PATIENT SAFETY HANDBOOK

ESAPS

EASAPS

EUROPEAN ASSOCIATION OF SOCIETIES OF AESTHETIC PLASTIC SURGERY

The Voice of Aesthetic Plastic Surgery

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To the President of EASAPS, Dr Jose Carlos Parreira, and his Board for their trust and support in this project.

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DISCLAIMER

This handbook is neither intended to be all-inclusive nor to define or serve as the standard of medical care. The standards of medical care are determined on the basis of all the facts involved in an individual case and are subject to change as scientific knowledge and technology advance and as practice patterns evolve. The EASAPS voids all liability for completeness and potential claims as a subsequence of usage.

PROLOGUE

Aesthetic Plastic Surgery is a branch of Plastic Surgery that has gained in the Society, a significative importance, reached by its own merit through the results and satisfaction of the patients.

By definition, patient safety is the means by which we want to prevent and reduce risks, errors and harm that can happen during the provision of health care, namely Aesthetic Surgical procedures.

There are very important features, namely doing the appropriate procedure for that particular patient, that the patient has realistic expectations of a surgery done by an experienced and certified surgeon in a suitable surgical facility. For patients, choosing to have an Aesthetic Plastic Surgery done is a very important decision. When a patient consider to have an Aesthetic Surgical procedure, he needs the skill of a Board Certified Plastic Surgeon, their training and experience guarantees the qualification to perform the Aesthetic Surgical procedure. And we must be prepared to perform that specific procedure(s) in a safe setting and following all the rules and recommendations for patient´s safety.

Precise information to patients and specially managing patient's expectations, are cornerstones for the success of the surgery and the result obtained.

Also there are stigmas and prejudices about Aesthetic Surgery done just for the purpose of improving beauty and as being superfluous. But the result of a so-call "Aesthetic Surgery" can be as grateful as the result of a breast reconstruction or any other Reconstructive Surgery, both done in a safe setting.

Patient safety is at the core of our Association and being able to offer these guidelines is a very important step for Plastic Surgeons all over Europe.

This document has been generously developed by the E(A)SAPS Patient Safety Committee: Dr Jesus Benito-Ruiz (Chair) and his Committee Members, Dr. Bianca Knoll, Dr. Timo Pakkanen, Dr. Mario Mendanha, Dr. Andrea Margara and Dr. Vladimir Marik. The passion and time dedicated to this project was incredible and we will be eternally grateful for the hard work and effort that Dr Benito-Ruiz and his team put into producing an excellent final result.

The publication will provide guidance for those that practice and research Aesthetic Plastic Surgery. Clear instructions and step-by-step methods that are easy to follow and carry out in our daily practice, makes this

publication unique and hopefully will be adopted by all Surgeons, to allow our patients to feel that they are receiving the best and safer care possible.

The guidelines however, cannot anticipate every situation, so these publications will be updated at regular intervals, and we hope to count on ongoing collaboration with many surgeons in Europe to add to the already comprehensive data,

Finally, I want to thanks to all the structure of E(A)SAPS who made possible the planning of such important Documents

José Carlos Santos Parreira

E(A)SAPS President

INTRODUCTION

This handbook was prepared by the **EASAPS patient safety committee** to help European plastic surgeons organise their practice in a systematic and professional manner to build an accredited facility. The handbook is intended neither as a set of standards nor a complete system of documentation. Even though it strongly leans on the CEN standard, the handbook serves as a guide and a source of reference for a surgeon in creating his/her personalised, country- and clinic-specific documentation system, as it both complies with national legislation and can be adapted to local conditions.

The ultimate goal is patient safety. Well-defined written instructions allow for easy learning, the creation of uniform protocols, fewer mistakes, better predictability, happy staff members and happy patients. Quality=patient safety.

WHAT IS PATIENT SAFETY?

PATIENT SAFETY is a health care discipline that emerged with evolving complexity in health care systems and the resulting rise of patient harm in health care facilities. It aims to prevent and reduce risks, errors and harm that occur to patients during the provision of health care. A cornerstone of the discipline is continuous improvement based on learning from errors and adverse events.

Patient safety is fundamental to delivering quality essential health services. Humans can minimise the possibility of making mistakes when they are placed in an error-proof environment where the systems, tasks and processes they work in are well designed. (1)

In 2004, the World Health Organization (WHO) launched the World Alliance for Patient Safety with the purpose of garnering the commitment of health professionals to improve the safety of patient care, with the surgical environment being one of the first places in which security practices would be implemented.

As surgeons and physicians, we need to ensure that our patients are protected by preventing some of the main errors, defined by the WHO, which are as follows:

- Medication errors

- Health care-associated infections
- **Unsafe surgical care procedures that can** cause complications in up to 25% of patients. Almost 7 million surgical patients suffer significant complications annually, 1 million of whom die during or immediately following surgery *(1,2)*
- Unsafe injections practices
- Deep venous thromboembolism

Additionally, we have a responsibility to our colleagues and workers, as the recent pandemic involving SARS-CoV2 has shown us.

In 2011, the International Joint Commission (IJC) launched the six International Goals for Patient Safety (IGPS), which are:

A recent systematic review (2) notes our most important aspects in our specialty, which are described below.

Informed Consent form: Safety for the plastic surgeon and the patient is ensured with this form, since it equals and consolidates the relationship of trust and transparency between the two, fulfilling the obligation of the doctor to inform the patient; in turn, this patient declares that he/she understood the treatment plan and agrees to submit to the proposed treatment. The consent form must provide adequate and sufficient information, including the nature and purpose of the treatment, probable risks and benefits, alternative treatments, and risks of failing to perform the proposed treatment or the alternatives.

Surgical checklist: The use of a checklist allows the collection of data and the identification of potential risks, promotes favourable changes in the attitudes of some professionals, and generates interest in patient safety and team labour. It also helps to reduce SSI (surgical site infections).

Patient confidentiality: This aspect is important, especially with the increasing, widespread use of social media as a way to promote and advertise our job.

Prevention of DVT and stratification of its risk in plastic surgery, as Caprini´s score seems not to fit well into our procedures.

References

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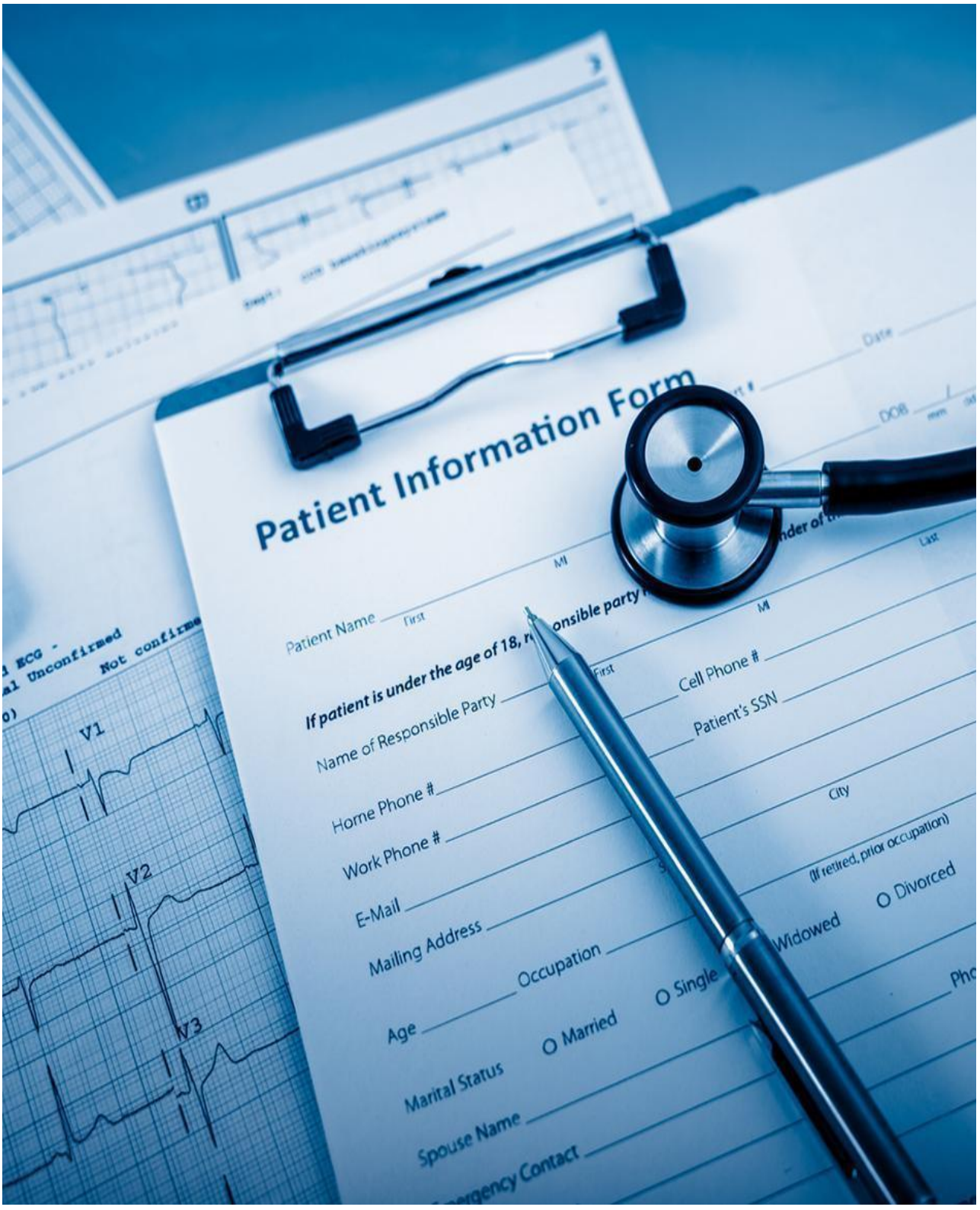
PATIENT INFORMATION



ADVERTISING AND MARKETING

Advertising rules for aesthetic surgical services are dependent on both national legislation and medical ethics. A European standard (CEN 16372, 2015) includes the guidelines (in chapter 4.8) and code of ethics (in Annex A) for advertising and marketing described below.

Guidelines for Publicity and Advertising in the CEN European Standard

Advertising should be avoided. In the case of advertising the following applies:

- National advertising standard guidelines shall be followed by any individual, group or business wishing to communicate with, or advertise to, patients in any country.
- Advertising and marketing in any form shall be legal, decent, honest, truthful and socially responsible.

  NOTE—general guidance on social responsibility is provided in ISO 26000.

- Advertorial transparency shall be ensured and patients shall be made aware by the text when an article is an advertorial.
- Free consultation shall not be used as a marketing tool.
- No models should be used in advertising or marketing, and a declaration of conflict of interest shall be prominent.
- Web and blog transparency shall be ensured, and if practitioners, or their employees, are involved in blog/web communications, they shall declare their true identity.
- The official professional status/qualification of the practitioner shall be clearly stated.
- Practitioners' qualifications shall not be misrepresented, and only the speciality listed in Annex B in which the practitioner is qualified shall be used. No terms shall be used that give patients or the public the impression of qualification in another speciality listed in Annex B.
- Referring professionals or other persons, including patients, shall not receive payment/remuneration or fee discounts for making patient referrals. Patients shall expect that any referral is made in their best medical interest and does not involve any financial transaction.

For further documentation, see the CEN Code of Ethics for marketing and advertising.CEN Code of Ethics for marketing and advertising

- The following applies only if marketing and advertising are legally permitted.
- Practitioners shall act in accordance with the principles of the Code of Ethics in all marketing endeavours with patients, peers and the general public. Furthermore, practitioners are individually responsible and accountable for their actions and words, as well as for the use of their names by any individual or entity. Practitioners shall be subject to disciplinary action for violation of any of the specific aspects reviewed herein.
- Practitioners may advertise through public communications media, such as professional announcements, telephone and medical directories, computer bulletin boards, Internet web pages and broadcast and electronic media. The information shall be factual and verifiable and should adhere to national advertising standards and, where available, adhere to National Medical Association Guidelines for advertising and the Law of the Land on medical advertising.
- All promotional opportunities shall adhere to the same standards of legality, decency, honesty and truthfulness.
    - Marketing materials should be drafted and designed to safeguard patients from unrealistic expectations as a result of aesthetic surgical procedures.
    - Any advertisements in journals, newspapers, magazines or other print media should use photographs depicting real-life results. The results from computer simulations should not be used. If models are used to depict the results of any procedure or treatment, this shall be stated clearly.
    - The information published shall not make unjustifiable claims or offer cures/guarantees.
    - Services shall not be advertised by visiting or telephoning prospective patients, either in person or through a deputy.
    - Advertisements shall not offer discounts linked to a deadline date for booking appointments for aesthetic surgical procedures or other date-linked incentives.
    - Financial incentives (vouchers and discounts) are strongly discouraged.
    - A practitioner shall not be the financial intermediary.
    - A practitioner should not be involved in group shopping services offering aesthetic surgical procedures, time-limited offers, money offers and offers such as buy one, get one free.
    - A practitioner shall not participate in sweepstakes (lottery) of aesthetic surgical procedures.

- A practitioner shall not participate in makeover shows, as they can promote unrealistic expectations of what aesthetic surgical procedure can achieve, although educational documentaries may be acceptable.
- Practitioners shall not compensate or give anything of value directly or indirectly to a representative of the press, radio, television or other communication medium in anticipation of or in return for recommending the services for professional publicity.
- A practitioner may pay the reasonable cost of marketing services but shall approve all communications before dissemination and shall retain a copy or record in its entirety for one year.
- Professional association logos shall only be used truthfully and where specifically allowed by the organisation in question.
- Practitioners shall be honest about their own experience with any treatment and openly declare known audit figure complications and their own complication rate.
- Practitioners shall be honest about the science of any aesthetic surgical procedure they offer and how its efficacy has been evaluated scientifically or observationally.
- Practitioners shall refer to patients as patients and not clients.
- Referring professionals shall not receive payment/remuneration for patient referrals. Patients shall expect that any referral has been made in their best interest and does not involve any financial transaction. Any financial relationship between the referring party and/or the practitioner and/or the facility shall be declared to the patient.

- Practitioners shall be held personally responsible for any violation of the Code of Ethics incurred by public relations, advertising or a similar firm that he or she experiences or for any entity that advertises on the practitioner's behalf.

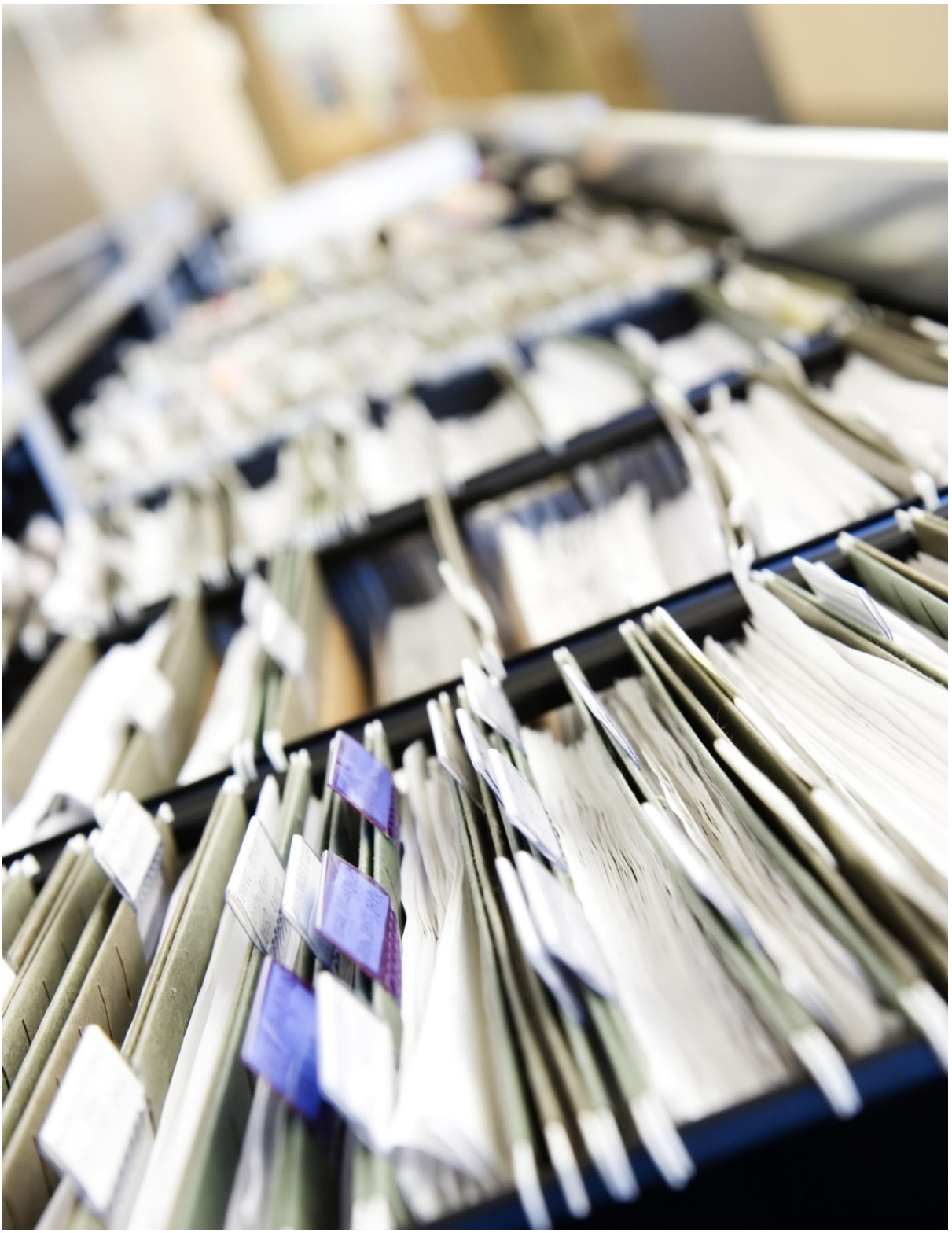
INFORMED CONSENT

The informed consent process is the basis for the collection of patient information, is mandatory for each (non)surgical intervention and is an essential part of good clinical practice. It contains two parts, the information and a separate written consent form. The information part contains all relevant information on the surgery planned. All frequent risks must be covered, and rare risks that have serious consequences. This includes the general risks of surgery and anaesthesia as well as the risks specific to the planned procedure(s). The information also needs to cover the possible alternative treatments, including the possibility of not undergoing any treatment of all. Other important issues include the possibility of unsatisfactory results, the revision policy and patient responsibilities, including the ability to comply with pre- and post-operative instructions. The information part needs to be informative enough to enable the patient to evaluate the proposed procedure and to make an informed decision. The timing of consent is critical. All information needs to be given to the patient well in advance, respecting national regulations to allow the patient to process the information before signing the consent document and agreeing to undergo surgery (the cooling off period). Informed consent reflects the medico-legal backbone to any medical intervention and should be done with the utmost care and diligence.

The national regulations vary in regard to the exact contents of informed consent forms. We have therefore created a set of talking points for the surgeon. These talking points serve as an additional asset to the surgeon both for the pre-operative consultation and when preparing the set of country-specific informed consent forms. A list with general considerations and procedure-specific talking points is provided in the attachment. Thus, the talking points are not a substitute for informed consent. The EASAPS voids all liability for completeness and potential claims as a subsequence of the usage of the “TALKING POINTS” provided

(see ANNEX 1. TALKING POINTS – BASICS FOR INFORMED CONSENT).

SAFETY IN PRACTICE MANAGEMENT



MEDICAL RECORDS

IMPLICATIONS OF PERSONAL DATA PROTECTION IN THE HEALTH FIELD

Doctors and health clinics, in the performance of their professional activities, are required access to and manage personal data from their patients, which include health data (*clinical records, medical examinations, transcripts, etc.)*. Consequently, special attention must be given to the general provisions established by the General Data Protection Regulation (apart from the existing specific codes of the sector) for the legal and adequate use of that personal data.

It should be noted that under the European regulation, health data fall into the category of "*special data"*, which means that its management must respect and guarantee higher security and safeguard standards. Moreover, health care is considered a fundamental right under the European Union Charter of Fundamental Rights.

In this regard, autonomous health care professionals and clinics are considered data controllers for their patients' personal data. Therefore, under the provisions of the GDPR and to avoid sanctions and reputational damages, health care professionals and clinics must fulfil, among others, the following obligations in data protection.

DUTY TO INFORM AND OBTAIN CONSENT FROM THE INTERESTED PARTY

Before undergoing any sort of medical treatment or visiting a doctor, patients must be informed clearly, concisely, and easily on the use and purposes sought by the health professional or clinic regarding the use of their personal data. **Explicit consent must be obtained**. In the case of minors, the information must be adapted to intelligible speech; in addition, their parents' consent must be obtained.

PRESERVATION OF MEDICAL RECORDS

Patient records and information must be kept for the duration of the relationship. Once completed, the information must be anonymised to prevent its dissemination during legal deadlines for possible liabilities.

CONTRACTS WITH SUPPLIERS AND COLLABORATORS

During their practice, clinics and professionals need the collaboration and provision of services by other experts. These relationships, if they involve providing access to their patients' data, must be legally regulated through a *Data Processing Agreement.*

RISKS DETECTION AND ADOPTION OF SECURITY MEASURES

Personal data processing requires prior analysis of possible risks and threats that may compromise the confidentiality, integrity and availability of data and patient records. Subsequently, security measures must be adopted to reduce such risks; in addition, their operation and suitability must be periodically audited.

NOTIFICATION AND RECORDING OF SECURITY VIOLATIONS

Unauthorised access to, loss of or theft of patient records is considered a security incident. In these cases, those affected must be informed, and the incident must be documented by the person(s) responsible for processing the incident. This document must include the date of the incident, the description of the incident, the type and number of data affected, the security measures taken, consequences, etc.

INTERESTED PARTIES' RIGHTS

Specific means must be made available to allow the patient to access his/her medical history and access to the results of tests at all times, as well as the ability to exercise of any other right recognised in terms of data protection.

DATA PROTECTION OFFICER (DPO)

Clinics and health professionals must appoint a data protection officer who will advise, supervise and ensure regulatory compliance in this area.

COMPLIANCE EVIDENCE

Clinics and health professionals must be able to document and show prove their compliance with regulations in the face of possible requirements from the control authorities.

Compliance with the above obligations allows professionals to carry out data processing in line with the legislation and avoid being fined up to 20.000.000€, depending on the impact of a possible incident. Compliance is important, along with the reputational damage that infringements in this area can cause to the public image of the clinics.

GOOD PRACTICES IN DATA PROTECTION

To facilitate compliance with data protection obligations, the following are some good practices that professionals can adopt in the development of their activity:

- **Protect your computer equipment** and keep your anti-virus, anti-malware, etc., up to date.
- **Sign confidentiality agreements** with employees and professionals with whom you collaborate for access to and use of patient data and clinical records in the exercise of your profession.
- Document custody of patient files and evidence of consent given for the treatment of their data.
- **Reduce the use of paper documentation** by digitising medical records and destroying hard copies. Use paper shredders**.**
- **Restrict employee access to patient information** that is strictly necessary to provide requested assistance. Access to complete patient information should be limited to only those parties responsible.
- Make periodic backups and records of access to documentation.
- **Send medical test reports or results by secure means,** protecting the information with passwords known only to the patient.
- **Install cabinets and file cabinets of documents** in access areas protected with keys and access control.
- **Contracting with secure IT service providers (***cloud computing, WhatsApp, telematic appointment system, e-mail, etc.***).** In cases of assistance or telematic appointments, use tools aligned with the GDPR and with an appropriate level of security**.**

Likewise, and in the current process of **digitalisation of medicine**, professionals must pay special attention to these obligations in telematic consultations, analysis and assessment of images sent electronically by their

patients or for recording operations. In such cases, **the purpose and means used must be adequately expressed in advance, and the patient's express consent must be obtained**.

In any case, remember the importance of having an expert team in regulatory compliance to provide adequate and continuous advice and to ensure that this fundamental right to data protection is respected.

MEDICAL PHOTOGRAPHS

INTRODUCTION

Photographs have paramount importance in medical records in aesthetic plastic surgery. The photos serve as tools for 1. the patient to be educated prior to the operation, 2. the results to be evaluated with the patient, 3. surgeon self-evaluation and learning, 4. use as a teaching tool, and 5. medico-legal backup.

Medical photographs help the patient and the surgeon to better understand and define treatment goals, progression and outcomes. In addition, these photographs serve as a tool to document and monitor quality control, allowing pertinent or evolving surgical techniques and strategies to be considered.

Medical photographs can be a crucial document in a legal case. Therefore, no plastic surgery should ever be performed without first acquiring adequate pre-operative photography.

Medical photographs should be taken in a standardised fashion using optimal lighting, background and other conditions (1). A dedicated studio room with a dedicated person is key for obtaining good quality images. Digital photography allows systems to take post-operative photos through pre-operative photos, allowing exact positioning, thus enhancing the visualisation of minimal volumetric changes, such as facial fat grafting results. Three-dimensional photography has become a great tool in breast surgery and rhinoplasty for both patient education and evaluation purposes.

It is paramount to obtain written consent from the patient regarding how the obtained photo (video) material can be used. No unauthorised distribution or display can be performed by the surgeon without the agreement of the patient. It is the patient's right to revoke any consent at any time. Even when adequate consent has been obtained, any identifying characters, such as tattoos and scars, should be hidden if any surgical results are presented.

Assuring safe digital or analogue storage according to the legal regulations of the medical professional's home country needs to be provided (2). The requirements for handling and storing digital images belong under the European GDPR rules. These requirements are necessary to ensure the safety of storage and access, as no clinic can be disconnected from the Internet currently, and the consequences of a data breach for both the economy and reputation can be devastating. Taking or storing any patient photos using a personal smartphone is therefore strongly discouraged.

Due to the ongoing increase in public displays in social media, ethical guidelines were proposed by Dorfman et al. in 2017 (3,4). Commercialised photographic and video editing, so-called “deep fakes”, have invaded the public market, evoking unrealistic expectations (5). Patients and surgeons need to be aware of this problem and protect their identity, intellectual property, and professional practice. The realistic and educational presentation of outcomes should remain paramount to any plastic surgeon’s office.

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BASIC MEDICAL EQUIPMENT KIT IN THE MEDICAL OFFICE

This chapter is for doctors who can perform procedures under local anaesthesia in their offices. For outpatient surgery, please consult the chapter on "Ambulatory surgery".

The main emergencies that one could experience are as follows:

- Collapse
- Chest pain
- Short of breath
- Reactions to local anaesthesia
- Bleeding

BASIC EQUIPMENT

There are many kits in the market with the basic equipment needed for basic CPR. The main emergency equipment recommended is as follows:

- A portable oxygen cylinder (E size) with a regulator (supplemental oxygen-delivering devices – oxygen therapy mask, nasal cannula, pocket mask, and bag valve mask unit).
- Oropharyngeal airways (sizes 1-4).
- Portable suction with suction catheters.
- Intravenous (IV) fluids/lines, syringes, needles, and tourniquets.
- An automated blood glucose measurement device.
- A stethoscope.
- A sphygmomanometer.
- A spacer device for inhaled bronchodilators.
- Magill intubation forceps.
- A pulse oximeter with audible alarm.
- An automated external defibrillator (AED).

ABCDE:

A: Airway

B: Breathing

C: Circulation

D: Disability (neurological status)

E: Exposure

BASIC MEDICATION

INDICATION	MEDICATION	ADMINISTRATION	DOSAGE
Any emergency	Oxygen	Nasal cannula Mask	2-6 l/min 10-15 l/min
Anaphylaxis	Epinephrine Hydrocortisone Dexamethasone	IM/SC IV IM/IV IM	1:1000 dilution 0.3-0.5 mg 1: 10,000 dilution 100 mg 4 mg
Allergy	Chlorpheniramine Diphenhydramine	Oral/IM	10-20 mg 20-50 mg
Angina	Nitro-glycerine Morphine (if unresponsive to nitro-glycerine)	Sublingual IM/IV RR<12; do not re-administer SC	0.4 mg q 5 min 2-3 times 2-5 mg repeat every 5-30 min
Asthma	Salbutamol	Aerosol	100 µg per actuation 2-3 inhalations/1-2 min
Infarction	Aspirin	Sublingual/PO	325 mg
Epilepsia	Diazepam	Oral Rectal	2-10 mg 0.2 mg/kg

	Midazolam Lorazepam	IM Intranasal IM/IV	5-10 mg 0.2 mg/kg 4 mg
Hypoglycaemia	50% dextrose 100 ml 25% dextrose 1-4 ml/kg Glucagon 50 mL amp	IV SC/IM/IV	50% dextrose 100 ml 1 mg
Hypertension	Propranolol Nifedipine Verapamil	Oral Oral IV	40 mg 10-20 mg 5-10 mg
Bradycardia	Atropine	IM/IV/SC	0.5-1 mg
Bleeding	Vitamin K	PO/IV/IM/SC	2.5-10 mg
Opioid overdose	Naloxone	IV/IM	0.4 mg
Benzodiazepines overdose	Flumazenil	IV	0.2 mg

https://cprguidelines.eu/guidelines-2020#downloads. Last access 3rd February 2021

EMERGENCY MEDICATIONS

- All medications necessary to perform **advanced cardiopulmonary resuscitation** or to treat **malignant hyperthermia** are stored in a specific area.
- **Epinephrine** is stored and available in the facility at all times.
- **Lidocaine (plain)** is stored and available in the facility at all times.
- **Vasopressors** other than epinephrine (e.g., ephedrine) are stored and available in the facility at all times.
- If narcotics are maintained in the facility, **narcotic antagonist** (e.g., Narcan) is stored and available in the facility at all times.
- **Seizure arresting medication** (a benzodiazepine, e.g., midazolam) are stored and available in the facility at all times.
- **Bronchospasm arresting medication** (inhaled beta agonist, e.g., albuterol) is stored and available in the facility at all times.

- **Intravenous corticosteroids** (e.g., dexamethasone) are stored and available in the facility at all times.
- **IV antihistamines** (e.g., diphenhydramine) are stored and available in the facility at all times.
- **Short-acting beta-blocker** (e.g., esmolol, labetalol, or propranolol) are stored and available in the facility at all times.
- Atropine is stored and available in the facility at all times.
- **Neuromuscular blocking agents** (including non-depolarising agents such as rocuronium or depolarising agents such as succinylcholine) are stored and available in the facility at all times.
- **Benzodiazepine** reversing agent (e.g., Mazicon, flumazenil) is stored and available in the facility at all times.

GUIDELINES FOR DAY SURGERY IN PLASTIC AND AESTHETIC SURGERY

Applicable to plastic and aesthetic surgical procedures carried out under any type of anaesthesia where the patient is discharged the same day of the surgery without spending the night in the health facility, as this occurrence does not require prolonged specialised post-operative care for correct post-surgical recovery. This approach also allows re-adaptation to the environment in a comfortable and safe way under precise medical instructions.

Synonyms: Outpatient surgery, ambulatory major surgery, surgery without admission.

TECHNICAL AND ARCHITECTURAL REQUIREMENTS

- Reception or admission area for patients and administrative services.
- Waiting room with toilets adapted for people with disabilities.
- Clinical or healthcare area.
    - Medical consultations with exploration area and treatments:
        - Stretcher with specific lighting.
        - Hand sink.
        - Oxygen, medical air and vacuum connections.
        - Material and instruments for cures.
        - Furniture made of non-porous material and easy to clean.
    - Pre-operative area (which can coincide with the area for re-adaptation to the environment):
        - Equipment for constant monitoring.
        - Peripheral infusion equipment.
        - Surgical clothing for patients.
    - Nursing control that is correctly located for proper observation of the area:
        - Clean office for storage of material and medication preparation, with a hand sink.
        - Dirty office for waste removal.

        - Refrigerator with temperature register for blood bank.
    - Area for rehabilitation to the environment:
        - Rooms or boxes correctly sized for the activity.
        - Oxygen, medical air and vacuum connections.
        - Light and sound warning system that alerts the nursing team.
        - Material for life support and airway management.
        - Medication for cardiopulmonary resuscitation.
        - Defibrillator 1.4. in the surgical area.
    - Controlled or electronically coded access.
    - Changing rooms for staff and patients with surgical clothing and toilets.
    - Patient and staff exchangers with a physical barrier.
    - Pre-surgical hand washing area.
    - Operating room/s:
        - Minimum surface and height required by local regulations.
        - Specific air conditioning for ISO 7 rooms for each operating room.
        - Smooth surfaces that are easy to clean and decontaminate.
        - Isolation against ionising radiation if this technology is used.
        - Articulated surgical table.
        - Surgical lamps with adequate light output.
        - Anaesthesia respirator with monitoring of haemodynamic constants, oxygen saturation and gas evacuation.
        - Material for life support and airway management.
        - Oxygen, medical air and vacuum connections.
        - Medication and anaesthetic drugs.
        - Suction or vacuum system.
        - Electrosurgical unit suitable for the type of surgery.
        - Surgical material and instruments.
        - Equipment suitable for the type of surgery.
        - Medication for cardiopulmonary resuscitation.
        - Clock and audio-visual elements embedded in the wall.
    - Post-anaesthetic recovery with direct access from the operating room:

        - Appropriate number of stretcher seats for surgical activity with lighting and independent haemodynamic constant monitoring, separated by mobile elements to preserve patient privacy.
        - Oxygen, medical air and vacuum connections for each stretcher seat.
        - Nursing control in the recovery area with direct observation of all the seats and with an available hand sink.
        - Stretcher or wheelchair to transfer the patients out of the surgical area.
        - Medication for cardiopulmonary resuscitation.
        - Defibrillator.
    - Medical gas tank (marked outside and attached to the unit).
    - Sterilisation substation (washing machine, autoclave steriliser and sealer).
    - Sterile and consumable surgical material warehouse.
    - Warehouse for devices and appliances with adequate electrical outlets.
    - Dirty office for the removal of waste and for the storage of materials and cleaning products.
    - Relaxation room for the staff.
    - Call centre to provide information to the family and accompanists.
- Uninterruptible electrical power supply system.
- Telephone and computer connections necessary for the proper functioning of the entire ambulatory surgery unit.
- Ambulance area with access enabled for a stretcher or wheelchair.

REQUIRED PROTOCOLS

- Organisation and functional protocol.
- Definition of lines of responsibility.
- Patient selection protocol.
- List of surgical procedures to be carried out in the unit, including the type of anaesthesia used and the expected duration of the procedures.
- Material sterilisation protocol.
- Maintenance protocol for the autoclave steriliser.
- Periodic environmental and surface microbiological controls.

- Assistance protocols in the pre-operative, intra-operative and post-operative periods.
- Permanent telephone service protocol for patients.
- Derivation protocol for patients requiring hospital admission.
- Sanitary waste management protocol.
- Quality control protocol (indicators).
- Book of complaints.

COLLABORATION CONTRACTS WITH OTHER CENTRES

- Collaboration contract with a referral hospital centre for emergencies and admission of patients who require emergency services; the centre should not be more than one hour from the unit or the patient's home.
- Service contract with an urgent medical transport company.
- Service contract with a drug supplier.
- Service contract with a hospital blood bank.
- Service contract with a laboratory for clinical and pathological analyses.
- Service contract with a diagnostic imaging centre.
- Service contract with a sanitary waste management company.

REQUIRED CLINICAL DOCUMENTATION

- Information documents on the ambulatory circuit and the most common processes.
- Pre-operative, peri-operative and post-operative recommendation sheets.
- Clinical history of the patient.
    - Clinical history number and filiation of the patient.
    - Diagnosis, indicated treatment and clinical course (ICD coding is recommended).
    - Informed consent for surgical procedures specifying their outpatient features.
    - Pre-operative health questionnaire.
    - Pre-anaesthetic visit sheet.
    - Anaesthetic action sheet.

- Surgical or operative report.
- Medical order sheet.
- Nursing course sheet.
- Discharge report.
    - Clinical history number and filiation of the patient.
    - Name, address, identification number and telephone number of the unit.
    - Pre-operative tests performed.
    - Diagnosis and treatment carried out (ICD coding is recommended).
    - Patient evolution and status of compliance with discharge criteria is PADS modified.
    - Type of diet, care and recommended cures.
    - Dosage, route of administration and schedule of the prescribed medication.
    - Warning signs.
    - Permanent contact telephone number with the healthcare team.
    - Name, signature and registration number of the responsible doctor.
- Post-operative control telephone call sheet prepared for the following 24 hours.

HUMAN RESOURCES REQUIRED

- Coordinator and medical chief of the unit.
- Nursing team trained in the ambulatory circuit.
- Specialist physicians trained in the ambulatory circuit.
- Unit manager.
- Administrative staff.
- Cleaning staff.

CRITERIA FOR THE INCLUSION OF PATIENTS IN AN OUTPATIENT CIRCUIT

- Surgical procedure criteria:
    - Low traumatic surgery or type II Davis classification.
    - Low risk of bleeding.

  - Low risk of inflammation and airway obstruction.
  - Low discharge of drains (if used).
  - Post-operative pain absent or controlled with oral analgesia.
- Physiological criteria of the patient:
  - Healthy patients classified as ASA I or ASA II of the ASA Classification.
  - Patients classified as ASA III with previous non-decompensated pathology during the last 6 months and with a favourable pre-anaesthetic visit were classified as APPROVED for the ambulatory circuit by the anaesthesiologist.
  - The suitability of biological age (not chronological) is rigorously assessed.
  - The inclusion of obese patients (> 30% ideal BMI) is rigorously assessed.
  - The inclusion of compensated psychiatric patients is rigorously assessed.
- Social or environmental criteria of the patient:
  - The outpatient surgical process is understood and accepted.
  - The patient must have a responsible adult companion upon discharge from the unit and during the first 24-48 hours who also understands and accepts the outpatient process.
  - The patient's home (or hotel) must not be more than one isochronous hour from the unit and/or the referring hospital.
  - The home (or hotel) must be comfortable and compatible with post-operative care, so it must be accessible and hygienic.
  - The patient must have quick access to telephone contact with the healthcare team in case of need.
- Absolute contra-indications in Ambulatory Major Surgery:
  - The patient does not accept, understand or collaborate with the outpatient procedure.
  - The patient does not have socio-family support.
  - Distance to the nearest centre is greater than an hour and a half.
  - Anti-coagulation for decompensated heart disease or uncontrolled arrhythmia.
  - ASA IV patients.
  - Decompensated psychiatric patient.
  - Drug addict or uncontrolled alcoholic patient.
  - Morbid obesity with associated comorbidities.
  - Poorly controlled high blood pressure or diabetes.

PRE-ANAESTHETIC VISIT AND PRE-SURGICAL PREPARATION

- Review of the pre-operative health questionnaire.
- Extension of the anamnesis directed by the health questionnaire.
- Examination of the patient with special attention to the assessment of the difficulty of maintaining the airway.
- Assessment of the surgical-anaesthetic risk of the patient (ASA Classification).
- Assessment of the need for a specific pre-operative test.
- Assessment of the need for requesting reports from other specialist doctors.
- The patient should be assessed regarding whether he or she meets the criteria for inclusion in an outpatient surgery circuit, and if not, hospital admission should be advised or discouraged from performing the proposed surgery.
- The most appropriate anaesthetic technique for the patient should be chosen.
- Information on the anaesthetic technique and its associated risks should be clear.
- Informed anaesthetic consent was obtained with personalised risks in writing and signed by the patient.
- Clear and precise instructions for pre-operative preparation should be given (fasting, regimen or modification of pre-operative medication, removal of make-up including nails, metal objects, piercings, contact lenses, etc.).
- The particularities of the ambulatory circuit should be addressed and doubts about the circuit should be resolved.

SURGICAL PROCEDURE

- Antibiotic prophylaxis 30-45' before the surgery.
- The use of general or total intravenous anaesthesia (TIVA) should be considered with a laryngeal mask and drugs that facilitate awakening and early recovery. Halogenated gases (nausea and vomiting) and spinal anaesthesia (delayed spontaneous urination) should be avoided as much as possible.
- Anaesthetic depth should be monitored.
- Low traumatic surgery following Halsted principles.

- The incisions and surgical dissection plane should be infiltrated with local anaesthetics and vasoconstrictors.
- The surgical checklist should be carried out and efficient and fluid communication should be maintained among team members during the intervention.
- Normothermia (36°C) should be maintained during surgery (thermal blankets by air conduction and preheated serum).
- Intra-operative intravenous antiemetic prophylaxis.
- Intra-operative intravenous multi-modal analgesia.
- The use of suction drainage systems should be minimised.
- Anti-thrombotic prophylaxis according to stratified assessment of individual risk.

POST-ANAESTHETIC RECOVERY

- Consciousness monitoring with haemodynamic constants and oxygen saturation.
- Normothermia (36°C) is maintained.
- Post-operative pain is controlled and managed.
- Active surveillance of the zone is performed with special attention to signs of bleeding.
- Authorisation of the patient's discharge from this area by the anaesthetist according to the modified Aldrete criteria.

RE-ADAPTATION TO THE ENVIRONMENT

- A pleasant and comfortable stay is provided.
- Diuresis, activity level and vital signs are monitored.
- A liquid diet is started two hours after surgery.
- A 30-40' with a semisolid diet is continued if well tolerated.
- Frequent monitoring and active stimulation by the nursing team.
- Efficient communication between all parties involved (patient, companions and healthcare team).

DISCHARGE OF THE PATIENT FROM THE UNIT

- Normally occurs between 3 and 4 hours after surgery.
- The responsible physician authorises the patient to be discharged at home according to the modified PADSS criteria.
- Patient is accompanied by a responsible adult for the first 24-48 hours.
- Clear and precise information on post-operative instructions and warning signs provided in verbal and written form for patients and their accompanying “caregivers”.
- Duly completed discharge reports that include permanent telephone contact numbers if necessary.
- The patient's appointment for the first post-operative control is scheduled.

POST-SURGICAL CONTROL PHONE CALL AT 24 HOURS

- Assessment of the general condition of the patient and his or her degree of comfort at home.
- Assessment and management of post-operative pain.
- Signs of bleeding or other acute complications are ruled out.
- Post-operative doubts are resolved.
- Registration and signing of post-operative control phone call document.

HOSPITAL DERIVATION PROTOCOL TO USE WHEN NECESSARY

- When there are incidents that require the patient to stay overnight in a health facility to continue with specialised post-operative care, the patient should be admitted to such a facility immediately.
- Effective management and control of the incident in the unit facilities.
- Haemodynamic stabilisation of the patient in the unit if required.
- Transfer request to the on-call supervisor of the referral hospital.
- A derivation report should be made specifying:
    - Patient filiation, medical history, diagnosis and surgical treatment that were performed.
    - The incident that occurred, and the actions that were carried out to stabilise or resolve it.
    - General condition of the patient prior to transfer.
- The patient is transferred by ambulance and accompanied by a doctor from the unit.

- The patient is admitted to the hospital and information is communicated efficiently, verbally and in writing (delivery of the derivation report), with the healthcare team of the same hospital.
- The necessary actions are continued to resolve the incident and help the patient recover.
- The necessary tests and consultations are requested if necessary.
- Close post-operative control of the patient is performed and tests and consultations are requested.
- Efficient and fluid communication with the hospital care team.
- Preparation and delivery of the discharge report when the incident has been solved and the medical criteria for it are met, also specifying the incident and actions carried out together with the other post-operative instructions.

INDICATORS FOR AN OUTPATIENT SURGERY UNIT IN PLASTIC AND AESTHETIC SURGERY

- Outpatient index.
- Substitution index.
- Index of suspension or cancellation of the programmed intervention.
- Index of delays in patient discharge.
- Unplanned derivations or admissions rate.
- Urgent consultation rate at 24-48 hours, a week and 30 days.
- Re-admission rate at 24-48 hours, per week and at 30 days.
- Patient's and user's satisfaction index.
- Morbidity rate and type.
- Index of re-interventions and/or "touch-ups".

ACCREDITATION

- Periodic external audit that requires compliance with internationally accepted quality of the items for the activity evaluated.
- Very convenient and necessary but not mandatory in Europe.
- It encourages the registration and publication of results.
- The quality and safety of the units is increased.
- Comparison between units is facilitated.

- Prestige is awarded to the unit that obtains the accreditation certificate.
- Accrediting organisations of ambulatory units:
    - ISO (International Organization for Standardization).
    - JCI (Joint Commission International) Accreditation Standards for Ambulatory Care.
    - AAAASF- I (American Association for Accreditation of Ambulatory Surgery Facilities - International).

TEACHING AND TRAINING

- The post-graduate rotation of healthcare professionals through this type of outpatient surgery unit should be encouraged.
- Organisation of scientific events: conferences, meetings, symposia and congresses.
- Continuous training of the professionals of the unit under a culture of quality and patient safety.
- Culture of transparency and publication of results.

INNOVATION AND DEVELOPMENT

- Culture of self-evaluation and continuous improvement.
- Innovation and development of the processes and the ambulatory circuit.
- Development and promotion of the most efficient and minimally invasive surgical techniques.
- Development of new anaesthetic and analgesic drugs that facilitate rapid recovery and discharge to the patient's home.
- Review and encourage the use of outpatient procedures.
- Promotion of the creation and implementation of this type of unit in public and private health in pursuit of a more efficient health system.

The above guidelines are to be construed as principles only. They are not mandatory nor must be met all-inclusively. Details and regulations are the responsibility of national and/or local accreditation, licensing bodies or individual physicians.

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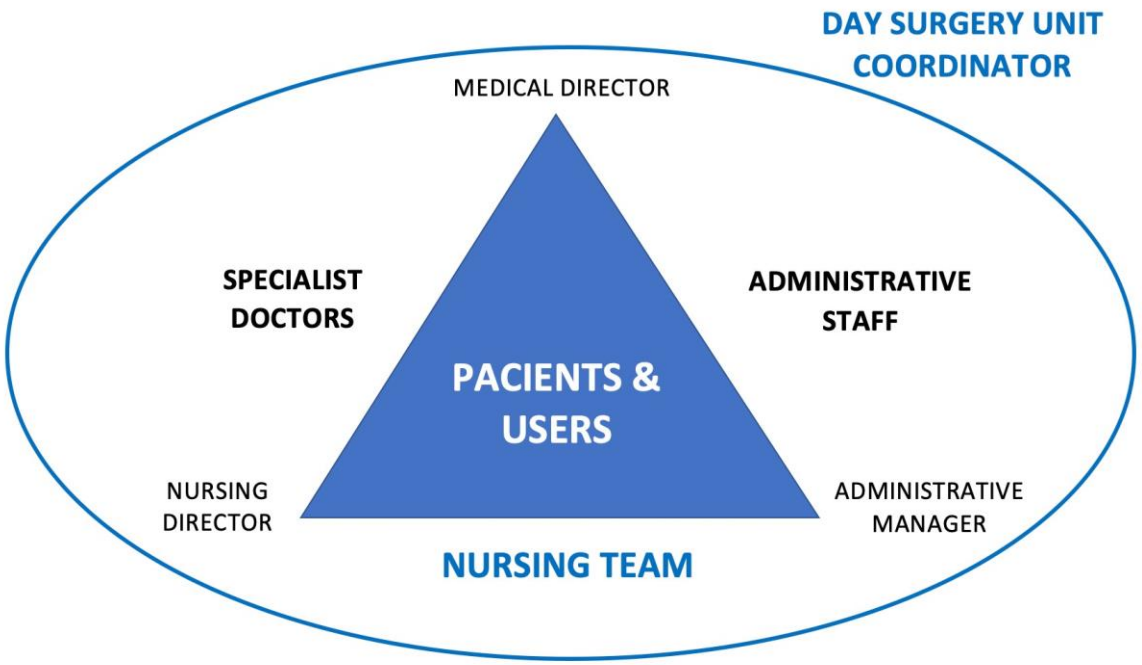
DECISION ALGORITHM IN DAY SURGERY

Functional Organisation in Day Surgery Unit



HEALTH WORKER PROTECTION

The SARS-CoV-2 pandemic has created a major problem for health care worldwide, showing the deficiencies of our health care systems and stressing the importance of protecting health workers.

Patient Safety Day in 2020 was dedicated by the **WHO to health worker safety**. The WHO's statement was:

Health worker safety: a priority for patient safety

The key WHO measures for this campaign were as follows:

- Establish synergies between health worker safety and patient safety policies and strategies
- Develop and implement national programmes for occupational health and the safety of health workers
- Protect health workers from violence in the workplace
- Improve the mental health and psychological well-being of health workers
- Protect health workers from physical and biological hazards

In this last item, it is paramount to emphasise that harm from sharps should be avoided (in Europe regulated by **directive 2010/32/EU** and having sufficient and adequate protective equipment (PPE)).

JCI has an extensive handbook on checklists for health worker protection that can be consulted

As workers, plastic surgeons need to protect ourselves from environmental hazards. Our safety is also a patient safety issue. The main health issues found in plastic surgeons are:

- Cervical spine injuries (because of the position during surgery and the use of gears and loupes)
- Back pain due to poor ergonomics in surgery
- Carpal tunnel syndrome
- Sharp injuries
- Blood and fluid spills
- Smoke inhalation (electrocautery and lasers)
- Noise contamination (i.e., liposuction)
- Radiation
- Burnout and lawsuits (which are a mental burden)

Measures to prevent these issues should be taken.

POLICIES AND PROCEDURES

WHY POLICIES?

Policies and procedures are a vast collection of key documents needed for running a medical practice safely and predictably. A written policy is a basis for coherent behaviour. It is easy to teach and learn. It reduces risks and unintentional mistakes, which makes a difference in patient safety. The policies increase the self-confidence of staff members by outlining their tasks. The policies decrease the vulnerability of the clinic in the loss of a key person or key skill. The policies increase the awareness of deviations and improve one's ability to respond by performing a corrective action.

An example of the general structure of the manual containing the policies and procedures is presented below.

WELCOME AND GOVERNANCE

The welcome part should contain the short description of the company as well as its aims, vision and mission statement. The governance section should include the administrative and organisational structures of the company.

PERSONNEL POLICIES

Personnel policies describe staff-related issues. Regarding general conduct, the policies delineate the dress code and hygiene (including smoking), the rules for customer service and grievance procedure. The new hire part informs the policy manual, introductory period, employment definitions and an orientation checklist. It also contains documents to be signed by the employee, such as authorisation to release information, confidentiality statements, conflicts of interest and employee acknowledgement of practice policies. The personnel records policy describes the information needed, the information to be updated by the employee and the contents of the personnel folder. Other topics for policies include pay issues, workday breaks, absences, employee benefits and in-service drill/staff meeting schedules. The termination of employment and legislative issues concerning employees (e.g., personal data protection, occupational health and safety, non-discrimination, and non-harassment laws) are also addressed here.

OFFICE POLICIES

Office policies begin with day-to-day activities, such as opening hours and how to open and close the practice. Telephone etiquette is the important aspect here. Other aspects include a magazine circulation policy and mailing procedure. Patient management issues include reservation and no-show policies, new patient intake procedures, surgery scheduling and patient counselling/dismissal policies. Collection issues include fee collection, billing, prepayment, payment and financing.

Risk management consists of medical record policies (charting guidelines, electronic medical records, retention of records, and authorisation to release medical records) and patient privacy policies (personal data protection and e-mail communication policies). Adverse events, accidents and near misses should be reported using incident reports. Other risk management policies include a conflict resolution policy and a collection control policy that patients from identity theft.

The infection control section includes infection control guidelines; guidelines for handwashing; laundry procedures; office cleaning procedures; and universal precautions, such as prevention of transmission of HIV and other bloodborne infections and the use of personal protective equipment. Other infection control policies include preventative maintenance policy, sterilisation policies, device accountability (implants) and spill protocol.

The safety protocol section includes general safety and security issues, protocols for needle sticks and electrical equipment safety checks. It also contains protocols for security emergencies, such as a plan for a bomb threat, for the presence of an intruder in the facility, for an emergency evacuation of patients in the event of a disaster and for fires.

The final two sections are job descriptions and performance evaluations.

OPERATING ROOM SAFETY

PREVENTION OF OPERATING ROOM FIRES

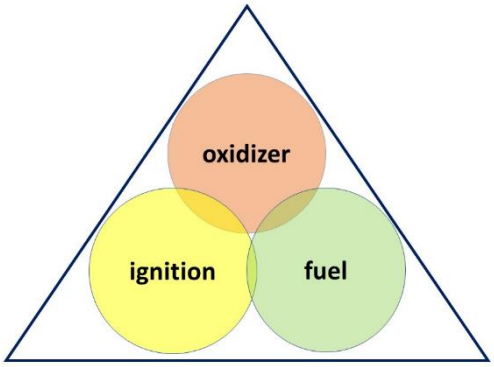
Fires in operating rooms (ORs) are rare events; they can quickly cause serious injury, disfigurement, and death.

According to the Emergency Care Research Institute (ECRI), facial surgery is the second most common time at which a fire occurs (tonsil surgery is the first); hence, facial surgeons should be aware of the potential risks of fire and explosions and know how to manage the resulting injuries. A review of operating room fire claims found that 85% of fires occurred near the head, neck, or upper chest, and 81% of cases occurred with monitored anaesthesia care.

TEN MAIN POINTS TO PREVENT AN OPERATING ROOM FIRE

Use non-alcoholic-based skin preparations if possible
Clean the area with a dry swab before the diathermy is used if an alcohol-based antiseptic has been used
Use flame-resistant surgical drapes
Use open face draping. Avoid tenting
Use a supplemental oxygen flow of 2 L/min, and cease supplementation 60 seconds before using electrocautery
Use suction to reduce oxygen concentration
Ensure oxygen is delivered through a properly placed nasal cannula
Keep all gauze sponges wet with saline
Use an electrocautery device, preferably bipolar, less than 15 W, with a clean tip and hold it at least 5 cm from the oxygen source
Do not use alcohol-based solutions to prepare the scalp when the head has not been shaved

Fire depends on three factors, known as the fire triad:



OXIDISERS

An oxidizer-enriched atmosphere develops when there is any increase in oxygen concentration above room air level and/or any concentration of nitrous oxide is present. The main oxidisers in the OR are oxygen and nitrous oxide.

An oxygen-enriched environment needed for a fire. Factors affecting the formation of this oxygen-enriched area are the flow and concentration of oxygen, the distance between the cannula and the ignition source and the draping.

Oxygen supplementation should be administered intermittently when an electrosurgical unit is not in use. The oxygen flow rate should be kept low (2–3 L/min) and supplementation should cease 60 seconds before starting electrocautery. The FiO2 should be kept as low as possible (less than 30%). The importance of oxygen content cannot be overemphasised as studies have

revealed that nearly all objects can become fuel for a fire once the oxygen content increases to greater than 30%.

Nasal cannulae should be properly placed and should never covered by drapes. The best way to reduce or even prevent fire is to exchange the nasal cannula for a rubber nasopharyngeal tube with the cut ends of the nasal cannula passing through the tube to provide a high flow of oxygen to the nasopharynx or even use an 8-French feeding tube.

Drapes made of polypropylene are more resistant to fire than those made of cellulose. In facial surgery, open drape preparation is used to avoid tenting (tents cause highly enriched oxygen environments).

IGNITION

As a heat or ignition source, an electrosurgical unit provides the ignition required for a fire to start in 70 to 90% of all surgical fires. The surgeon should use the lowest possible power during the surgery, and there should be a safe distance between the heat source and the oxygen source.

Ignition sources include but are not limited to electrosurgical or electrocautery devices, lasers, heated probes, drills and burrs, argon beam coagulators, fibre-optic light cables, and defibrillator paddles or pads.

The cautery device should be held a minimum distance of 5 cm from the oxygen source, or 10 cm from the oxygen source if the flow is 4 L/min or more, and the electrosurgical device should always be kept in a holster when not in use. An endoscopic or fibre-optic cable should never be left lying on top of surgical drapes, towels or gauze when the light source is turned on.

FUEL

The most common fuel to this kind of fire is an antiseptic solution, such as one that is alcohol-based.

Other fuel substances are tracheal tubes; sponges; drapes; gauze; solutions containing

other volatile compounds, such as ether or acetone; oxygen masks; nasal cannulas; the patient's hair; dressings; ointments; gowns; gastrointestinal tract gases; blankets; suction

catheters; flexible endoscopes; fibre-optic cable coverings; gloves; and packaging materials.

For all procedures:

- Surgical drapes should be configured to minimise the accumulation of oxidisers (oxygen and nitrous oxide) under the drapes and to keep them from flowing into the surgical site.
- Flammable skin-prepping solutions should be dry before draping is performed.
- Gauze and sponges should be moistened before use in proximity to an ignition source.

HEAD AND NECK SURGERY

This is a high-risk surgery for fires.

The anaesthesiologist and surgeon should develop a plan that accounts for the level of sedation and the patient's need for supplemental oxygen. If moderate or deep sedation is required or used or if the patient exhibits oxygen dependence, the anaesthesiologist and surgeon should consider a sealed gas delivery device (*e.g.*, a cuffed tracheal tube or laryngeal mask). If moderate or deep sedation is not required and the patient

does *not exhibit oxygen dependence*, an open gas delivery device (*e.g.*, a face mask or nasal cannula) may be considered.

Before activating an ignition source around the face, head, or neck, the surgeon should give the anaesthesiologist adequate notice that the ignition source is about to be activated. The anaesthesiologist should:

- *Stop* the delivery of supplemental oxygen or *reduce* the delivered oxygen concentration to the minimum value required to avoid hypoxia.
- *Wait* a few minutes after reducing the oxidiser-enriched atmosphere before approving the activation of the ignition source.

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SURGICAL CHECKLIST

The first report of the use of the WHO surgical checklist was a cohort study, in which implementation was associated with a decrease in adverse event rates from 11 to 7% and a reduction in mortality from 1.5 to 0.8%. (1)

The **World Health Organization (WHO) surgical safety checklist (Annex 3)** is the most widely used surgical checklist, comprising 19 items in three domains: before induction of anaesthesia, before surgical incision, and before the patient leaves the operating theatre.

SURPASS encompasses items to be checked from admission to discharge (2).

The introduction of a surgical checklist to the operating theatre environment appears to **improve communication and teamwork** within the multidisciplinary team, which in turn is associated with improved post-operative outcomes. **Effective implementation of a surgical checklist requires strong clinical engagement with adequate staff training**. A failure to do so may result in poor compliance or poor record keeping regarding checklist use (3).

The World Health Organization checklist should be used only as an example or guideline as that **checklist has to be adapted to the specific needs of its users**. Even each specialty has different needs. Specific checklists for plastic surgery have been published (4). Training on the use of checklists thus contributes to optimal performance by surgical ad hoc teams creates a sense of responsibility in all individuals. Surgeons' leadership is reflected by the fact that regarding surgical safety checklist performance, **it is better when surgeons lead the checklist process and when all team members are present and attentive**.

Encouragement to **speak up** and the creation of a climate that allows all members of a team to speak up without the risk of being punished is therefore a component of good medical leadership. Patient care is the foremost concern of the operating room staff, and the surgeon should be aware of each team member's contribution to the positive outcome of an operation.

Patient's checklist (5)

It is recommended that patients have their own checklist to help them prepare for surgery and to remember important information when interacting with healthcare workers. A review of patient involvement in safety

behaviour found that intra- and interpersonal and cultural relations between healthcare workers and patients might stimulate or limit patients' involvement in safety procedures. A patient surgical checklist **might also prevent errors and reduce complications** either when used alone or together with existing surgical complication prevention programmes and surgical checklists, such as that created by the WHO or SURPASS.

The aim of a patient's surgical safety checklist is to encourage patients to take more responsibility for their own safety by ensuring that they have received and understood the information provided to them as well as to help them prepare before and care for themselves after surgery.

Patient checklists include items such as changing their lifestyle and optimising their own health before surgery by exercising; improving nutritional status; or discontinuing smoking, alcohol and other substances.

Screening for multi-resistant bacteria, quitting smoking, treating chronic diseases, checking one's nutritional status, performing peri-operative showering, and checking one's body temperature and performing wound care after surgery are other risk-prevention methods. These methods are in line with today's recommended key actions for patients to help prevent surgical site infections.

Including medication in a surgical safety checklist can help patients to be more aware of their medications and to guide them to ask healthcare workers the right questions before surgery and discharge, which is coherent with the **WHO's five moments for medication safety.**

The WHO has published a leaflet with the main points for patients to ask about their surgery **(Annex 4).**

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PRE-OPERATIVE EVALUATION GUIDELINES

HOW, WHEN AND BY WHOM

Pre-operative standardised **questionnaires** may be helpful in improving anaesthesia evaluation in a variety of situations. If a pre-operative questionnaire is implemented, great care should be taken in its design, and a computer-based version should be used whenever possible.

Pre-operative evaluation should be carried out with **sufficient time** before a scheduled procedure to allow for the implementation of any advisable pre-operative intervention aimed at improving patient outcomes.

Pre-operative **assessment** should be completed by an **anaesthetist**, but the screening of patients could be carried out effectively by either trained nurses or anaesthesia trainees. A pharmacy personnel member may be useful to include in the pre-operative assessment to reduce discrepancies in post-operative drug orders. There is insufficient evidence to recommend that the preferred model is for a patient to be seen by the same anaesthetist from pre-operative assessment through anaesthesia administration.

PRE-OPERATIVE ASSESSMENT IN SPECIFIC CLINICAL CONDITIONS

CARDIOVASCULAR DISEASE

For pre-operative cardiac risk assessment and peri-operative cardiac management in non-cardiac surgery, please refer to the ESC guidelines that were endorsed by the ESA (www.escardio.org/guidelines).

If active cardiac disease is suspected in a patient scheduled for surgery, the patient should be referred to a cardiologist for assessment and possible treatment. In patients currently taking b-blocking or statin therapy, this treatment should be continued peri-operatively.

Respiratory disease, smoking and obstructive sleep apnoea syndrome (OSAS)

Patients with OSAS should be evaluated carefully for a **potentially difficult airway,** and special attention is warranted in the immediate post-operative period.

Specific questionnaires to diagnose OSAS can be recommended when polysomnography is not available.

Pre-operative spirometry can be beneficial in upper abdominal surgery to avoid post-operative pulmonary complications.

Pre-operative diagnostic spirometry in non-cardiothoracic patients cannot be recommended to evaluate the risk of post-operative complications. Routine pre-operative chest radiographs rarely alter the peri-operative management of these cases. Therefore, pre-operative chest radiographs cannot be recommended on a routine basis. Pre-operative chest radiographs have a very limited value in patients older than 70 years with established risk factors.

Correction of malnutrition may be beneficial. Smoking cessation before surgery is recommended. Smoking cessation must start early (at least 6–8 weeks prior to surgery, 4 weeks at a minimum). Short-term cessation is beneficial only to reduce the amount of carboxyhaemoglobin in the blood in heavy smokers.

The use of CPAP peri-operatively in patients with OSAS may reduce hypoxic events.

Renal disease

The risk index of Kheterpal et al. is useful for the identification of patients at risk for post-operative renal impairment. The calculated GFR is superior to serum creatinine levels for the identification of patients with pre-existing renal impairment.

Urine output should be monitored carefully throughout the peri-operative phase, and adequate fluid management should be provided to avoid worsening of pre-existing renal failure for patients at risk for post-operative renal impairment.

Diabetes mellitus

Pre-operative assessment should include a formal assessment of the risk of a patient having disordered glucose homeostasis. It is not recommended to test blood sugars routinely during a pre-operative assessment.

Patients at high risk of disordered glucose homeostasis should be identified as needing specific procedures for peri-operative glucose control.

Patients with known diabetes should be managed in accordance with guidelines on the management of patients with known or suspected cardiovascular disease. Patients with long-standing diabetes should undergo careful airway assessment.

Obesity

Pre-operative assessment of obese patients includes at least clinical evaluation, a Berlin or STOP questionnaire, ECG, polysomnography and/or oximetry. Laboratory examination is indicated in obese patients to detect pathological glucose/HbA1c concentrations and anaemia. Neck circumferences of at least 43 cm as well as a high Mallampati score are predictors for difficult intubation in obese patients. The use of CPAP peri-operatively may reduce hypoxic events in obese patients.

Coagulation disorders

If coagulation disorders are suspected, the patient should be referred to a haematologist. Pre-operative correction of haemostasis decreases peri-operative bleeding. Routine use of coagulation tests is not recommended unless there are specific risk factors in the patient's history.

Anaemia and pre-operative blood conservation strategies

Pre-operative iron supplementation may be considered to correct pre-operative anaemia. There is insufficient evidence to promote the routine use of pre-operative autologous blood donation to reduce peri-operative transfusion requirements.

Elderly individuals

Risk, not age, should be used to indicate the need increased assessment and preparation. The likelihood of post-operative mortality and morbidity depends upon background risk interacting with the grade of surgery.

Peri-operative care protocols reduce post-operative delirium in patients with a fractured neck of the femur.

Alcohol misuse and addiction

For the pre-operative identification of alcohol use disorders (AUDs), a combination of GGT and CDT shows the highest sensitivity when using biomarkers only. For the pre-operative detection of AUDs, a combination of standardised questionnaires and laboratory tests such as GGT and CDT is superior to the sole use of laboratory tests or using a questionnaire alone. The use of a computerised self-assessment questionnaire is superior to an interview by an anaesthesiologist in the identification of patients with an AUD.

Administration of benzodiazepines for 5 peri-operative days reduces the incidence of alcohol withdrawal syndrome in patients at risk. Alcohol abstinence for at least 1 month prior to surgery reduces the incidence of AUD-related peri-operative complications.

Allergy

The pre-anaesthesia evaluation should include a thorough interview for predisposition to allergic risk.

Patients at risk for anaphylactic/anaphylactoid reactions during surgical anaesthesia include patients with a **documented allergy** to one of the drugs or products likely to be used, patients with a history of **possible allergic reaction** during previous anaesthesia and patients with a history of possible **latex** allergy, irrespective of the circumstance. Children who have had multiple surgeries, particularly those with spina bifida and myelomeningocele, are also at increased risk. Patients with a history suggesting allergies to vegetables, fruits or cereals were known to have frequent cross-reactivity with latex.

In patients with a positive clinical history, the anaesthesiologist should seek a specialised allergy opinion and evaluation when feasible to guide their choices (negative and positive) for the anaesthesia protocol and other drugs. Negative skin tests do not guarantee the absence of sensitisation to a given substance, as test results may become negative with time. The results of the pre-anaesthesia allergy evaluation should be made visible to all the care providers as well as to the patient.

MANAGING WITH CONCURRENT MEDICATION

Anti-thrombotic therapy and loco-regional anaesthesia

For the management of anti-thrombotic therapy and loco-regional anaesthesia, please refer to the ESA guidelines (http://www.csen.com/GUIDELINES.pdf).

Herbal medication

Patients should be asked explicitly about their intake of herbal drugs, particularly those that may cause increased bleeding in the peri-operative period or that have other unwanted interaction/side effects (of note, other ‘over the-counter’ drugs may also have an important impact on platelet function, such as analgesics, anti-inflammatory drugs or drugs taken for a common cold).

Herbal medicines should be discontinued 2 weeks prior to surgery.

When there is no evidence indicating that elective surgery should be postponed, a postponement of elective cases might be considered for high-risk surgery in ‘closed compartments’, such as neurosurgery on the brain, when patients take herbal drugs such as ginseng, garlic and ginkgo until the day of surgery.

Psychotropic medication

Patients chronically treated with TCAs should undergo cardiac evaluation prior to anaesthesia.

Anti-depressant treatment for chronically depressed patients should not be discontinued prior to anaesthesia.

Peri-operative discontinuation of SSRI treatment is not recommended.

Irreversible MAOIs should be discontinued at least 2 weeks prior to anaesthesia. To avoid relapse of the underlying disease, medication should be changed to reversible MAOIs.

The incidence of post-operative confusion is significantly higher in schizophrenic patients if medication was discontinued prior to surgery. Thus, antipsychotic medication should be continued peri-operatively in patients with chronic schizophrenia.

Lithium administration should be discontinued 72 hours prior to surgery. It can be restarted if the patient has normal ranges of electrolytes, is haemodynamically stable and is able to eat and drink. Levels of lithium in the blood should be controlled within 1 week.

In patients undergoing minor surgery under local anaesthesia, continuation of lithium therapy can be considered.

Peri-operative bridging of anti-coagulation therapy

In high-risk patients under oral anti-coagulation, bridging management for the peri-operative period is highly recommended in accordance with existing clinical guidelines.

In minor surgical procedures or minor soft tissue surgery, continuation of warfarin therapy should be considered instead of the initiation of bridging therapy.

Pre-operative testing

Pre-operative testing is extensively addressed in the existing guidelines on the use of pre-operative tests for elective surgery from the NICE. The reader is, therefore, referred to these guidelines at https://www.nice.org.uk/guidance/ng45.

Evaluation of the Airway

Screening for difficult mask ventilation (DMV) and difficult intubation should be conducted whenever feasible in all patients potentially requiring airway management for anaesthesia as well as in the ICU. This

screening includes a history of medical conditions, surgical operations, history of difficult airway management and, if available, examination of previous anaesthetic records. This screening has to be documented in patients' charts. No single predictive sign for difficult airway management is sufficient by itself, and the pre-anaesthesia assessment needs the combination of different, validated evaluation criteria.

Potential for DMV should be evaluated and relies on the presence of two or more of the following factors: BMI of at least 30 kg m2, jaw protrusion is severely limited, a propensity for snoring, the presence of a beard, Mallampati classification 3 or 4, and age of at least 57 years. Potential for impossible mask ventilation should be evaluated and relies on the presence of three or more of the following factors: neck radiation changes, male sex, OSA, Mallampati class 3 or 4, and the presence of a beard.

Systematic multi-modal screening for difficult intubation should include the Mallampati classification, thyromental distance, mouth opening or inter incisor distance and the ULBT. Particular attention should be given to an evaluation for possible difficult intubation in certain medical conditions, such as obesity, OSAS, diabetes, fixed cervical spine, ENT pathologies and preeclampsia. A neck circumference of more than 45 cm is another warning sign. Difficult videolaryngoscopy is difficult to predict, as only a few studies have addressed this question thus far.

How should the patient be informed about peri-operative risks?

- The amount of information given to the patient should be based on what they wish to know.
- Written information can be safely used to supplement direct consultations.
- Written information should not be used in place of direct consultations.
- Patients prefer to be given numerical estimates of risk.
- Written and video information are effective methods of providing information.
- Written and video information are effective methods of reducing anxiety, but the clinical effect is small.

PREVENTION AND MANAGEMENT OF PERI-OPERATIVE PROBLEMS

ANTIBIOTIC PROPHYLAXIS AND NON-PHARMACOLOGICAL INTERVENTIONS

DEFINITION

Among the numerous published definitions, the most straightforward ones are as follows[1]:

infection at the surgical site within 30 days after the operation (no implants used)

or

infection at the surgical site within 1 year (if an implant is in place)

To classify the severity of surgical site infection, the type of intervention needed to treat the SSI-related complication should be considered[2].

CONSIDERATIONS

Risk factors for developing surgical site infections[3]

- Wound contamination class
- ASA physical status classification
- Duration of operation

Sources of surgical site infections

Contamination of the wound site and microorganisms gaining access

- From the organ system (e.g., the skin or blood) of the patient prior to surgery
- From the environment (operating theatre, surgical instruments, or personnel) during surgery
- During provision of care after surgery (wound dressing changes)

Types of interventions to prevent surgical site infections

Key interventions [4,5,6] to prevent SSI focus on:

- Removing microorganisms from the skin of the patient prior to surgery
- Minimising the chance of microorganism multiplication during the surgical procedure
- Reducing the risk of microorganisms gaining entry to the wound site after surgery

pharmacological

Peri-operative antibiotic prophylaxis (4 factors) =

effective agent + effective dose + amount of agent that reaches the surgical site + administration during the operation

"antibiotics do not heal wounds, but infections"

Effective agent: Targeted antibiotic prophylaxis (known regional microbial resistance profile, use of existing health care provider standard peri-operative protocols, and the type of surgery with or without use of implants)

Effective dose: "hit them hard & short" (adequately high dose in accordance with individual risk profile and pre-existing conditions for the duration of the operation)

Amount of agent that reaches the surgical site: (administration 60 min before incision, except for vancomycin and fluoroquinolones)

Administration during the operation: (single dose preferred, but subsequent doses required depending on t1/2 of administered antibiotic agent & duration of operation)

Factors influencing the choice of antimicrobial agent: pre-existing medical conditions, known drug allergies, previous antimicrobial treatment (e.g.,, inpatient within the last 4 weeks prior to surgery), known microbial colonisation (e.g., a nasal carrier of methicillin-resistant staph. aureus)

Non-pharmacological[7,8]

- Place and plan incisions to minimise manipulation around the incisional site (smallest necessary incision)

- Avoid additional injury to skin (the use of a hair clipper is better than the use of razor blades/shaving)
- Prep the smallest region of the body necessary for surgery
- Cover potential sources of microorganisms (e.g., the umbilical area or nipple-areola-complex) during surgical intervention if possible
- Change gloves before handling implants
- Avoid of implant-to-skin contact, for example, by use of a Keller funnel for breast implants (e.g., propionibacteria reside in glands/follicles of the dermis; hence, this bacteria is not readily removed by routine pre-operative disinfection protocols[9])
- Avoid contact between the surgical glove and the dermis while handling implants
- Reduce surgical site exposure to the external environment (reduce the use of surgical drains whenever possible)

RECOMMENDATIONS

Modalities to implement strategies for peri-operative antibiotic prophylaxis[1]

- Modality #1: Multidisciplinary antimicrobial management teams: **implement the PAP protocol**
- Modality #2: Responsibility for appropriate timing of PAP: **anaesthesiologist**
- Modality #3: **PAP within 60 min before incision** (except for vancomycin and fluoroquinolones)
- Modality #4: Dosing and duration of PAP: single dose preferred, subsequent doses depending on $t_{1/2}$ & duration of the operation
- Modality #5: Finish PAP at the end of operation

Additional considerations associated with better post-operative outcomes:

ERAS (enhanced recovery after surgery)[10]

Practical examples of SSI antibiotic prophylaxis and associated regional differences in plastic surgery[6,1,1]:

USA (Stanford guide)

Preferred agent: cefazolin 2 g (if > 120 kg body weight = 3 g), re-administration after 4 hours.

In the case of beta-lactam allergy, vancomycin 1 g < 80 kg (if 80 – 99 kg = 1.25 g/if 100 -120 kg = 1.5 g/>120 kg = 2 grams), re-administration after 12 hours requires prolonged infusion starting 2 hours before incision.

Australia (South Australia Guidelines, defined based on the type of intervention)

Preferred agent: cefazolin 2 g; if implants are inserted and/or there is a high risk of MRSA, add vancomycin 1 g (1,5 g for >80 kg body weight)

References:

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BLEEDING – ANAEMIA – BLOOD TRANSFUSION

Although bleeding complications represent a small subset of intra-operative and post-operative complications in plastic surgery, the effects of these complications are substantial. Unanticipated surgical bleeding has been associated with increased operative time, unplanned return to the operating room, and significantly increased health care costs (1).

The estimated incidence of bleeding in plastic surgery is 2.0%. The main morbidity associated with bleeding was hypertension (that required medication) and a longer total operative time (median, 335 min versus 115 min). 7.3%)] and a previously diagnosed bleeding disorder.

The five most common primary plastic surgery procedures associated with bleeding complications were breast reconstruction with a free flap, infraumbilical panniculectomy, breast reconstruction with a pedicled transverse rectus abdominis musculocutaneous (TRAM) flap and free muscle/myocutaneous flaps.

PRE-OPERATIVE ASSESSMENT: PRE-OPERATIVE ANAEMIA (2, 3, 4)

The prevalence of pre-operative anaemia varies from 26 to 75%, while after major surgery, prevalence increases to 90%. In the peri-operative period, anaemia is an independent factor for morbidity and mortality. It is also related to an increased incidence of red blood cell transfusion, prolonged hospital stays, and higher complications.

Patients at risk of bleeding should be assessed for anaemia 3 to 8 weeks before surgery. The underlying cause should be identified (iron deficiency, renal insufficiency or inflammation). Pre-operative evaluation should include a review of previous medical records; a physical examination of the patient; and an interview of the patient or family to identify risk factors for organ ischaemia (*e.g.*, cardiorespiratory disease), which

may influence the ultimate transfusion trigger for red blood cells (*e.g.*, haemoglobin level) and (2) coagulopathy (*e.g.*, use of warfarin, clopidogrel, or aspirin), which may influence the transfusion of non-red blood cell components.

In addition, a pre-operative evaluation should include assessments for the presence of congenital or acquired blood disorders, the use of vitamins or herbal supplements that may affect coagulation, or previous exposure to drugs.

Available pre-operative laboratory results include, but are not limited to, haemoglobin, haematocrit, and coagulation profiles.

Herbal Supplements That Decrease Platelet Aggregation	Herbs That Inhibit Clotting	Vitamins That Affect Coagulation
Bilberry Bromelain Dong quoi Feverfew Fish oil Flax seed oil Garlic Ginger Gingko biloba Grape seed extract Saw palmetto	Chamomile Dandelion root Dong quoi Horse chestnut	Vitamin K Vitamin E

In patients with pre-operative anaemia, the main recommendation for elective aesthetic surgery would be not to perform the operation unless the underlying cause has been corrected. If not, combined therapy with intravenous iron and erythropoietin should be used along with a restrictive transfusion policy.

Iron deficiency might or might not be associated with anaemia (a decrease in haemoglobin levels and changes in erythrocyte morphology), often being unidentified or untreated.

The “gold standard” for iron deficiency diagnosis remains a bone marrow biopsy. It directly measures the iron stores that can be used in haematopoiesis, but bone marrow biopsy is a complicated, invasive, and low tolerated test that is rarely used.

One of the most sensitive tools for iron deficiency diagnosis is a serum ferritin assessment for levels under 30 ng/mL, which is an indication of depleted iron stores. Nevertheless, ferritin is also released when inflammation is present.

Transferrin saturation (TSAT) measures the transported iron that is available for cell uptake, but the reliability of TSAT in measuring iron status can also be reduced by a high inflammatory status. Circulating iron bound to its carrier (transferrin) can also be assessed, but its values can vary with oral intake and physiological necessities; it can also have a normal value even in the presence of depleted stores.

In the presence of low ferritin (30–100 ng/mL) and transferrin saturation levels (<20%), a level of C-reactive protein below 5 mg/L is a marker of absolute iron deficiency.

Iron deficiency should be corrected with iron supplementation, with intravenous iron being preferred over oral iron supplementation. Intravenous iron increase haemoglobin levels more rapidly than oral formulas, permitting earlier surgical intervention or adjuvant therapies.

Intravenous Iron Formula	Dosage and Minimum Administration Time
1. Ferric carboxymaltose (Ferinject®, Injectafer®)	1000 mg in 15 min
2. Ferric derisomaltose (Monoferric®)	1000 mg in at least 20 min (patients > 50 kg) 20 mg/kg in at least 20 min (patients < 50 kg)
3. Iron sucrose (Venofer®)	200 mg in 30 min
4. Low molecular-weight iron dextran (LMW dextran) (Cosmofer®, InFed®)	20 mg/kg in 4-6 hours
5. Sodium ferric gluconate (Ferrlecit®)	125 mg in 30-60 min
6. Ferumoxytol (Fraheme®, Rienso®)	No longer in use

From: Țigliș, M., Neagu, T. P., Niculae, A., Lascăr, I., & Grințescu, I. M. Incidence of Iron Deficiency and the Role of Intravenous Iron Use in Perioperative Periods. *Medicina*, 2020, *56*(10), 528.

There is a risk of hypersensitivity reaction appearance or iron overload (<0.1%). Mild reactions are characterised by flushing, urticaria and itching, joint pain, and chest tightness and disappear if the infusion is stopped or the rate is lowered.

PREVENTION OF BLOOD LOSS (6,7,8)

Permissive hypotension

Values between 50 and 65 mmHg were used to reduce blood flow to the surgical area. These values should be avoided in patients with coronary artery disease, poorly controlled hypotension or cerebrovascular disease.

Permissive hypotension can be achieved by patient positioning, central neuraxial anaesthesia, intravenous anaesthetics (such as propofol), opioids (remifentanil), directly acting vasodilators (nitro-glycerine), selective beta-blockers (esmolol), selective α-blockers (dexmedetomidine), combined α- and beta-blockers (labetalol) and volatile anaesthetics (sevoflurane).

Patient positioning

In facial surgery, blood loss can be reduced by a reverse Trendelenburg position or elevating the head.

Avoiding hypothermia

Mild hypothermia has been associated with a 16% increase in blood loss and a 22% increase in the relative risk of red blood cell transfusion. In addition, hypothermia can lead to increased rates of wound infection and cardiovascular events and prolonged recovery.

Antifibrinolytic agents: tranexamic acid (TXA) and aminocaproic acid (EACA)

	TXA	**EACA**
Mechanism of action	Competitive inhibition of plasminogen activation; anti-plasmin activity	Competitive inhibition of plasminogen activation; anti-plasmin activity
Bioavailability	34	
Terminal half-life, hour	3.1	2
Elimination	95% renal excretion as an unchanged drug	65% renal excretion as an unchanged drug

Administration	By mouth or injection	By mouth or injection
Drug interactions	No studies of interactions between TXA and other drugs have been conducted	No studies of interactions between EACA and other drugs have been conducted
Contra-indications	Acquired defective vision, subarachnoid haemorrhage, active intravascular clotting, hypersensitivity to tranexamic acid	Active intravascular clotting
Main adverse effects	Headaches, back pain, nasal sinus problems, abdominal pain, diarrhoea, fatigue, and anaemia	Oedema, headache, and malaise
Recommended dosages: Normal renal function Cr 1,36 to 2,83 mg/dl Cr 2,83 to 5,66 mg/dl Cr > 5,66 mg/dl	 10 mg/kg 3-4 times daily 10 mg/kg twice daily 10 mg/kg once daily or 10 mg/kg every 48 hour 5 mg/kg every 24 hour	Intravenous: 16 - 20 ml injection in 250 ml of diluent during the first hour, then 4 ml/hour in 50 ml of diluent Oral: 5000 mg in the first hour, then 1000 mg/hour

From: Brown, S., Yao, A., & Taub, P. J. (2018). Antifibrinolytic agents in plastic surgery: current practices and future directions. *Plastic and reconstructive surgery*, *141*(6), 937e-949e.

In aesthetic surgery, tranexamic acid (10 mg/kg) has shown efficacy in decreasing bleeding in rhinoplasty and liposuction and in reducing mammoplasty (topical)

In plastic surgery, to avoid transfusions in body contouring surgery, the following strategy has been suggested:

Summary of Patient Blood Management Strategies Implemented to Reduce Blood Loss and Minimize the Need for Post-operative Transfusions (From: Bayter-Marin, J. E., Cárdenas-Camarena, L., Peña, W. E., Durán, H., Ramos-Gallardo, G., Robles-Cervantes, J. A., ... & Plata-Rueda, E. L. (2021). Patient Blood Management Strategies to Avoid Transfusions in Body Contouring Operations: Controlled Clinical Trial. Plastic and Reconstructive Surgery, 147(2), 355-363.)

Pre-operative

- Hb <12 g/dl
- Erythropoietin 20,000 IU
- Iron 200 mg
- Warming the patient for 1 hour; 45°C to 47°C
- Suspension of anti-coagulant drugs

Intra-operative

- Tranexamic acid 1 g IV
- Heat infiltration liquids to 37°C
- Room temperature at 23°C
- Normovolemic haemodilution Hb between 12 and 13 g/dl
- Least possible time spent in the prone position
- Total lipoaspirate less than 5 litres

Post-operative

- Transfusion
- Hb <9 g/dl and symptoms
- Hb <7 g/dl
- Continue temperature control to prevent hypothermia
- Hb, haemoglobin; IV, intravenously.

HAEMOGLOBIN AND TRANSFUSION TRIGGERS (2, 9)

We recommend a target haemoglobin concentration of 7 to 9 g dl_1 during active bleeding.

Most guidelines stress that blood transfusion should not be the only haemoglobin value; the clinical sign/symptoms of anaemia and the predictors of transfusion should also be considered.

In post-operative surgical patients, transfusion should be considered at a haemoglobin concentration of 8 g/dl and with clinical symptoms (chest pain, orthostatic hypotension or tachycardia unresponsive to fluid resuscitation). In haemodynamically stable patients without pre-existing cardiovascular disease transfusion, a haemoglobin concentration of less than 7 g/dl and clinical symptoms should be considered.

One RBC unit should be transfused at a time in haemodynamically stable, non-bleeding patients, with assessments of symptoms and the post-transfusion Hb level prior to giving the next unit. Laboratory assessment of Hb may be performed as early as 15 min following blood transfusion.

Restricting blood transfusions to patients whose haemoglobin is less than 7 g/dl leads to a significant reduction in total mortality, pulmonary oedema, re-bleeding, and bacterial infection compared with a more liberal transfusion strategy.

MONITORING STRATEGIES IN ACTIVE BLEEDING (2,4)

Monitoring for blood loss. A visual assessment of the surgical field should be periodically conducted to assess the presence of excessive microvascular bleeding. Peri-operative normothermia should be achieved when possible because it reduces blood loss and transfusion requirements.

Monitoring for inadequate perfusion and oxygenation of vital organs. Conventional monitoring systems (*e.g.*, blood pressure, heart rate, oxygen saturation,

urine output, and electrocardiography) should be used to assess the adequacy of perfusion and oxygenation of vital organs.

Monitoring for transfusion indications. Haemoglobin or haematocrit should be measured when substantial blood loss or any indication of organ ischaemia occurs.

Transfusion of allogeneic red blood cells or autologous blood. Adequate intravascular volume and blood pressure should be maintained with crystalloids or colloids until the criteria for red blood cell transfusion listed above are met.

Transfusion of platelets. If possible, a platelet count should be obtained before transfusion of platelets in a bleeding patient, and a test of platelet function

should be done in patients with suspected or drug-induced platelet dysfunction.

Transfusion of fresh frozen plasma. If possible, coagulation tests (*i.e.*, PT or INR and aPTT) should be obtained before the administration of FFP in a bleeding patient. Transfusion of FFP is not indicated if PT, INR, and aPTT are normal. Indiscriminate use of plasma transfusion in peri-operative bleeding management is not recommended.

FFP transfusion is indicated for the following reasons:

- correction of excessive microvascular bleeding (*i.e.*, coagulopathy) in the presence of a PT greater than 1.5 times normal, INR greater than 2.0, or an aPTT greater than 2 times normal;
- correction of excessive microvascular bleeding secondary to coagulation factor deficiency in patients transfused with more than one blood volume (approximately 70 ml/kg) and when PT or INR and Aptt cannot be obtained in a timely fashion;
- urgent reversal of warfarin therapy;
- correction of known coagulation factor deficiencies for which specific concentrates are unavailable; and
- heparin resistance (antithrombin III deficiency) in a patient requiring heparin.

Fresh frozen plasma should be given in doses calculated to achieve a minimum of 30% of plasma factor concentration (usually achieved with administration of 10–15 ml/kg (FFP)), except for urgent reversal of warfarin anti-coagulation, for which 5–8 ml/kg FFP will usually suffice. Four to five platelet concentrates, 1 unit of single-donor apheresis platelets, or 1 unit of fresh whole blood provide a quantity of coagulation factors similar to that contained in 1 unit of FFP.

Transfusion of cryoprecipitate. Hypofibrinogenemia in bleeding patients has to be corrected. A fibrinogen concentration of less than 1.5 to 2 g l_1 is considered hypofibrinogenemia in acquired coagulopathy and is associated with increased bleeding risk. Transfusion of cryoprecipitates is rarely indicated if the fibrinogen concentration is greater than 150 mg/dl.

The suggested initial dose of fibrinogen concentrate is 25 to 50 mg/kg. In cases wherein fibrinogen concentrate is not available, cryoprecipitate should be used at an initial dose of 4 to 6 ml/kg. Each unit of cryoprecipitate contains 150–250 mg fibrinogen.

Plasma transfusion alone is not sufficient to correct hypofibrinogenemia. Each unit of FFP contains 2–4 mg fibrinogen/ml. Therefore, it should be noted that each unit of FFP delivers the equivalent amount of fibrinogen as 2 units of cryoprecipitate.

Indications:

- when the fibrinogen concentration is less than 80–100 mg/dl in the presence of excessive microvascular bleeding,
- to correct excessive microvascular bleeding in massively transfused patients when fibrinogen concentrations cannot be measured in a timely fashion, and
- for patients with congenital fibrinogen deficiencies.

Factor XIII. In cases of bleeding and low factor XIII activity (e.g., <30%), we suggest administration of factor XIII concentrate (30 IU/kg)

Tranexamic acid. It competitively inhibits the activation of plasminogen to plasmin by binding to lysine receptors on plasminogen and therefore impedes the degradation of fibrin clots. A secondary benefit of this plasmin inhibition is the reduced plasmin-induced platelet activation resulting in a higher circulating platelet count to aid clotting as the surgical procedure progresses. There was no increase in stroke, myocardial infarction, pulmonary embolism, or deep vein thrombosis.

Ten milligrams/kg has been shown to inhibit 80% of plasminogen conversion to active plasmin, and TXA remains active for more than 17 hours. Common dosing regimens are 1 to 2 g IV, 1 to 3 mg/mL in saline topically, and 0.5 to 1 g orally.

Von Willebrand disease. Use of DDAVP (desmopressin).

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COMBINED SURGERY

Combined surgeries are continuously on the rise due to increasing patient demand or evolving surgical techniques. The most common complications are death from DVT/PE, bleeding, and wound healing problems.

However, not all combined procedures display the same high risk related to DVT, bleeding, hypothermia, wound healing, and coagulopathy. For example, despite a similar length of surgery time, 360-degree lipoabdominoplasty combined with breast surgery is different from a face/neck lift procedure combined with fat grafting and eyelid surgery.

One would associate the former combined surgery with higher risks related to increased fluid shifts, enlarged wound surface, development of hypothermia, bleeding, wound healing problems and DVT/PE. However, the later procedures carry risks related to the patient's age, overall health status, DVT, and hypothermia.

Most surgeons underestimate the consequences of hypothermia and how fast it develops once general anaesthesia is applied. Many surgeons also underestimate the risk of DVT, even post-operatively, and the benefits of appropriate prophylactic management (please refer to the appropriate chapters within this booklet).

To help you with the decision-making process and to plan a safe, combined procedure properly, your clinical setting and your team play a paramount role.

Considerations BEFORE surgery:

- General health status of the patient
- Anaesthesia team:
    - Are they truly good team players?
    - Are they truly working together with you?
    - Do they understand the physiological specifics that the planned procedure entails?
- Availability of an overnight stay in the clinic/hospital with adequate clinical monitoring by medical staff if deemed necessary.

Considerations IMMEDIATELY pre- and DURING surgery:

- Pressure sore prevention and control of the patient's position during surgery
- DVT prophylaxis according to the Caprini risk assessment scale (2005)
- Placement of urine catheter (some of them have a temperature control option as well)
- Patient is kept warm (60 min - most effective)
- I.v. fluids and tumescent solution are warmed
- I.v. antibiotic prophylaxis 60 min prior to incision
- Active fluid management during the case - avoiding fluid overload or the contrary
- Monitoring temperature - normothermia is an active process (i.e., Bair hugger, warming mat, or room temperature). Hypothermia (<36 degrees) will develop if no active measures are taken quickly within the 1st hour
- Immediate haemostasis

AFTER surgery:

- Post-operative nausea/vomiting prophylaxis
- Adequate pain management
- Early ambulation
- Post-operative anti-coagulation if necessary

A summary of some of the most relevant data collected to date is provided below.

In a large retrospective study by Kaoutzanis et al (1), liposuction alone and in combination was assessed considering the following potential risk factors: age, sex, BMI, smoking, diabetes mellitus, and the type of surgical facility.

Liposuction alone has a risk of 0,7%. Combining liposuction with one additional procedure on one body region increases the complication rate to 3,2% and increases further to 4.5% with additional procedures on two or more body regions. The authors found liposuction with abdominoplasty, liposuction with breast procedures, and liposuction with abdominoplasty and breast procedures (mommy makeover) to be the most

frequent procedure combination. Risks for major complications were age, female sex, smoking, BMI, diabetes mellitus, combined procedures, and hospital location.

Male sex has been found to be the greatest risk factor for developing haematoma in facelift surgery or combined procedures. A BMI above 25 increases the overall morbidity and mortality rate from surgery. The authors found a higher incidence of developing a haematoma if the BMI was >40 (2). A higher incidence was also found in combined procedures (1.1%) than in single procedures (0,8%). Of the combined procedures, body and breast had the highest rate of haematoma at 1,4%. In their study, the authors did not specify what type of breast procedure was performed.

In another study, the authors addressed this issue and looked at breast procedures combined with other procedures. The major complication rate regarding breast procedures in the authors' paper was consistent (1,85%) with the general complication rate of cosmetic procedures (1,94%). Haematoma (1,05%) was the most common, followed by surgical site infection (0,39%), suspected VTE (0,12%), pulmonary dysfunction (0,09%) and confirmed VTE (0,06%).

The risk increased significantly if an additional procedure of the trunk or extremities was added to the breast procedure. The highest difference was noted when a breast reduction procedure was performed. An increase from 1,46% to 3,54% was noted. The infection risk was 0,23% in patients with a BMI<30 and increased to 0,89% in patients whose BMI was above 30.

Mommy makeovers, classically describing an abdominoplasty combined with a breast procedure, had a higher incidence of complications when procedures were combined compared to the number of complications observed in single breast procedures (MM with breast augmentation 3,48% vs 1,15%), augmentation-mastopexy (4.50% vs 1.86%), mastopexy (3.96% vs 1.15%), and reduction (7.06% vs 1.58%). The incidence of haematoma, infection, and confirmed VTE was higher during mommy makeovers with combined procedures. However, the combined procedures did not have a significantly higher risk of infection or VTE than abdominoplasty alone (3).

A BMI of 25-29,9 has been shown to be an independent risk factor for any complication. In abdominoplasty, BMI raises the risk of complications from 3% to 4,3% when liposuction is performed (4).

Surgery time was anecdotally recommended to be kept below 6 hrs. Although the length of surgery certainly plays a role regarding risks associated with any procedure, a shorter length of a procedure alone does not make up for the impact of medical preconditions such as obesity or poor management of VTE prophylaxis, fluid management, haemostasis, or normothermia.

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DEEP VENOUS THROMBOSIS AND PULMONARY EMBOLISM

The incidence of deep venous thrombosis and pulmonary embolism is representative and not negligible in our practice; a complication can begin as deep vein thrombosis (DVT) and end as pulmonary thromboembolism (PE), which is the most feared and lethal presentation. The asymptomatic presentation of DVT and PE has a high incidence that is difficult to diagnose. In its symptomatic form, the incidence of DVT and PE has been calculated to range from one case in 10,000 young adults to one case in 100 older adults, and fatal thrombosis has an incidence of 0.8%. Findings in different autopsy studies demonstrate DVT and PE in individuals in whom the disease had not been suspected.

A survey of members of the American Society of Plastic Surgeons (ASPS) showed that only 48.7% of surgeons who perform rhytidectomies, 43.7% of those who perform liposuction, and 60.8% of those who perform combined procedures routinely use thromboprophylaxis.

The incidence of venous thromboembolism is highest in patients undergoing head and neck reconstruction (0-27%), second highest among patients with burns (0-23%) and, third highest among patients who underwent abdominoplasty (0-4.23%). On the other hand, those most affected by pulmonary thromboembolism (PE) were patients who underwent liposuction (0-23%), abdominoplasty combined with another procedure (0.2-9.3%) and burns (0- 4.35%). Finally, it is important to mention that pulmonary thromboembolism is the main cause of death after liposuction.1 Thus, tumescent liposuction of the abdomen and lower extremities associated with prolonged immobilisation can block venous flow, release prothrombotic factors and contribute to thrombogenesis.

Up to 50% of deep vein thrombosis instances begins in the intra-operative period; of the above, 50% of these instances can be resolved spontaneously in the subsequent 72 hours. Thromboprophylaxis facilitates the lysis of clots and promotes the prevention of new thromboses.

Approximately 25% of untreated leg thromboses spread to the proximal veins within the first week of evolution. The period of greatest risk for a fatal pulmonary embolism is 3 to 7 days after a surgical event. Ten percent cause death within the first hour of the onset of symptoms. The risk of thromboembolism is very high in the first two weeks after surgery and remains high for approximately 2 to 3 months. Up to 50% of patients diagnosed with pulmonary embolism develop right ventricular dysfunction.

STRATIFICATION

There is a great discrepancy in the stratification of the risk of thrombosis between the classifications used: the lowest score was with the Caprini scale, and the highest was with the IMPROVE and ACCP scales. There is a noticeable difference, in numerical terms, in risk classifications; however, there is unanimity in recommending the use of low molecular-weight heparin. Current classifications do not include existing thrombogenic factors in plastic surgery patients. As long as there is no effective scale adapted to plastic surgery patients, an existing classification should be used, and the thrombogenic factors of the specialty procedures should be added, which will increase the rating of patients and the indication for prophylaxis.

The most widely used scales to rate the risk of thrombosis are:

- Caprini. It is the most commonly used scale for stratifying the risk of thrombotic disease; it is used in surgical and non-surgical patients, has contributed to establishing prophylactic care, and has helped reduce the incidence of deep vein thrombosis and pulmonary thromboembolism.

- Caprini/Pannucci.

- ACCP (CHEST) American College of Chest Physicians. The updated results have been published in their eighth and ninth editions (AT8, AT9: anti-thrombotic therapy and prevention of thrombosis 8th and 9th edition). Some have made adaptations to those proposed by the ACCP.

- IMPROVE (International Medical Prevention Registry on Venous Thromboembolism).

- Padua.

- Davison.

Pannucci et al. conducted a study to validate the 2005 Caprini index, concluding that the index is effective in risk stratification in plastic surgery patients. The ASPS grants a **level of evidence II and a grade of recommendation B for the use of the Caprini 2005 index** in plastic surgery patients. (This index is even more reliable than the one proposed by Caprini himself in 2010, which overestimates the risk according to experts).

The completion of the **Caprini 2005 index** provides a total score, which corresponds to the behaviour to be followed (Worksheet 1 and 2). This form SHOULD be completed for both hospitalised patients and for short-stay procedures under general anaesthesia.

The recommendations, according to the score obtained by the patient, apply to those undergoing surgical procedures longer than 60 min under general anaesthesia, regardless of the situations, including body

contouring surgery, abdominoplasty, breast reconstruction, lower limb procedures and procedures related to head and neck cancer.

* Long-distance travellers deserve some of the following considerations:

For patients who travel long distances by plane (> 6 hours) and have an increased risk of thrombosis (including previous thrombosis, recent surgery or trauma, active malignancy, pregnancy, oestrogens, advanced age, limited mobility, severe obesity, or thrombophilia), the following courses of action are suggested:

- Frequent ambulation, calf exercises and sitting in a wide seat if possible (Grade 2C).
- Use of elastic stockings below the knee that provide a pressure of 15 to 30 mmHg at the ankle (Grade 2C).
- Use of aspirin or anticoagulants (Grade 2C) is not recommended.
- Fly 1 week prior to the scheduled surgical date and remain after the operation for at least a couple of weeks before returning home, ideally.

THROMBOPROPHYLAXIS METHODS

Mechanical thromboprophylaxis

The most basic and well-known method of mechanical thromboprophylaxis is the use of infrapatellar graduated compression stockings. Their use has shown a 65% reduction in DVT since they increase venous return, improve valve function, and decrease dilatation of the vascular wall.

Intermittent pneumatic compression devices work by decreasing venous stasis by actively pumping the blood; they also stimulate fibrinolytic activity in the veins by reducing plasminogen activator activity and increasing the release of tissue plasminogen activator. These devices provide a 60% reduction in DVT risk.

Heparin

Low molecular-weight heparin (enoxaparin, for example) and low-dose unfractionated heparin are the most widely used methods for preventing DVT/PE. Their effectiveness has been proven regarding both inactivate factors Xa and IIa (thrombin) of the coagulation cascade.

The advantages of low molecular-weight heparin are its lower binding to plasma proteins, which improves its bioavailability, requires a smaller number of daily doses and does not warrant examinations for monitoring or dose adjustment (very useful and safe for both patients and physicians), and has a lower incidence of bleeding and bruising than low-dose unfractionated heparin. Low molecular-weight heparin reduces the risk of DVT/PE by 70%.

Low-dose unfractionated heparin reduces the incidence of fatal pulmonary embolism by 47%, reduces non-fatal pulmonary thromboembolism by 41%, and causes a 57% increase in the incidence of non-fatal major bleeding.

The recommended doses are as follows:

In its guidelines, the ASPS mentions that the usual dose of enoxaparin is between 30 and 60 mg daily. The most common presentation in our environment is 40 mg to delivered subcutaneously once a day.

Pannucci et al. reported that thromboprophylaxis with enoxaparin (40 mg subcutaneously every 24 hours or 30 mg subcutaneously every 12 hours in patients with a body mass index (BMI)> 40 kg/m2), administered 6 to 8 hours after surgery, is not associated with an increase in the haematoma index requiring surgical revision (level of evidence: II).

When to start its administration:

Raskob and Hirsh mention in their work that the initiation of pharmacological thromboprophylaxis **six hours after surgery** has been shown to be effective and without the associated risk of major bleeding. In contrast, if pharmacological thromboprophylaxis is administered pre-operatively or less than six hours after surgery, it has been associated with major bleeding events without increasing anti-thrombotic effectiveness.

Non-heparin drugs

There are multiple drugs under investigation that act only in one of the steps of the coagulation process (fibrin initiation, propagation or formation), unlike heparin, which affects two steps in the process simultaneously. Fondaparinux acts only on Factor Xa (indirect inhibition) and is the only new generation anti-coagulant approved by the FDA available in our environment. No significant difference in efficacy or risk of bleeding was found when compared with low molecular-weight heparin.

Evidence suggests that the combined use of heparin (low molecular-weight or non-fractionated) together with mechanical methods increases the effectiveness of thromboprophylaxis compared to using them separately (level of evidence II).

How long chemoprophylaxis should last and an overview of the risk of major bleeding

The risk of DVT remains high for at least 12 weeks after surgery.

In patients with a Caprini 2005 index greater than 3, the use of chemoprophylaxis for a period of one week is effective without increasing the risk of bleeding (level of evidence: I).

In patients with a Caprini 2005 index greater than seven, the extended use of chemoprophylaxis for a period of four weeks is recommended to effectively reduce the risk of deep vein thrombosis without increasing the risk of haematoma or complications secondary to bleeding (level of evidence: I).

In the ASPS guidelines, it is mentioned that the use of post-operative chemoprophylaxis with low molecular-weight heparin, unfractionated heparin or fondaparinux for a period of one week or up to four weeks in selected cases does not significantly increase the risk of bleeding (level of evidence: I).

CONTRA-INDICATIONS FOR THROMBOPROPHYLAXIS

Seruya et al. mention important points to consider when using chemoprophylaxis and pneumatic compression devices.

For chemoprophylaxis, there are factors that increase the risk of bleeding. Hence, in the presence of one of these factors, the use of mechanical methods and not the use of pharmacological methods should be considered.

Contra-indications for chemoprophylaxis are the following:

- Active bleeding.
- Patients who present with or have a history of heparin-induced thrombocytopenia.
- Platelet count less than 100,000/mm3.
- Patients who are on oral anti-coagulation or platelet inhibitors.
- Abnormal creatinine clearance.

The following factors should be considered **to avoid the need to use pneumatic compression:**

- Severe peripheral arterial disease.
- Congestive heart failure.
- Acute superficial and/or deep vein thrombosis. :

PANNUCCI-CAPRINI STRATIFICATION SCORE

date:

Patient´s name: :

Age:

Diagnosis :

Procedure: Anesthesia:

INDEX FOR THE RISK STRATIFICATION OF TROMBOEMBOLISM CAPRINI 2005

Each factor represents 1 point	
Age 41-60 yrs	
Minor surgery	
History of major surgery in the last month	
Varicose veins	
Intestinal imflammatory disease	
Swollen legs	
Obesity (BMI > 25)	
Acute myocardial infarction	
Congestive heart failure in the past month	
Sepsis in the last month	
Serious lung disease in the last month, including pneumonia	
Obstructive pulmonary disease	
Patient currently in bed	

Each factor represents 2 point	
Age 60-74 yrs	
Arthroscopic surgery	
Malignancies, actual or in the past	
Mayor surgery (> 45 min.)	
Laparoscopic surgery (> 45 min.)	
Patient in bed (> 72 hs.)	
Splint for limbs in the last month	
Central venous catheter	

Each factor represents 3 points	
Age >75 yr	
History of DVT/PE	
Familiar history of Thrombosis	
Factor V Leiden	
Thrombin 20210A	
Increased serum homocisteine	
Lupus	
Anticardiolipine antibodies	
Heparine-induced thrombocitopenia	
Other thrombophilia	
(Which)	

Each factor represents 5 points	
Major arthroplasty, lower limb	
Hip, pelvis or leg fractures in the last month	
Vasculocerebral accident in the last month	
Multiple myeloma	
Acute spinal cord injury (paralysis) in the past month	

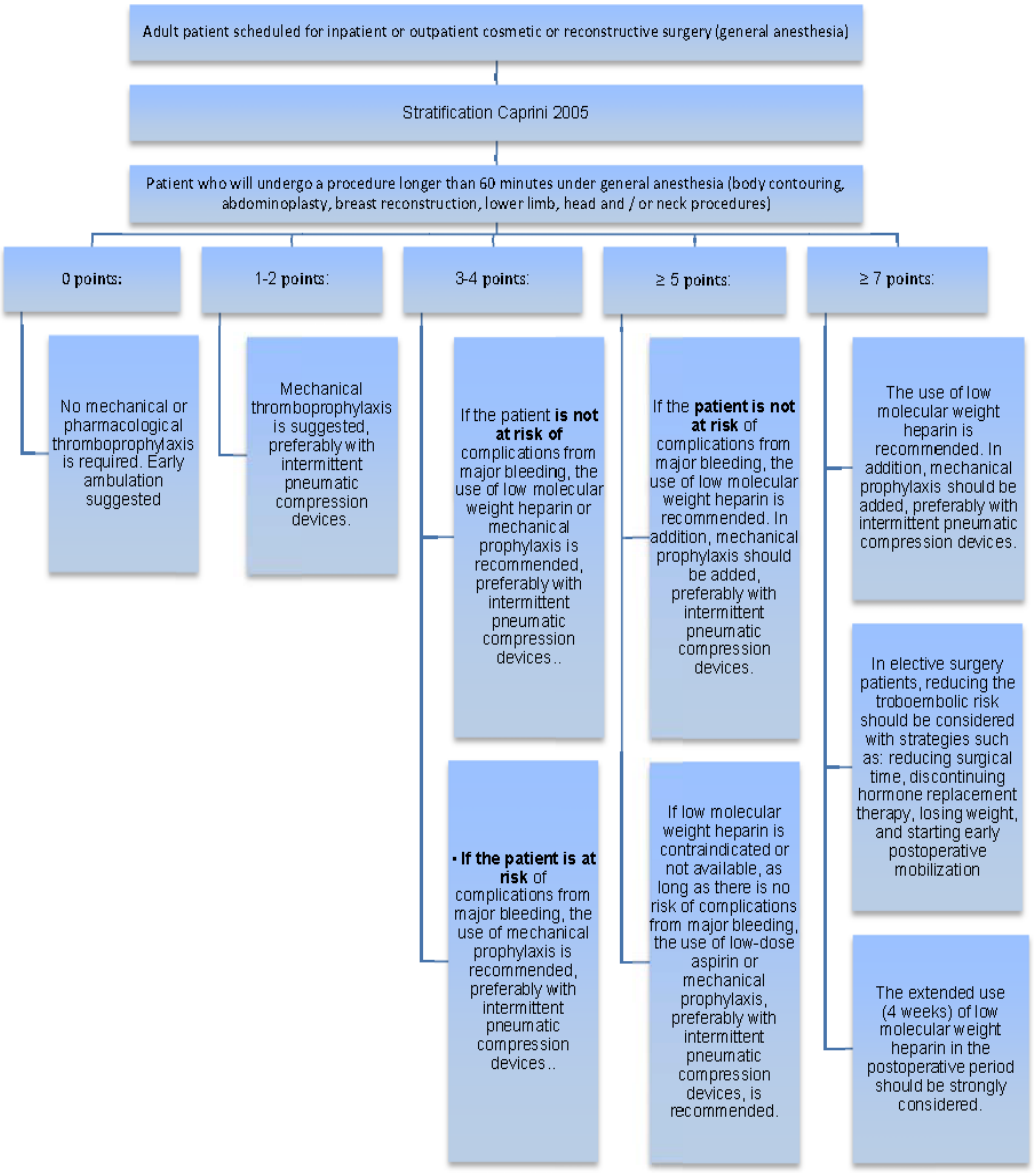
Only women (Each factor represents 1 point)	
Oral anticonceptive or Hormone replacement therapy (HRT)	
Pregnancy or postpartum in the last month	
History of recurrent spontaneous abortions (≥3), premature delivery with toxemia, or infant with growth restriction	

Doctor`s name:

SCORE:

Table 1. From Pannucci CJ, Bailey SH, Dreszer G et al. Validation of the Caprini risk assessment model in plastic and reconstructive surgery patients. *J Am Coll Surg.* 2011; 212 (1): 105-112.

Table 2. Scoring and prophylaxis From: Mur- phy RX Jr, Alder- man A, Gutowski K et al. Evidence based practices for thromboembolism pre- vention: summary of the ASPS venous thromboembolism task force report. Plast Reconstr Surg. 2012; 130(1):168e- 175e y de Seruya M, Baker S. Venous thromboembolism: prophylaxis in plas- tic surgery patients. *Plast Reconstr Surg.* 2008; 122 (3 Suppl): 1-9.



Consider NOT using chemoprophylaxis if: • There is active bleeding • Heparin-induced thrombocytopenia (past or current) • Current intake of anticoagulants or platelet inhibitors • Platelet count less than 100,000 • Abnormal cratinin clearance. DO NOT use pneumatic compression devices: • Severe peripheral arterial disease • Congestive heart failure • Acute superficial or deep venous thrombosis. **Suggested DOSAGE of enoxaparin**: 40 mg / SC / every 24 hours. Start 6-8 hours after surgery. Suggested duration: 1 week for 3 to 6 points, 4 weeks for 7 or more points.

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FAT EMBOLISM

Liposuction and fat transfer (mainly in the gluteal region) can be a cause of fat embolism syndrome. Ocular fat embolism syndrome occurs most commonly when fat globules result in retinal ischaemia. Iris segmental infarction has been described following autologous fat injection into the lower eyelid tissues.

There are two types of fat embolism (2).

- MAFE: macroscopic fat embolism. Embolisation of large fat globules through deep pelvic veins that can lead to cardiopulmonary arrest and intra-operative death.

- MIFE: Microscopic fat embolism. Smaller fat globules or liquified fat through smaller-calibre veins. It is postulated that microscopic fat emboli may first obstruct small-calibre pulmonary vessels, leading to vessel engorgement and an increase in lung stiffness. The lung responds to the presence of emboli by secreting lipase, producing free fatty acids and producing glycerol. Free fatty acids then act to increase the permeability of capillary networks, thus destroying alveolar architecture and compromising surfactant supplies from within. Haemorrhaging and alveolar oedema may follow; the subsequent release of inflammatory mediators then culminates in systemic inflammation, CNS depression, and, alongside the aforementioned obstructive and chemical processes encountered by the lungs, respiratory insufficiency.

DIAGNOSIS

The classical triad of FES consists of

- respiratory insufficiency/distress (the earliest, seen in 75% of the patients). It progresses to respiratory failure in 10% of patients.
- neurologic impairment, (86% of the patients). It may include cerebral and/or spinal cord ischaemia, haemorrhagic stroke, seizures, autonomic dysfunction, and diffuse brain injury leading to acute encephalopathy or coma.
- petechial skin rash in the chest, axilla, conjunctiva, and neck that appears within 24–36 hours and disappears within a week in 20–50% of patients.

Differential diagnosis of changes in CT scan findings has to be made; diagnoses are often as follows:

- Pulmonary contusion - Important distinguishing features include the development of signs and symptoms shortly after trauma, typically within 6 hours, and localised multifocal ground-glass opacities in the distribution of the injury.
- Pulmonary oedema - This will likely manifest as bilateral symmetrically distributed septal lines, ground-glass opacities, vascular engorgement, pleural effusions, or some combination thereof.
- Interstitial lung disease.
- Thromboembolic pulmonary embolism (PE) - This will show intraluminal pulmonary vascular arterial filling defects.
- Aspiration pneumonia – This will have peribronchial opacities on CT images with associated infectious signs and
- COVID pneumonia.

The diagnostic criteria for fat embolism are described below (From: Morales-Vidal, S. G. (2019). Neurologic complications of fat embolism syndrome. *Current neurology and neuroscience reports*, *19*(3), 1-7).

PROPOSED DIAGNOSTIC CRITERIA OF FES BY GURD AND WILSON
MAJOR CRITERIA
Axillary or subconjunctival petechiae
Hypoxemia PaO2, 60 mmHg; FiO2 ¼ 0,4)
CNS depression disproportionate to hypoxemia
Pulmonary oedema
MINOR CRITERIA
Tachycardia > 110 bpm
Fever
Retinal emboli

Fat globules in urine
Fat globules present in sputum
Elevated ESR
Sudden inexplicable drop in haematocrit or platelet values increasing

SCHONFELD´S CRITERIA	SCORE
Petechia	5
Chest X-ray changes (diffuse alveolar infiltrates)	4
Hypoxemia (PaO2, 9.3 kPa)	3
Fever > 30.8°C	1
Tachycardia > 120 bpm	1
Tachypnoea >30 bpm	1
Cumulative score 5 required for diagnosis	

LINDEQUE´S CRITERIA
Sustained PO2 <60 mmHg
Sustained PCO2 > 55 mmHg
Sustained respiratory rate >35 bpm in spite of sedation
Increased effort to breathe, dyspnoea, tachycardia, anxiety

TREATMENT

Prevention

- Safety during gluteal injection: avoid intramuscular injections and the area medial to a line from the posterior iliac spine to the ischium
- Adequate patient hydration

- No injection of the upper liquid fraction of lipoaspirate, if possible, to reduce the risk of free fatty acids
- Single peri-operative IV dose of methylprednisolone

Treatment

Oxygenation

In MAFE, especially if presenting with cardiac arrest: ECMO (extracorporeal membrane oxygenation). Best if ECMO is < 40 min after collapse.

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POST-OPERATIVE NAUSEA AND VOMITING

Nausea and vomiting are two of the most common adverse events in the post-operative period, with an estimated incidence of 30% in the general surgical population and can be as high as 80%.

in high-risk cohorts, the consequences of nausea and vomiting can be severe and may contribute to complications, such as haematoma, incisional dehiscence, respiratory compromise, pain, longer hospital stays, slower recuperation, and patient dissatisfaction. PONV can be highly distressing to the patient.

This is an abstract of the recommendations on PONV prophylaxis and management by the European Society of Anaesthesiology. The full text can be found in:

Gan, T. J., Belani, K. G., Bergese, S., et al. Fourth consensus guidelines for the management of postoperative nausea and vomiting. Anesthesia & Analgesia, 2019, 131(2), 411-448.

RISK FACTORS

Evidence risk factors	Disproven factors or factors with limited clinical relevance
Positive overall female sex (B1) History of PONV or motion sickness (B1) Non-smoker (B1) Younger age (B1) General versus regional anaesthesia (A1) Use of volatile anaesthetics and nitrous oxide (A1) Post-operative opioids (A1) Duration of anaesthesia (B1) Type of surgery (cholecystectomy, laparoscopic, or gynaecological) (B1) Conflicting ASA physical status (B1) Menstrual cycle (B1)	BMI (B1) Anxiety (B1) Nasogastric tube (A1) Migraine (B1) Supplemental oxygen (A1)

Level of anaesthesiologist's experience (B1) Peri-operative fasting (A2)	

The Apfel simplified risk score is based on 4 predictors: female sex, history of PONV and/

or motion sickness, non-smoking status, and post-operative opioid use (Figure 2).14 The incidence

of PONV with the presence of 0, 1, 2, 3, and 4 risk factors is approximately 10%, 20%, 40%, 60%, and

80%, respectively. The panel classifies patients with 0–1, 2, or 3 or more risk factors into "low," "medium," and "high" risk categories, respectively.

The **Koivuranta score** includes the 4 Apfel risk predictors and length of surgery >60 min.

Some experts and limited publications have suggested that 1 or 2 antiemetics should be administered to all patients since risk scores are not completely predictive. Risk scores represent an

objective approach to predict the incidence of PONV or PDNV, with a sensitivity and specificity between 65% and 70%.

Strategies recommended to reduce baseline risk for PONV include the following:

- minimisation of peri-operative opioids with the use of multi-modal analgesic regimens
- preferential use of regional anaesthesia
- preferential use of propofol infusions as the primary anaesthetic
- avoidance of volatile anaesthetics
- adequate hydration in patients undergoing same-day surgery

MEDICATION: PROPHYLAXIS AND RESCUE

The combination of 2 or more antiemetics for the prevention of PONV is robust and shows superiority

over single agents in the majority of studies (evidence A1).

5-HT3 receptor antagonists are commonly used alone or in combination with 4 or 8 mg dexamethasone and form the cornerstone of antiemetic prophylaxis for surgery (evidence A1).

There has not been sufficient evidence to guide clinicians to select the most effective individual antiemetic that provides an optimal combination compared other combination therapies with the exception of using agents from a different pharmacologic class.

When PONV prophylaxis has failed, patients should receive antiemetic treatment from a different pharmacological class to aid PONV prophylaxis. Administering repeated doses of antiemetics from the same

class within 6 hours does not confer additional therapeutic benefit when compared to placebo (evidence A2).

This table summarises the different drugs used for PONV.

DRUGS	DOSE	EVIDENCE	TIMING	EVIDENCE
Amisulpiride	5 mg	A2	At induction	A2
Aprepitant	40 mg PO	A1	At induction	A2
Casopitant	150 mg PO	A1	At induction	
Dexamethasone	4-8 mg IV	A1	At induction	A1
Dimenhydrinate	1 mg/kg IV	A1		
Dolasetron	12.5 mg IV	A2	End of surgery	A2
Droperidol	0.625 mg IV	A1	End of surgery	A1
Ephedrine	0.5 mg/kg IV	A2		
Granisetron	0.35-3 mg IV	A1	End of surgery	A1
Haloperidol	0.5 to <2 mg IM/IV	A1		
Methylprednisolone	40 mg IV	A2		
Metoclopramide	10 mg	A1		
Ondansetron	4 mg IV 8 mg PO or ODT	A1	End of surgery	A1
Palonostron	0.075 mg IV	A1		
Perphenazine	5 mg IV	A1		
Prometazine	6.25 mg	A2		
Ramosetron	0.3 mg IV	A1	End of surgery	A2
Rolapitant	70-200 mg PO	A3	At induction	

Scopolamine	Transdermal patch	A1	Prior evening or 2 hours before surgery	A1
Tropisetron	2 mg IV	A1	End of surgery	

In patients who did not receive PONV prophylaxis, 5-HT3 receptor antagonists, such as ondansetron and ramosetron, remain the first-line pharmacotherapy for treating established PONV. Recommended rescue antiemetic treatment regimens include ondansetron at 4 mg dose administered orally or IV, 218 0.3 mg ramosetron administered IV, 0.1 mg 218 granisetron and 0.5 mg tropisetron, as well as 6.25 mg promethazine administered IV.

PROPOSED COMBINATIONS

Table 5. Pharmacologic Combination Therapy for Adults and Children

Adults
- 5-HT_3 receptor antagonists + dexamethasone
  - Ondansetron: (A1)[158,159]
  - Palonosetron: (A2)[160–164]
  - Ramosetron: (A2)[165,166]
  - Granisetron: (A3)[167]
  - Tropisetron: (A3)[168]; with methylprednisolone (A3)[169]
- 5-HT_3 receptor antagonists + aprepitant
  - Ondansetron: (A2)[170,171]
  - Ramosetron: (A3)[172]
  - Palonosetron: (A3)[173]

Aprepitant + dexamethasone: (A2)[174,175]
- 5-HT_3 + droperidol
  - Ondansetron + droperidol: (A3)[176]
  - Granisetron + droperidol: (A3)[177]
  - Palonosetron + droperidol: (A3)[178]
- Other 5-HT_3 combination therapies:
  - Ondansetron + haloperidol: (A3)[179]
  - Haloperidol + dexamethasone + ondansetron: (A3)[180]
  - Ondansetron + betahistine: (A2)[181,182]
  - Ramosetron + gabapentin: (A3)[183]
  - Midazolam + ramosetron: (A3)[184]
- Other antidopaminergic combination therapies
  - Dexamethasone + haloperidol: (A2)[185,186]
  - Metoclopramide + dimenhydrinate: (A3)[187]
  - Amisulpride +1 nondopaminergic antiemetic: (A3)[188]
  - Haloperidol + midazolam: (A2)[189,190]

Acupoint stimulation + pharmacoprophylaxis: (A2)[191,192]
- Others
  - Propofol + dexamethasone: (A3)[193]
  - Dexamethasone + dimenhydrinate:[194] (A3)
  - Gabapentin + dexamethasone: (A3)[195]

ADDITIONAL INFORMATION ON THE MOST COMMONLY USED DRUGS FOR PONV

Ondansetron	5-HT3 receptor antagonist	4 mg IV dose or 8 mg oral disintegrating tablet with a 50% bioavailability	
Dolasetron	5-HT3 receptor antagonist	12.5 mg IV administered 15 min before the end of anaesthesia has similar efficacy to 4 mg ondansetron	QT prolongation-not available in the USA
Granisetron	5-HT3 receptor antagonist	0.35–3 mg (5–20 µg/kg) IV	
Tropisetron	5-HT3 receptor antagonist	5 mg IV before the start of anaesthesia	Not available in the USA
Ramosetron	5-HT3 receptor antagonist	0.3 mg IV	Japan and Asia; side effects include drowsiness, dizziness, muscle pain, sedation, constipation, and diarrhoea
Palonosetron	5-HT3 receptor antagonist	0.075 mg	
Aprepitant	neurokinin 1 (NK1) receptor inhibition	All dosages (40, 80, and 125 mg) have been shown to be more effective in reducing the incidence of POV rather than nausea	
Dexamethasone	glucocorticoid	8 mg (0.01 mg/kg) of dexamethasone	mild blood glucose elevation; no increase risks of SSI, wound dehiscence, bleeding

Amisulpiride	dopamine D2, D3 receptors antagonist.	established PONV, amisulpride 5 and 10 mg	slight increase of prolactin
Droperidol	Antidopaminergic	prophylaxis of PONV in doses of 0.625–1.25 mg a dose of 0.625 mg is recommended by the panel	risk of sudden cardiac death when used in doses >25 mg
Haloperidol	Antidopaminergic	0.5–2 mg is effective for PONV prophylaxis or established PONV in the PACU, haloperidol 1 mg	not FDA approved
Metoclopramide	Antidopaminergic	antiemetic efficacy of a 10 mg dose of metoclopramide is uncertain	Extrapyramidal symptoms were rare but were significantly higher in the 25 and 50 mg groups

PAIN MANAGEMENT IN PLASTIC SURGERY

Following the recommendations of the American Society of Anaesthesia, Resuscitation and Pain Therapy, in the guidelines for the management of acute post-operative pain (1), the analgesic process must be individualised and planned from the moment of the initial pre-anaesthetic interview and discussed with the patient. The phases of treatment and what to expect from them should be explained and should be understood at all times. Expected and unwanted desired effects should also be explained. Therefore, a good pre-anaesthetic assessment where the presence of allergies, ASA classification, anaesthetic risks (alcohol or substance abuse), and medication (NSAIDs, consumption of opioids, or antidepressants) that can interact with the analgesic plan can be investigated is vital. In addition, the type of hospital stay modality, whether ambulatory or admitted, was established. (1,2)

The adequate control of pain in plastic surgery centres also makes these centres serve as a quality control tool, positioning them as centres of high standards in surgical clinical practice and adding favourable points to the accreditation of quality of care. (5).

It is important to define the pain measurement scale and to follow it at all times. The VAS (visual analogue scale), NRS (numerical rating scale), VRS (verbal rating scale) and the face pain rating scale are examples of the scales used. The goal is to try to keep the pain in the first lower points of the scale. On the other hand, this assessment should be carried out not only in the immediate post-operative period but also in the following days, knowing that the greatest painful stimulus does not only occur in the first 24 hours but can also occur in the following 48-72 hours. (3.7)

Once the pre-anaesthetic assessment has been established and the analgesic plan established, the approach must be multi-modal, which means including the use of local anaesthetics and opioid-sparing medication in addition to anti-inflammatory medication, paracetamol, NSAIDs and opioids.

The goals of our therapy should be individual, multi-modal, and when possible, oral. In addition, the use of opioids should be minimised. For this, opioid use must begin with the least administration of peri-operative opioids that increase the need for more consumption of them to affect the sensation of pain. Although opioids have been an important therapeutic line in pain management, their side effects and even the risk of respiratory depression and death have caused them to be used with greater discretion. (1,4,7)

The analgesic process begins in the peri-operative period (1,2) with the administration of paracetamol as basic analgesia mediation, which can be started IV and then be administered orally as long as the dose does

not exceed 4 gr per day due to its hepatotoxic effects. Along with paracetamol, COX2 inhibitors such as celecoxib 200 to 400 mg were administered 1 hour before the induction of anaesthesia and repeated at 200 mg 1 hour later.

The use of conventional **NSAIDs** is a great tool in the treatment arsenal, and their widespread use positions them as an important pillar of any multi-modal therapy. Selective COX2 inhibitors are preferred to conventional NSAIDs due to their reduction in adverse effects, such as gastrointestinal, kidney and platelet lesions, especially when used chronically or in high doses. The use of COX2 inhibitors should not be used in patients with ischaemic heart disease or peripheral arteriosclerotic disease. In some publications, the use of conventional NSAIDs is preferred, even knowing their effects already described on COX2 (1,2), as is the case with ketorolac 30 mg, which reduces opioid consumption by 25-45% (1, 2.8).

NSAID	By mouth	Frequency
Paracetamol	1 gr	4 per day
Ketorolac	30 mg	2-3 per day
Ibuprofen/Desibuprofen	400-600 mg/400 mg	4 per day
Naproxen	550 mg	2 per day
Diclofenac	75 mg	2 per day
Ketoprofen	50 mg	4 per day
Meloxicam	15 mg	1 per day
Lornoxicam	4-8 mg	1-2 per day (< 16 mg in day)
Celecoxib	200 mg	1-2 per day

The administration of anticonvulsants such as gabapentin 600 to 1200 mg 1 hour before and 600 mg 1 hour after or pregabalin 150-300 mg 1 to 2 hours before surgery and repetition of the same dose 12 hours later should be used only for patients with high tolerance to opioids. Routine use should be avoided due to its increase in side effects, such as sedation. Also, its superior analgesic quality has not been demonstrated compared to a multi-modality approach. (1).

Whether the anaesthetic technique is sedative, general or regional, when possible, it should be performed using drugs that reduce intra-operative opioid consumption, such as dexamethasone 8 mg and dexmedetomidine (alpha2 agonist) in perfusion at 0.3-0.06 mcg/kg/h. The use of ketamine, magnesium in perfusion, or IV lidocaine has been widely used with good results, reducing the consumption of opioids, but their side effects could delay discharge in patients, especially those in ambulatory mode, thus increasing costs. (8)

The administration of neuraxial, regional, tumescent or infiltrative **blocks,** which administered before surgery is called pre-empty analgesia (7), has recently been demonstrated to be a great analgesic tool, not only due to the decrease in intra-operative opioid consumption but also due to the level of satisfaction in the management of pain in the post-operative period. (8) It decreases the need for opioids and other anti-inflammatories in the immediate post-operative period until the first 24 hours. Unfortunately, the absence of liposomal local anaesthetics in Europe, which increase the duration of the effect, is one of the limitations of this technique. Therefore, the cessation of the effect must be anticipated at 24 hours and be prepared with analgesic rescue. With the administration of loco-regional techniques, one must bear in mind the use of the allowed doses for each local anaesthetic at all times and follow cardiovascular and neurological monitoring with special care. Resuscitation equipment and medication should be available for the management of potential local anaesthetic toxicity. (1)

In the case of facial surgery, a few trigeminal facial blocks are sufficient to achieve a good analgesic level. In chest surgery, the use of ultrasound-guided PEC1 and PEC2 facial blocks, as well as tumescent infiltration of the gland and surgical wounds, provides good analgesic quality in the post-operative period (8,10).

In the abdomen, TAP block (1), ultrasound infiltration of the rectus abdominis or in the dissection flap, and infiltration of surgical wounds have also managed to reduce the need for opioid use in the immediate post-operative period (8,10).

Liposuction poses a different challenge. Tumescent anaesthesia with lidocaine at a dose of 35-55 mg/kg produces a good analgesic level for a couple of hours post-operatively, but the patient should be monitored for 12 hours for the risk of a local anaesthetic peak in the plasma. Local anaesthetics in some cases can cause intoxication that can range from mild non-specific symptoms to more severe neurotoxicity, cardiotoxicity

and death. However, the tumescent technique today is the most commonly used anaesthetic technique in these procedures. (8)

With regard to **opioids**, their oral and short-acting administration is preferable. Long-acting drugs are not recommended and are used much less often in base infusion, especially in patients that do not regularly use this medication. The most commonly used opioids, morphine and oxycodone, are almost always administered in rescue form. The side effects of opioids, such as respiratory depression, sedation, nausea, vomiting, itching, a reduction in intestinal motility, urinary retention, delusions, cognitive dysfunction, high tolerance and hyperalgesia, are well known (1,2,6,8).

Tapentadol is a new opioid for moderate to severe pain management without the marked side effects of other opioids. Its dosage is 50 mg per hour before surgery. Its use should be avoided in patients taking serotonin reuptake inhibitor antidepressants and MAOIs or illicit drugs. (11)

Oral opioids	Dosage	Frequency
Codein/paracetamol	30/500	4-6 per day
Tramadol/paracetamol	37,5/325	4-6/day
Tapentadol	50-75-100	4-6/day. < 700 mg day

Opioids: analgesic rescue	Dosage	Frequency
Morphine	10 mg	Rescue if the patient is experiencing pain. Administer every 3 h
Oxycodone	10 mg	Rescue if the patient is experiencing pain. Administer every 3 h
Sufentanilo (sublingual)	15 mcg	Rescue if the patient is experiencing pain. Administer every 20 min

Patient-controlled analgesia (PCA) systems are a very important aid in post-operative control since they work in tandem with the patient in the dosage. These systems can include:

- IV administration of NSAIDs or opioids.
- Regional administration of local anaesthetics whether in epidural, spinal and fascial catheters and in surgical wounds.
- Oral administration of short-acting opioids.
- Transdermal administration of 40 mcg of fentanyl (3) by ITS iontophoresis (IONSYS) with a safety time of 10 min.
- Sublingual administration with sufentanil, (Zalviso), in which 15 mcg is administered to the patient every 20 min on demand for 72 hours (4).

The latter two options have drawbacks in that they have side effects similar to morphine; they are not effective in patients with tolerance to opioids, are exclusively for hospital use and result in increased costs. (4).

Individual, multi-modal pain management protocol in plastic surgery (9,10)

- Infiltration with intra-operative local anaesthetics according to the type of surgery and the techniques mentioned above. Using ropivacaine 0.2-0.5% (no more than 3 mg/kg), levobupivacaine 0.2, -0.5% (no more than 3 mg/kg).
- Intra-operative use of dexamethasone 8 mg IV and dexmedetomidine 0.3-0.5 mcg/kg/h in perfusion during maintenance of anaesthesia.
- Pantoprazole 40 mg orally per day. In addition, ondansetron 4 mg is administered orally if nausea occurs.
- Paracetamol 1 gr IV C/8-6 h. In addition, the oral route of administration should be continued. It can be administered alone or in compounds with codeine or tramadol.
- Celecoxib 200 to 400 mg administered 1 hour before surgery and continued 1 hour later at 200 mg/12 hours orally (no more than 400 mg a day). This drug should not be used in patients with cardiovascular disease.

- Desibuptrofen administered orally at doses of 400 mg every 6 hours, ketorolac 30 mg every 8 hours or lornoxicam 8 mg every 12 hours.
- Tapentadol 50 mg 1 hour before surgery and continued at a dose of 50 or 75 or 100 mg C/4 to 6 hours with a maximum dose 600 to 700 mg/day.
- Short-acting oral opioids as rescue in oral PCA: 10 mg MST morphine or 10 mg oxycodone as needed by the patient.

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SPECIFIC PROTOCOLS

FAT GRAFTING HARVESTING, PROCESSING AND INJECTION GUIDELINES

PROCUREMENT

Liposuction is the technique used to harvest fat. Liposuction disaggregates the fat in particles that are different sizes, depending on the cannula diameter.

WHAT IS THE BEST DONOR SITE?

The main conclusion suggested by the current literature suggests is that there is no significant difference among different donor sources regarding cell viability or volume retention. On the other hand, if we consider the layers of adipose tissue, there could be a difference. Di Taranto et al reported that superficial adipose tissue has more stromal compounds and more CD105+ cells than deep tissue, which would make it a better donor tissue site for fat survival.

EFFECT OF LOCAL ANAESTHESIA

Local anaesthesia (lidocaine) appears to adversely affect the metabolism of adipocytes, with reduced glucose transport, lipolysis, viability and differentiation of preadipocytes (ASCs). Articaine/epinephrine and 2% lidocaine are especially harmful. The time between infiltration and aspiration may be relevant in terms of the longer contact between cells and anaesthetics. After washing, cells were able to fully regain their function and growth regardless of whether the exposure was as short as 30 min or as long as 10 days. In fact, it seems that the inhibitory effects of lidocaine disappear when the anaesthetic is removed.

Epinephrine at different concentrations had no deleterious effect on the number of living cells in a 100x field.

Finally, tumescence makes no difference regarding cell viability compared to the dry technique.

SUCTION PRESSURE

There are no conclusive data to ensure that syringe harvesting is better than liposuction. Syringe allow a pressure of 660 mmHG (0.86 at) to be achieved. The percentage of cells in the stromal fraction is greater when using aspiration at 350 mmHg than 700 mmHg and higher in both cases than that achieved when a syringe is used. Obtaining a 10 cc syringe and after aspirating 2 cc of air (which is what Coleman recommended) results in a negative pressure of 0.37 at. A 50 cc syringe creates a vacuum pressure of 0.76 atm. Therefore, either a 10-cc syringe should be used with the plunger removed 2 cc or a liposuction device should be used at 0.5 at.

There is some evidence that for harvesting, lower pressures (approximately 250 mmHg) are better than higher pressures (approximately 750 mmHg) in terms of cell viability (adipocytes and ASCs).

THE CANNULA

Coleman designed a series of cannulas aimed at obtaining atraumatic fat and its safe infiltration (reducing the possibility of intravascular injection). Larger cannulas for harvesting seem to provide higher cell viability.

However, there is some evidence that harvesting with a microcannula (2 mm multiperforated) could be better for tissue regeneration and micrografting.

Energy devices such as ultrasound-assisted liposuction (UAL), power-assisted liposuction (PAL) and water-assisted liposuction (WAL) are also suitable for harvesting fat for grafting.

PROCESSING

During fat processing, the harvested fat undergoes a process of eliminating fluid, blood, cell fragments, and oil.

Centrifugation

Kurita et al compared the effect of various forces of centrifugation (400, 800, 1200, 3000 and 4200 g) for 3 min on cell viability . A centrifuge with greater force produces a higher oil and fluid fraction. A total of 400 g already separates the red fraction. Both adipocytes and stem cells can withstand high centrifugal forces, up to 3000 g. Native adipose tissue is richer in ASCs than aspirates, but centrifugation causes tissue to compact and increase the concentration of ASCs. Experts recommend 1200 g as the optimal strength. The main

advantage of centrifugation is that it provides an increased concentration of progenitor cells in the processed fat.

Cotton gauze rolling, Telfa®

Alternatives to Telfa® include blue surgical towels or 4 _ 4 gauze pads to absorb the undesired oil and aqueous components of the lipoaspirate. In this technique, the harvested fat is placed on top of the gauze. The back of a forceps, scalpel, or tongue depressor is used to roll the fat back and forth over the gauze. This is an easy and inexpensive method to harvest small quantities of fat (55).

Decantation

Decantation allows separation of the components by using gravity. Critics of this method state that the harvested fat may still be very “wet” if the proper amount of time has not passed for sufficient separation to occur. This results in falsely higher injection volumes of fat that are diluted by the undesired components of lipoaspirate. The benefits of these commercial devices include ease of use and single-use containers.

Washing and filtration

Other recent works show that viability and vascularisation are higher in washed tissues than in centrifuged and decanted tissues. New protocols recently suggested that the best results are obtained with gentle centrifugation preceded by washing. Centrifugation and decantation remove 50-60% of red cells and leukocytes, and filtering and washing remove 90% of erythrocytes and leukocytes. Blood reduces the viability of fat and impairs fat graft take.

INJECTION

Fat graft injections have to be done with blunt cannulas, ideally 2 or 3 mm. The worst complication is fat embolism due to intravascular injection. Fat necrosis and oil cysts are also linked to the use of the injection technique, and multiple passes with tiny deposits reduce the incidence of these complications.

In the face, the arteries in at-risk areas (mainly in periorbital and nasal areas) should be compressed and aspirated before injection.

Mortality is associated especially with gluteal fat grafting. The specific recommendations by an international task force are as follows:

- selecting appropriate patients
- avoiding intramuscular injections and incisions near the “danger zone” region of the buttocks, which includes the gluteal vessels and nerves

- utilising a blunt and larger cannula to prevent bending, which would cause an accidental intramuscular injection
- injecting parallel to the buttocks in a retrograde fashion with patients in the jack-knife position

having a strong understanding of gluteal anatomy

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PAEDIATRIC-ADOLESCENT PLASTIC SURGERY PATIENT SAFETY GUIDELINES

The concept of PATIENT SAFETY in the paediatric population has increased over the last 10 years, and data have been extrapolated from adult studies. This extrapolation has raised many questions that must be addressed in future investigations.

Medical errors and patient harm differ in some ways for children/adolescents than for adults. Moreover, unfortunately, paediatric surgical patient safety evidence is still in its early stages. The vast majority of studies have their origin in US institutions, and most of them are related to handoff tools.

First, children/adolescents are at greater risk of dosage and medication errors because of their development, demographics, dependency on parents and other caregivers and different epidemiologies of medical conditions.

A substantial portion of preventable medical errors are related to the prescription, dispensation and administration of medication directly related to weight and medical status. Efforts to eliminate catheter-related bloodstream infections in adults have not had the same effect in children.

The numbers of some investigations are quite disturbing and as many as 12.91 adverse events/1000 hospital discharges among patients from birth to 15 years of age have been reported.

There are three unique and multifactorial characteristics of patient safety problems and solutions for children:

- Physical characteristics
- Developmental issues
- Legal issues due to the fact that they are minors

One of the most efficient tools to prevent errors is a **checklist,** as it reinforces communication and provides feedback on where system goals are being achieved. However, to obtain success in using a checklist, consistent and permanent engagement by the entire team is required.

FAMILY ENGAGEMENT

- Enhance family-oriented care, actively engage patients and families in safety at all points of care, and address issues of ethnic culture, language, and health literacy.
- Direct families to appropriate resources and review patients' rights and responsibilities from the perspective of safety.
- Involve families in identifying, creating, and implementing the best patient safety practices with attention to the medical home model in the ambulatory setting.
- Engage families in creating safety materials and participating in safety committees.
- Identify opportunities for families to aid in improvements related to health literacy, handoffs, and school and home care, among others. Leverage electronic health record portals and tools to directly communicate and share materials with patients and families.

10 RELEVANT ITEMS

1. Hand hygiene /2. Team training /3. Clinical pharmacists /4. Infection barriers /5. Central venous line bundles/pressure ulcers/DVT prophylaxis /6. Checklists / 7. Informed consent / 8. Do-not-use abbreviation policies /9. Rapid-response teams /10. Medication reconciliation

ADOLESCENTS SEEKING COSMETIC SURGERY

The American Society of Plastic Surgeons has published guidelines for evaluating an adolescent patient desiring cosmetic surgery:

Adolescents must initiate the request for surgery

Adolescents must have realistic, logical goals and understand the benefits and risks

Adolescents must be sufficiently balanced to tolerate temporary discomfort and possible negative outcomes

VENOUS THROMBOEMBOLISM

Despite the fact that the risk of VTE in hospitalised children is much lower than that in adults, there are patients in paediatric hospitals who deserve systematic screening and thoughtful application of preventative measures.

One of the greatest challenges in the field of paediatric thrombosis is the lack of randomised clinical trials to guide treatment. Nonetheless, standard practices for treating paediatric patients with VTE, largely extrapolated from adult guidelines, do exist, and there are results from many large cohort studies to support these practices.

Guidelines permit the attending physician to ultimately determine if a patient at high risk should receive sequential compression or anti-coagulation treatment. This flexibility is allowed because the lack of evidence in paediatrics makes it difficult to stipulate that all patients at high risk should receive anti-coagulation treatment, the subcutaneous administration of which causes discomfort and is not without risk. Although it is well accepted that sequential compression is not as effective as anti-coagulation for prophylaxis, there are data demonstrating that sequential compression does significantly reduce the risk of VTE in the paediatric population.

TEMPERATURE CONTROL

Unplanned peri-operative hypothermia is a common surgical risk in the paediatric population. Being defined as a body temperature below 36°C (96.8°F). The incidence of hypothermia can be as high as 60%, which is higher than that in the adult population and can be reduced to less than 2% by implementing some practices.

Low body temperature before anaesthesia induction has been identified as a risk factor for developing peri-operative hypothermia. The contributing factors for neonatal and infant unplanned hypothermia risk include a reduced weight-to-surface area ratio (i.e., larger body-surface area) and physiologic temperature regulation differences. Children who experience mild hypothermia before anaesthesia induction are unable to maintain normothermia throughout the intra-operative period without added warming interventions.

Methods of temperature measurement in the paediatric peri-operative environment and evidence supporting a specific instrument or method are varied (axillary, temporal, tympanic, rectal, oral, and oesophageal temperature). Ideal temperature monitoring should reflect the core temperature while providing safety, being efficient, and providing comfort; temporal temperature meets these premises.

To keep the temperature between 36.5° and 37.5° during the whole process, heated beds or pre-warmed beds, pre-warmed prep solutions, Bair huggers, warming lights, circulating water garments and/or chemical warming mattresses are needed.

Additional research is needed to examine variables such as body mass index, blood pressure, nutritional status, length of hospitalisation, post-operative illness indicators (e.g., surgical site infection), discharge status, and re-admission status in children who experience unplanned peri-operative hypothermia and to assist in creating knowledge of the outcomes resulting from unplanned hypothermia in the paediatric population.

ANALGESIA

Inadequate management of children's pain and distress during medical procedures may negatively impact their future pain responses; therefore, although much emphasis is traditionally placed on pharmacologic sedation and analgesia, the approach to preventing and treating pain in children should be multi-dimensional—and ultimately include environmental and nonpharmacologic therapies for reducing stress.

Many studies have demonstrated a significant analgesic effect and increased tolerance to pain in paediatric patients through the use of audio-visual media, including movies and cartoons. This media-based analgesia effectively calms and distracts the patients and manages to divert the patient's attention away from the procedure at hand. This achieves the goal of both physical immobilisation and mental preoccupation and takes focus away from pain and apprehension related to the procedure. These patients display noticeably less anxiety before, during, and after the procedure.

One important aspect is the use of opioids in this population, especially optimisation of peri-operative pain management with non-opioid alternatives and patient and family education regarding pain management. If opioids have to be used, safety guidelines have to be followed.

CHECKLISTS

The surgical safety checklist unifies the process of avoiding human error in surgery at all costs. The reviewed research presents improvements in the prevention of adverse events in paediatric surgery, as well as innovative solutions for issues related mainly to paediatric patients, such as the inclusion of guardians or even patients in the safety check process or in the implementation of procedural or bedside safety checklists. If there is a risk of blood loss > 7 ml/kg, IV/central access and fluid repositioning must be planned. If there is a risk of hypothermia or if the procedure will be >1 hour, a warmer system must be used.

Currently, the Children's Hospitals' Solutions for Patient Safety (SPS) Network represents the most comprehensive effort by children's hospitals to date to create a universally safe and healing environment for all children who are in their care. What began as an agreement in 2005 among leaders of eight Ohio children's hospitals to not compete on safety but instead work together to prevent harm has grown into a national movement that is transforming the delivery of safe care in more than 130 children's hospitals across North America. This project could be an example of what could be implemented in the European area to address specific regional characteristics.

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COVID

The COVID-19 crisis has led to unprecedented challenges in the acute management of the crisis, and thewave only recently seems to flatten out in some countries.The adaptation of surgical and procedural steps for a risk-minimizing management of potential COVID-19-positivepatients seeking to undergo elective aesthetic procedures in the wake of that wave will present the next big challengefor the aesthetic surgery community. A clinical algorithm to enhance patient safety in elective surgery in the context of COVID-19 and to minimize cross-contamination between healthcare workers and patients has been proposed (next page) (1)

Reported series suggest that mortality is higher in patients undergoing surgery and infected by SARS-Cov2. Elective surgery should be avoided in these patients.

Surgery should be delayed for at least 7 weeks following SARS-CoV-2 infection to reduce the risk of postoperative mortality and pulmonary complications. In addition, patients who are still symptomatic ≥ 7 weeks after SARS-CoV-2 infection and undergo surgery also have an increased mortality rate (2)

References

1. Kaye, K., Paprottka, F., Escudero, R., Casabona, G., Montes, J., Fakin, R., ... & Benito-Ruiz, J.. Elective, Non-urgent Procedures and Aesthetic Surgery in the Wake of SARS–COVID-19: Considerations Regarding Safety, Feasibility and Impact on Clinical Management. *Aesthetic Plastic Surgery*, 2020, 1-29

2. COVIDSurg Collaborative, & GlobalSurg Collaborative. (2021). Timing of surgery following SARS-CoV-2 infection: an international prospective cohort study. *Anaesthesia*, *76*(6), 748-758.

Initial Telemedicine appointment to screen suitability for Surgery

Asking for travel, exposure to COVID19 + patients, symptom

if absent

Phone screening 24h before appointment confirming absence of symptoms

if absent

Patient enters in Surgery / Anaesthesia Circuit, Procedure following SOPs

positive

Temperature Control, Rapid Antigen test upon admission

Low-exposure risk surgery (Body procedures)

Discharge from hospital or Ambulatory Surgery Center following standard discharge criteria

High-exposure risk surgery (Mucosa exposure)

Recommended minimum PPE:

Surgical Mask

Goggles + shield

Double gloves

Surgical gowns

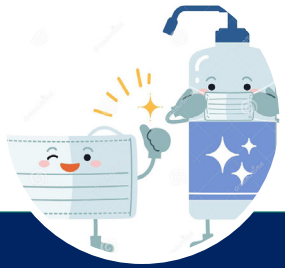
Recommended minimum PPE:

FFP3 or Full Face Mask with HEF

Goggles + shield

Double gloves

Fluid repellent surgical gowns



On arrivai at clinic / office
Give Mask and hand disinfection
at entrance, Temperature control

if qualified

Consultation with Surgeon,
suitable regarding risk?

Refer to Guideline Surgical risk
assessment and stratifying

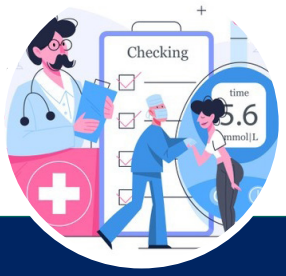
if qualified

Anamnesis /Consent : Epidemiologic
Risk factors, comorbidities, age
and informed consent on COVID 19
and surgery risk

not qualified

if qualified

Admission at hospital or
Ambulatory Surgery Center



Patient enters in Pre-Surgery testing
circuit, PCR 48- 24 h before OP for ITN
- Level II Surgeries

if qualified

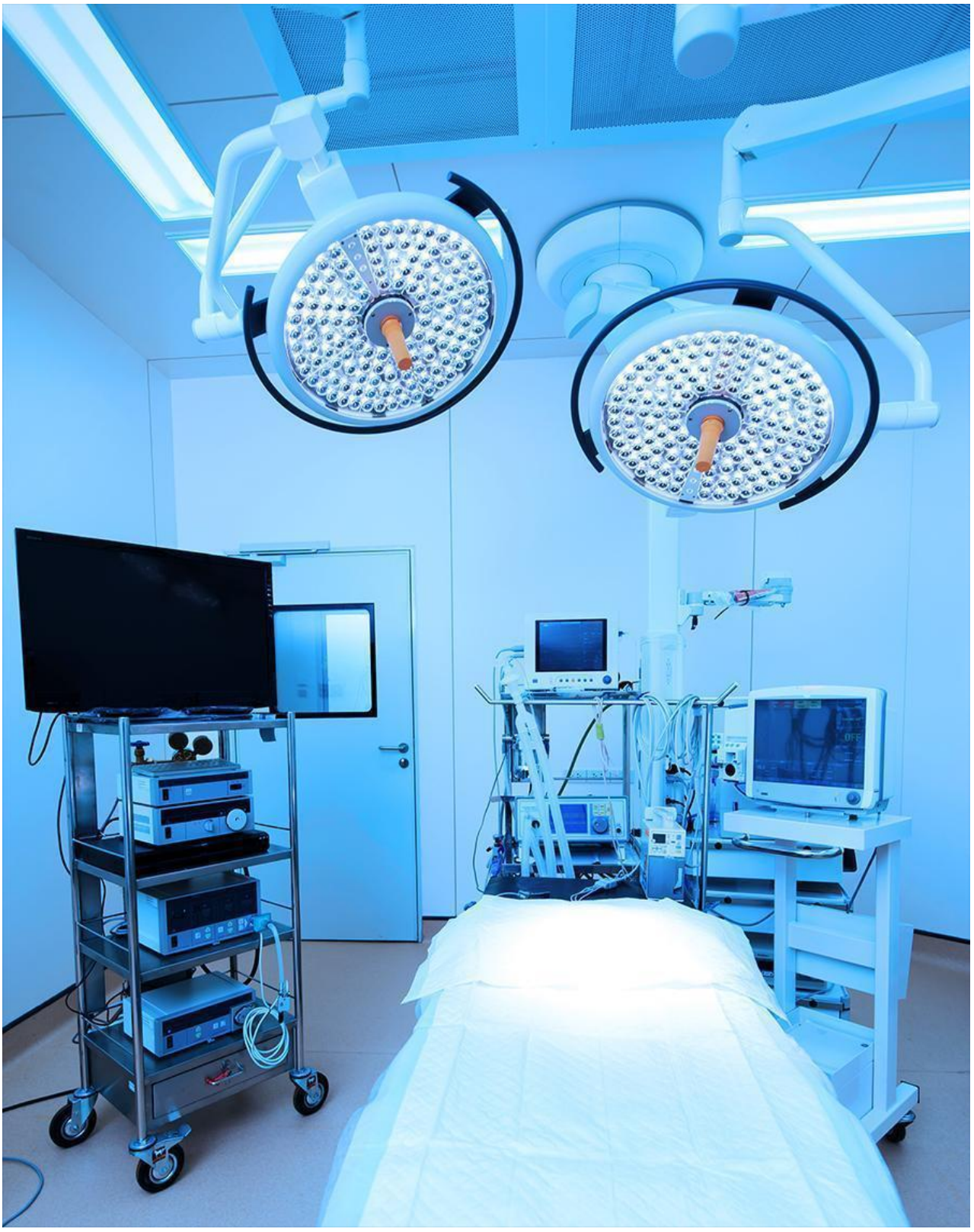
not qualified

NO SURGERY

negative

Consultation with Covid19 team,
additionals exams review
after passed infection

OPERATING ROOM PROTOCOLS



LOCAL ANAESTHESIA – DOSAGE AND OVERDOSAGE

Local, or regional, anaesthesia involves the injection or application of an anaesthetic drug to a specific area of the body. This is in contrast to general anaesthesia, which provides anaesthesia to the entire body and the brain. An example of information patient is provided in Annex 2.

DOSAGE OF LOCAL ANAESTHETICS

Maximum recommended doses and duration of local anaesthetics

Anaesthetic route of administration	Maximum single dose without a vasoconstrictor (mg /kg)	Maximum single dose with a vasoconstrictor (mg/kg)	Onset of action (min)	Duration of action in isolation (min) [w/vasoconstriction, if available]
Esters				
Procaine infiltration, subcutaneous	7-10 - not to exceed 1000 mg total	10		20 - 30 [30-45 w/epinephrine]
Chloroprocaine infiltration, subcutaneous	10-12 - not to exceed 800 mg per dose	14 - not to exceed 1000 mg per dose	6-12	30-60 [60-90 w/ epinephrine]
Tetracaine topical, skin & mucous membranes infiltration, subcutaneous	1-3 - topical skin, adults: 7 g/24 hours - topical skin, children: 2 g/24 hours - topical mucous membranes: 20 mg/dose - infiltration, subcutaneous: 3	1.5	3-8	120-180

	mg/kg per dose			
Amides				
Lidocaine topical, skin & mucous membranes infiltration, subcutaneous	3-4.5 - topical skin: 4.5 mg/kg per dose, not to exceed 300 mg - topical mucous membranes: 4.5 mg/kg per dose, not to exceed 300 mg per dose, maximum 2400 mg/24 hours - infiltration, subcutaneous: 4.5 mg/kg per dose	6-7 (infiltration) - not to exceed 500 mg per dose	- infiltration 1-3 - topical skin 3-5	30-120 [120-240 w/ epinephrine]
Mepivacaine infiltration, subcutaneous	4.5-5 - not to exceed 400 mg per dose - maximum 1000 mg/24 hours	6.6 - not to exceed 400 mg per dose if used with levonordefrin - not to exceed 500 mg per dose if used with epinephrine	3-20	45-90 [60-330 w/ levonordefrin, 120 w/epinephrine]
Bupivacaine infiltration, subcutaneous	2-2.5 - not to exceed 175 mg per dose - maximum 400 mg/24 hours	2.5-3 - not to exceed 225 mg per dose - maximum dose 400 mg/24 hours	2-10	120-175 [180-480 w/epinephrine]
Levobupivacaine infiltration, subcutaneous	2 - not to exceed 150 mg per dose	3		180-360
Ropivacaine	2-3	3-4	3-15	120-240

infiltration, subcutaneous	- not to exceed 225 mg per dose	- not to exceed 225 mg per dose		[180-480 w/epinephrine]
Articaine infiltration, subcutaneous	n/a	7	1-9	[60-230 w/epinephrine]

Tumescent anaesthesia is a technique commonly used in aesthetic procedures. It involves subcutaneous infiltration of large volumes of tumescent fluid containing lidocaine (0.05% or 0.1%), saline, and epinephrine (1:1,000,000) to induce anaesthesia, promote swelling, and create firmness in targeted areas.

Tumescent lidocaine solution contains at most 1 g lidocaine and 1 mg epinephrine in 100 ml plus 10 mEq sodium bicarbonate in 10 ml added to 1000 ml of 0.9% physiologic saline for a final lidocaine concentration of 1 g per bag containing 1110 ml or 0.9 g/l (0.09%). Sodium bicarbonate reduces the stinging discomfort of large volume subcutaneous tumescent infiltration. The maximum safe dosage is estimated to be 35-55 mg/kg lidocaine.

CLINICAL FEATURES OF LOCAL ANAESTHETIC TOXICITY

RISK FACTORS: Hypoxia or acidosis; extremes of age; small patient size or muscle mass; frailty; heart disease, including coronary artery disease, low cardiac output, arrhythmias, and bundle branch blocks; liver or kidney disease, mitochondrial dysfunction, and carnitine deficiency.

PREVENTION: Use of the lowest effective dose, use of a vascular marker, adequate monitoring, incremental injection, intermittent aspiration, individualised dosing, education of doctors and nurses, and assessment of patient risk factors.

PRESENTING SIGNS AND SYMPTOMS:

Prodrome: tinnitus, metallic taste, hypertension, and tachycardia

Major CNS: agitation/confusion, obtundation, seizure, and coma

Major CV: bradycardia/heart block, hypotension, ventricular tachycardia or fibrillation, and asystole

TREATMENT OF LOCAL ANAESTHETIC SYSTEMIC TOXICITY

- Stop administering local anaesthetic/call for help
- Manage airway
- Control seizures with benzodiazepine
- Perform CPR as needed
- 20% LIPID EMULSION. The order of bolus administration and method of infusion (manually, iv roller clamp, or pump) are not critical

  Treatment:

  - over 70 kg: bolus - 100 ml over 2-3 min or infusion 250 ml over 15-20 min. IF PATIENT remains unstable, repeat bolus or double infusion.
  - under 70 kg: bolus -1,5 ml/kg over 2-3 min or infusion - 0,25 ml/kg/min. IF PATIENT remains unstable, repeat bolus or double infusion.

  MAX DOSE: 12 ml/kg

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MALIGNANT HYPERTHERMIA

GENERAL:

Malignant hyperthermia (MH) is a pharmacogenetic disorder of skeletal muscle that presents as a hypermetabolic response to potent volatile anaesthetic gases, such as halothane, sevoflurane, desflurane, isoflurane. MH is also a negative response to the depolarising muscle relaxant succinylcholine and rarely, in humans, to stressors such as vigorous exercise and heat. The incidence of MH reactions ranges from 1:10,000 to 1:250,000 anaesthetics. However, the prevalence of genetic abnormalities may be as great as one in 400 individuals. In humans, the syndrome is inherited in an autosomal dominant pattern. In most cases, the syndrome is caused by a defect in the ryanodine receptor. Over 400 variants have been identified in the RYR1 gene located on chromosome 19q13.1, and at least 34 are causal for MH. Less than 1% of variants have been found in CACNA1S, but not all of these variants are causal.

SYMPTOMS AND DIAGNOSIS

An increase in end-tidal carbon dioxide despite increased minute ventilation provides an early diagnostic clue. The classic signs of MH include hyperthermia, tachycardia, tachypnoea, increased carbon dioxide production, increased oxygen consumption, acidosis, hyperkalaemia, muscle rigidity, and rhabdomyolysis, all related to a hypermetabolic response. An uncontrolled rise in myoplasmic calcium, which activates biochemical processes related to muscle activation, leads to pathophysiological changes.

TREATMENT

MH is likely to be fatal if untreated. Dantrolene sodium is a specific antagonist and should be available wherever general anaesthesia is administered. An increased understanding of the clinical manifestation and pathophysiology of the syndrome has led to mortality decreasing from 80% thirty years ago to <5% in 2006.

PRECAUTIONS

For adequate patient safety, it is necessary to prepare for the risks of MH prior to surgery by having protocols in place for risk patient screening by questionnaire and by having a reference for testing.

Diagnostic testing involves the in vitro contracture response of biopsied muscle to halothane, caffeine, and in some centres, ryanodine and 4-chloro-m-cresol. Elucidation of genetic changes has led to the introduction of DNA testing for susceptibility to MH.

In an emergency, quick diagnosis and treatment using dantrolene is crucial. This involves staff drills and storage of emergency medicine. The requirements of the American Association for Accreditation of Ambulatory Surgery Facilities are presented as follows.

Requirements for facilities by AAAASF

This section applies if potential MH triggering agents, such as the inhalation of potent anaesthetics including halothane, enflurane, isoflurane, sevoflurane, and desflurane, are ever used or are present in the facility.

If the depolarising muscle relaxant succinylcholine is present only for use in emergency airway rescue, the facility must document a protocol to manage the possibility of malignant hyperthermia (MH) following its use.

There must be adequate screening for MH risk that includes but is not limited to a family history of unexpected death(s) following general anaesthesia or exercise; a family or personal history of MH, a muscle or neuromuscular disorder, high temperature following exercise; a personal history of muscle spasm, dark or chocolate-coloured urine, or unanticipated fever immediately following anaesthesia or serious exercise.

The facility director and all operating surgeons and anaesthesiology providers should be aware of genetic and/or caffeine-halothane contracture testing (CHCT) for MH and should refer patients for appropriate testing if there is a suspicious history as indicated above prior to permitting surgery to take place in the facility.

The medical director ensures that all staff are trained and annual drills are conducted for MH crisis and management, including actual dilution of at least one vial of actual dantrolene (use of the drug after it has expired is OK). Staff should be assigned roles prior to drills, and a written protocol outlining those personnel and their roles is on file. Documentation of drills is required.

A minimum of 1000 cc (IV bag or similar container) of preservative-free H2O (water) diluent for dantrolene is stored and available in the facility at all times.

A minimum of four (4) 50 cc ampules of NaHCO3 (sodium bicarbonate) are stored and available in the facility at all times.

A minimum of twelve (12) vials of dantrolene are stored and available in the facility at all times.

The necessary additional 24 vials of dantrolene and required diluent are stored in the facility or the facility has a written agreement with another source that can and will provide those additional 24 vials of dantrolene and required diluent on a STAT basis within 15 min.

Malignant hyperthermia algorithms must be available on the emergency cart.

Flow sheets for any MH intervention, as well as forms to rapidly communicate progress of intervention with receiving facilities, are on the emergency cart, and all facilities must document and report any “adverse metabolic or musculoskeletal reaction to anaesthesia.” This documentation must be transportable so that it can accompany the patient when he or she is transferred to a receiving facility.

NON-SURGICAL PROCEDURES

SAFETY WITH INJECTABLES

GENERAL

Injections should belong to the armamentarium of every plastic surgeon dealing with aesthetic patients. To carry out a successful, long-lasting practice, there are a number of important things to cover.

INJECTOR

The injector should be a physician. Depending on the national regulations, nurses may be allowed to inject – either independently or as extension injectors – under physician supervision.

INJECTION ROOM

The physical space for injections should be suitable both in terms of aseptic requirements and patient comfort. The surfaces need to be easy to wipe and disinfect. Good light is needed for injections, but smooth, indirect light may be better for patient comfort. The general atmosphere should be calm and without interfering noise or any extra traffic in the room. Calm music may help eliminate distractive noise. The type of patient chair or table is a matter of preference.

SAFE PROCEDURES

Special attention needs to be paid to safe working manners in terms of dilutions, recording dosages and handling sharps. Assistant nurses can provide additional value to service quality by improving aseptic work, speeding up the cleaning process and reducing physicians' paperwork.

PATIENT RECORDS AND PHOTOGRAPHY

All injections should be carefully documented in patient records. Pre-injection photographs are imperative, as they enable the physician to analyse the results, to understand and to learn from any mistakes, and to take the proper corrective action should the patient return for any reason for any complaint.

CONTRA-INDICATIONS

During the initial visit, it is necessary to go through potential contra-indications such as allergies, pregnancy, autoimmune diseases (with fillers) and neuromuscular disorders (with botulinum toxin).

INFORMED CONSENT

The informed consent process is mandatory. Even if complications are rare, the potential for serious problems exists, particularly with fillers. Thorough information with written consent prior to each injection serves both in complying with consumer rights and in covering the physician.

PREPAREDNESS TO TREAT COMPLICATIONS

The person injected must be capable of identifying and treating complications. Therefore, protocols to handle anaphylaxis and accidental intra-arterial filler injection, including the use of hyaluronidase, must be readily available; also, the staff needs to be trained with regular drills.

ACCIDENTAL INTRA-ARTERIA FILLER INJECTION

Prevention

- Accidental intra-arterial filler injection is a serious complication that cannot be fully avoided. However, the risk can be minimised by using a safe technique:
- Instead of a sharp needle, a blunt cannula (the larger - the safer) should be used
- Injection of parallel arteries should be avoided (risk of cannulation)
- Small aliquots should be injected
- Injections should only be performed on withdrawal, and the cannula should be constantly moving
- High pressure should be avoided during injection
- Local lidocaine injection should be used with epinephrine **prior** to injection of filler (adding lidocaine in the filler does not help)

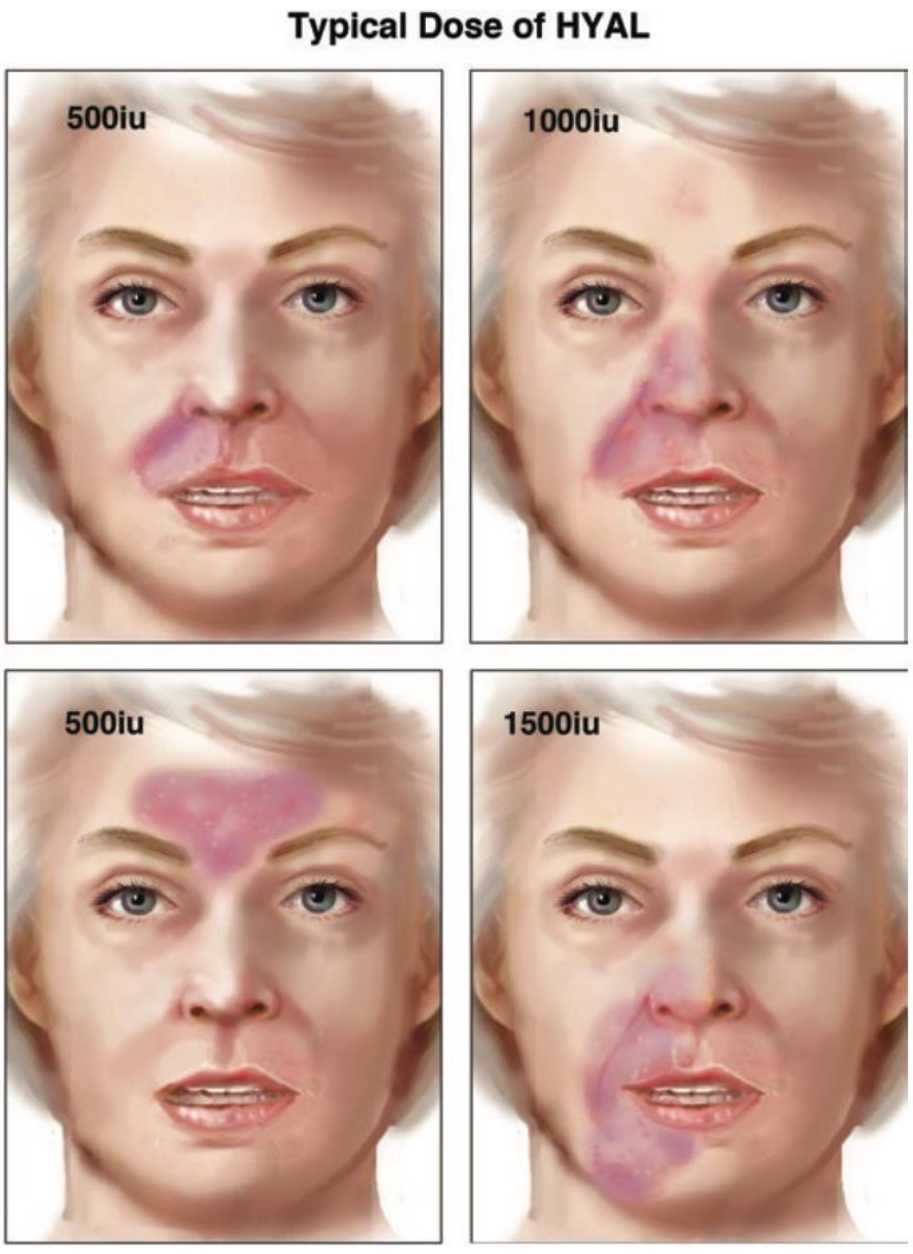
Intra-arterial injection – phases

Phase	Duration
Pain (a non-specific symptom, may be absent in the presence of anaesthetic agents)	
Pallor or blanching phase (not always visible and may be caused by a local anaesthetic)	Seconds – tens of seconds
Livedo phase (a reliable sign of intravascular occlusion)	Minutes – tens of minutes
Slow capillary refill	
Blue or grey-blue phase	Tens of minutes – hours
Blistering phase	Hours – days
Demarcation phase (damaging of the skin surface, ulceration, and demarcation)	Days – weeks
Repair and remodelling phase	

Treatment:

- If intra-arterial hyaluronic acid filler injection is suspected due to clinical symptoms, the following treatment should be started immediately (at the latest, 72 hours later):
- Hyaluronidase, e.g., Hylase Dessau 150 IU/vial
- 1 ml 0.9% NaCl
- 3-6 vials (3-6 ml=450-900 IU per injection), depending on the size of the affected area, is injected subdermally in the affected area (for dosage, see the image)
- The patient is kept under observation
- The injection is repeated until a normal skin colour is reached
- (Typically, 3-4 times, but sometimes even 7-8x)
- It is advisable to always keep 3000 IU hyaluronidase available in storage
- Proper treatment administered in time can prevent the complication of skin necrosis

- Accidental injection of artery filler in the retina may lead to blindness. In these circumstances, hyaluronidase should be injected intraorbitally via the lower lid conjunctiva. The prognosis for vision is poor anyway. Even intra-arterial filler injection into the lip may lead to retinal artery occlusion and blindness.



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ANNEX 1.

TALKING POINTS – BASICS FOR INFORMED CONSENT

This list of talking points provided by the EASAPS has been inspired and modified by informed consent documents from other plastic surgery societies. The aim of this list is to serve as a guideline for in-person patient consultation, and the list should not be regarded as a complete or exhaustive.

GENERAL TALKING POINTS - AESTHETIC PLASTIC SURGERY

GENERAL Talking points:

- Infection
- Bleeding/haematoma
- Seroma
- Asymmetry
- Scar (hypertrophic or hyperpigmented)
- Change of skin colouration
- Change/loss of skin sensation
- Damage to deeper structures
- Surgical anaesthesia
- Shock
- Pain
- Cardiac and pulmonary complications
- Venous thrombosis and sequelae (DVT/PE)
- Allergic reactions
- Drug reactions
- Asymmetry
- Persistent swelling
- Unsatisfactory result

COMMENTS:

DATE:

Signature - MD

ADDITIONAL ADVISORIES Talking points:

- Smoking/second-hand smoking
- Sleep apnoea/CPAP
- Off-label use issues
- Medications and herbal dietary supplements
- Sun exposure - direct or tanning salon
- Travel plans
- Long-term results
- Body piercing procedures
- Future pregnancy and breast feeding
- Influence of anaesthesia on birth control pills
- Intimate relations after surgery
- Mental health disorders and elective surgery
- Additional necessary surgery
- Patient compliance
- Revision policy
- Health insurance
- Financial responsibility
- Cosmetic surgical financial agreement

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - ABDOMINOPLASTY

SPECIFIC Talking points:

- Incisions
- Pubic distortion
- Umbilicus malposition/scarring/necrosis
- Major wound separation
- Skin contour irregularities
- Combined procedures (suction assisted lipectomy)—please refer to the specific talking point list
- Damage to deeper structures
- Use of platelet gel or fibrin sealants, such as “tissue glue”
- Drains (with/without)

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - ARMLIFT

SPECIFIC Talking points:

- Skin quality/volume/excess skin
- Type of armlift (_ long scar/_short scar (axillary)/_ extended/_combined with liposuction _others:_____)
- Sensory nerve injury
- Partial loss of sweat glands (with axillary and extended approaches)
- Skin necrosis/wound healing problems
- Hypoesthesia/dysesthesia
- Visible scarring
- Scar migration (axillary approach)
- Prolonged swelling
- Feeling of tightness
- Influence of weight change
- Potential impact of previous surgery:

  _____
- Potential impact of previous laser treatments and skin tightening procedures
- History of smoking/second-hand smoking (incl. cessation medications, such as nicotine patches/gum/nasal spray, and drugs, such as Champix (ingredient: varenicline)

COMMENTS:

DATE:

Signature - MD

LKING POINTS - BODY LIFT SURGERY

SPECIFIC Talking points:

- Incisions
- Pubic distortion
- Umbilicus malposition/scarring/necrosis
- Major wound separation
- Skin contour irregularities
- Combined procedures (suction assisted lipectomy)—please refer to the specific talking point list
- Damage to deeper structures
- Use of platelet gel or fibrin sealants, such as “tissue glue”
- Drains (with/without)

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BOTULINUM TOXIN INJECTIONS

SPECIFIC Talking points:

- Incomplete block
- Asymmetry
- Ptosis
- Pain
- Migration
- Bruising
- Neuromuscular disorders might be enhanced
- Development of antibodies (tolerance/limited effect/non-responder)
- Progression of the ageing process
- Current differences in the area to be injected: R _____ L _____

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BREAST AUGMENTATION

SPECIFIC Talking points:

- Rupture
- Silicone gel bleed
- Risk of surface contamination of the implants (biofilm)
- Capsular contracture
- Implant extrusion
- Wound healing problems
- Palpable implant
- Chest wall irregularities
- Implant displacement
- Change of breast shape over time/ageing/weight changes/pregnancy/menopause
- BIA-ALCL
- Breast implant illness
- Muscle deformity (with sub-muscular or dual plane placement)
- Change in nipple and skin sensation
- Current differences in the breasts: R _____ L _____
- Future breast exams/mammogram
- Interference with sentinel lymph node mapping procedures
- Potential of additional breast surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

. *TALKING POINTS - BREAST IMPLANT EXCHANGE*

SPECIFIC Talking points:

- Capsular contracture
- Up-sizing/down-sizing of the implant pocket
- Capsulotomy/capsulorraphy/capsulectomy
- Neo-pocket
- Acellular dermal graft/mesh
- Silicone gel bleed
- Risk of surface contamination of the implants (biofilm)
- Rupture
- Implant extrusion
- Wound healing problems
- Palpable implant
- Chest wall irregularities
- Implant displacement
- Change of breast shape over time/ageing/weight changes/pregnancy/menopause
- BIA-ALCL
- Breast implant illness
- Muscle deformity (with sub-muscular or dual plane placement)
- Change in nipple and skin sensation
- Current differences in the breasts: R _____ L _____
- Future breast exams/mammogram
- Interference with sentinel lymph node mapping procedures
- Potential of additional breast surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BREAST IMPLANT REMOVAL

SPECIFIC Talking points:

- Possible ptosis/loose tissue requiring additional surgery
- Need for no/partial/complete (en-bloc) capsulectomy
- Pre-op radiographic imaging (ultrasound/MRI/mammogram)
- Biofilm (diagnosis/role and impact on future breast surgeries esp if another implant placement is considered)
- Additional testing might be required based on intra-operative findings (for example: cultures, histology, BIA-ALCL work-up)
- Family planning - timing of the procedure
- Relief of perceived symptoms of breast implant illness cannot be guaranteed
- Change of breast shape over time/ageing/weight changes/pregnancy/menopause
- Current differences of breast: R _____ L _____
- Influence of breast tissue and skin quality on outcome
- Interference with sentinel lymph node mapping procedures (
- Future breast exams/mammogram

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BREAST LIFT/BREAST LIFT WITH AUTO-AUGMENTATION

SPECIFIC Talking points:

- Incisions (vertical/T-shape/peri-areolar (partial- complete/old scar))
- Change in nipple and skin sensation (permanent/transient)
- Combined procedures (breast augmentation/fat grafting/implant removal)—please refer to the specific talking point list
- Use of acellular dermal matrix
- Fat necrosis
- Partial or full loss of NAC
- Influence of breast tissue and skin quality on outcome
- Family planning—timing of the procedure—ability to breast-feed
- Change of breast shape over time/ageing/weight changes/pregnancy/menopause
- Current differences in the breasts: R _____ L _____
- Future breast exams/mammogram
- Interference with sentinel lymph node mapping procedures (
- Potential of additional breast surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BREAST REDUCTION

SPECIFIC Talking points:

- Incisions (vertical/T-shape/horizontal/old scar)
- Change in nipple and skin sensation (permanent/transient)
- Combined procedures (breast augmentation/fat grafting/implant removal)—please refer to the specific talking point list
- Breast feeding
- Fat necrosis
- Partial/full loss of NAC
- Family planning—timing of the procedure
- Change of breast shape over time/ageing/weight changes/pregnancy/menopause
- Current differences in the breasts: R _____ L _____
- Influence of breast tissue and skin quality on outcome
- Future breast exams/mammogram
- Interference with sentinel lymph node mapping procedures (
- Potential of additional breast surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BUTTOCK AUGMENTATION BY FAT TRANSFER

SPECIFIC Talking points:

- Incisions (infragluteal crease/intergluteal crease/other)
- Fat embolism
- Fat necrosis
- Fluid shifts and lidocaine toxicity
- Stretch marks
- Cellulite or skin irregularities
- Seroma
- Infection
- Pain
- Asymmetry
- Swelling
- Haematoma
- Bruising
- Septic shock
- Death

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - BUTTOCK AUGMENTATION WITH IMPLANTS

SPECIFIC Talking points:

- Incisions (intergluteal crease/superior gluteal area/inferior gluteal crease)
- Pocket location of implant (subcutaneous/intramuscular/sub-muscular)
- Wound breakdown with/without implant exposure
- Combined procedures (liposuction/fat grafting)—please refer to the specific talking point list
- Implant rupture or leakage requiring removal or replacement
- Hardness around implant
- Implant rotation
- Pressure on sciatic nerve
- Seroma
- Infection
- Pain
- Asymmetry
- Scarring
- Haematoma
- Bruising

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - CALF IMPLANT

SPECIFIC Talking points:

- Pocket location of implant (subfascial/sub-muscular)
- Implant extrusion and tissue necrosis
- Implant rupture or leakage requiring removal or replacement
- Implant visibility
- Implant displacement
- Combined procedures (liposuction/fat grafting)—please refer to the specific talking point list
- Hardness around implant
- Infection
- Nerve injury
- Damage to deeper structures
- Acute compartment syndrome
- Chronic pain
- Change in skin sensation
- Bleeding
- Seroma
- Skin scarring
- Surgical anaesthesia (local/general)
- Pain
- Long-term results
- Unsatisfactory result

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - CHEEK IMPLANT

SPECIFIC Talking points:

- Skin quality/volume loss (fat compartments)/excess skin
- Malar projection—Vector: _negative/_ positive
- Lower lid-cheek junction
- Current differences in facial halves: R _____ L _____
- Type of cheek implant (_ Medpor/_ Silicone/ _ other:_____)
- Incision (_ trans oral /_ subciliar/_ transconjunctival/_ other:_____)
- Motor/sensory nerve injury (mainly CN V2)
- Infection/biofilm (esp. transoral approach)
- Wound healing problems—implant exposure
- Potential need for implant removal
- Hypoesthesia/dysesthesia
- Progression of the ageing process
- Potential impact of previous surgery:

  _____
- Potential impact of previous filler injections
- Potential impact of previous laser treatments and skin tightening procedures
- Potential of additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature – MD

TALKING POINTS - CHIN IMPLANT

SPECIFIC Talking points:

- Type of occlusion (_ class I/__ II/__ III; _ overjet/_ true retrogenia)
- Profile—nasal projection (need for __ rhinoplasty/__ orthognathic surgery/__ osseous chin surgery)
- Current differences in facial halves: R _____ L _____
- Type of chin implant (_ Medpor/_ Silicone/ _ other:_____)
- Incision (_ transoral /_ submental/_ other:_____)
- Motor/sensory nerve injury (mainly CN V3 or CN VII)
- Infection/biofilm (esp. transoral approach)
- Wound healing problems—implant exposure
- Potential need for implant removal
- Hypoesthesia/dysesthesia
- Further deepening of existing deep mental crease
- Potential impact of previous surgery:

  _____
- Potential impact of previous filler injections
- Potential impact of previous laser treatments and skin tightening procedures
- Potential of additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - FACELIFT

SPECIFIC Talking points:

- Skin quality/volume loss (fat compartments)/excess skin
- Jaw line—submandibular gland—neck (separate talking points for a neck lift procedure)
- Current differences in facial halves: R _____ L _____
- Type of facelift (_ extended/_high/_ low SMAS/_deep plane/_skin only/_ bilaminar/_ composite/_ MACS/_ mid face/_other:_____)
- Pattern of incision (_ periauricular/_ extended periauricular/_ short-scar/_ submental/_ other:_____)
- Motor/sensory nerve injury (mainly CN VII, CN V, or the greater auricular nerve)
- Hairline alternation/hair loss
- Skin necrosis/wound healing problems
- Hypoesthesia/dysesthesia
- Visible scarring
- Joker face deformity
- Prolonged swelling (esp when combined with lipofilling)
- Transient prolonged swelling of the ear/ear canal
- Progression of the ageing process
- Potential impact of previous surgery:

  _____
- Potential impact of previous filler injections
- Potential impact of previous laser treatments and skin tightening procedures
- History of smoking/second-hand smoking (incl. cessation medications, such as nicotine patches/gum/nasal spray, and drugs, such as Champix (ingredient: varenicline)
- History of blood thinning medications, including herbal supplements (esp the 4 G's—garlic, gingko, ginger, and ginseng) and vitamin E
- Potential of additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - HA FILLER INJECTIONS

SPECIFIC Talking points:

- Current differences in the area to be injected: R _____ L _____
- Bruising
- Asymmetry/irregularities
- Granuloma/biofilm
- Transient/chronic swelling/pain
- Potential incomplete resorption
- Potential immunomodulation
- Erythema
- Tyndall effect
- Accidental intra-arterial injection
- Skin necrosis/tissue loss
- Blindness
- Progression of ageing process
- Potential negative influence on subsequent treatments/surgeries

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - FOREHEAD/EYEBROW LIFT

SPECIFIC Talking points:

- Height of the forehead/hairline/eyebrow shape and position/volume temple area
- Upper eyelid/face (separate talking points for a neck lift procedure)
- Current differences in facial halves: R _____ L _____
- Type of forehead lift (_ direct/_ endoscopic/_other:_____)
- Pattern of incision (_ pretrichal/_ bicoronal/_ lateral/_ other:_____)
- Motor/sensory nerve injury (mainly CN VII or CN V)
- Hairline alternation/hair loss/age-related receding hairline
- Skin necrosis/wound healing problems
- Hypoesthesia/dysesthesia
- Visible scarring
- Prolonged swelling (esp when combined with lipofilling)
- Progression of the ageing process
- Potential impact of previous surgery:

  _____
- Potential impact of previous filler injections
- Potential impact of previous laser treatments and skin tightening procedures
- Potential of additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - GYNAECOMASTIA

SPECIFIC Talking points:

- Direct resection/any type of liposuction procedure
- Incisions
- Change in nipple and skin sensation (permanent/transient)
- Combined procedures—please refer to the specific talking point list
- Male breast cancer (rare—family history of breast cancer)
- Histological exam cannot be obtained if any type of liposuction procedure is to be performed
- Endocrinological work-up
- Medications/substances that may cause or contribute to the development of gynaecomastia
- Change in chest shape over time/age/weight changes/hormones
- Current differences in the chest: R _____ L _____
- Influence of chest tissue and skin quality on outcome

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - LOWER BLEPHAROPLASTY

SPECIFIC Talking points:

- Ectropion
- Lower eyelid fat compartments/lid-cheek junction
- Malar projection (vector negative/positive)
- Canthoplasty/canthopexy/lateral canthal strip
- Dry eye problems
- Blindness
- Corneal exposure problems
- Progression of the ageing process
- Current differences in the lower eyelids: R _____ L _____
- Prolonged swelling
- Potential impact of previous filler injections
- Potential of additional eyelid surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - NECK LIFT

SPECIFIC Talking points:

- Skin quality/volume loss (fat compartments - deep/superficial - anterior/lateral)/excess skin
- Jaw line—submandibular gland—face (separate talking points for a neck lift procedure)
- Platysmal bands (_ dynamic/_ static)
- Type of neck lift (_ anterior approach/_ lateral approach/_ anterior platysmaplasty/_other:_____)
- Pattern of incision (_ peri-auricular/_ short-scar/_ submental/_ other:_____)
- Motor/sensory nerve injury (mainly CN VII, CN V, or the greater auricular nerve)
- Hairline alternation/hair loss
- Skin necrosis/wound healing problems
- Hypoesthesia/dysesthesia
- Visible scarring
- Prolonged swelling
- Feeling of tightness
- Progression of the ageing process
- Potential impact of previous surgery:

  _____
- Potential impact of previous filler injections
- Potential impact of previous laser treatments and skin tightening procedures
- History of smoking/second-hand smoking (incl. cessation medications, such as nicotine patches/gum/nasal spray, and drugs, such as Champix (ingredient: varenicline)
- History of blood thinning medications, including herbal supplements (esp the 4 G's—garlic, gingko, ginger, and ginseng) and vitamin E
- Potential of additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - RHINOPLASTY

SPECIFIC Talking points:

- Facial analysis/nasal aesthetics
- Current asymmetries of the nose: R _____ L _____
- Type of rhinoplasty (_ primary/_ secondary/_ open/_closed/others:_____)
- Donor site of cartilage graft (_ nasal septum/_ ear/_ rib/_ other:_____)
- Donor site: 1. rib—pneumothorax/scar/pain 2. ear—deformity/scar 3. septum—perforation
- Need for other grafts: __autologous: _____; __ allograft:_____; others _____
- Motor/sensory nerve injury (including transient frontal tooth pain)
- Change in breathing pattern
- Septal perforation
- Asymmetry—internal scarring
- Skin necrosis/wound healing problems
- Hypoesthesia/dysesthesia
- Visible scarring
- Influence of skin thickness onto the result
- Prolonged swelling (especially when combined with lipofilling)
- Transient prolonged swelling of the nose
- Potential impact of previous surgery: _____
- Potential impact of previous filler injections (non-surgical rhinoplasty)
- Potential impact of previous laser treatments
- History of smoking/second-hand smoking (incl. cessation medications, such as nicotine patches/gum/nasal spray, and drugs, such as Champix (ingredient: varenicline)
- Illegal drug use, esp. cocaine
- History of blood thinning medications, including herbal supplements (esp the 4 G's—garlic, gingko, ginger, and ginseng) and vitamin E

- Potential of additional nasal surgery during the lifetime
- History of OCD or BDD

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - THREADS

SPECIFIC Talking points:

- Skin quality/volume loss (fat compartments)/excess skin
- Current differences in facial halves: R _____ L _____
- Motor/sensory nerve injury (mainly CN VII or CN V)
- Asymmetry
- Relapse/recurrence/lack of longevity
- Hypoesthesia/dysesthesia
- Palpability of threads/foreign body sensation
- Swelling
- Progression of the ageing process
- Potential impact of previous surgery/treatments:

  _____
- Potential negative influence on subsequent treatments/surgeries
- Need for additional facial surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - UPPER BLEPHAROPLASTY

SPECIFIC Talking points:

- Levator weakness
- Upper eyelid fat compartments/subpalpebral fat compartment
- Existing brow ptosis
- Lacrimal gland prolapse
- Dry eye problems
- Blindness
- Corneal exposure problems
- Progression of ageing process
- Current differences in the upper eyelid: R _____ L _____
- Potential of additional eyelid surgery during the lifetime

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - COOLSCULPTING

SPECIFIC Talking points:

- Patient selection
- Unpredictable results
- Paradoxical hyperplasia of fat tissue
- Asymmetry
- Treatment area demarcation
- Frostbite lesions
- Change in skin pigmentation
- Hardness of treated area
- Discrete nodules
- Hernia formation/exacerbation

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - FAT TRANSFER PROCEDURES

SPECIFIC Talking points:

- Change in appearance
- Firmness and lumpiness
- Asymmetry
- Long-term effects (impact of ageing and weight loss or gain)
- Fat tissue reabsorption
- Skin necrosis
- Infection
- Unsatisfactory results
- Blood clots (DVT)
- Pulmonary complications (PE)
- Fat embolism

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - LASER PROCEDURES ON SKIN

SPECIFIC Talking points:

- Burns
- Pain
- Erythema
- Skin discolouration/swelling
- Skin pigmentation
- Interaction with medication (photosensitivity)
- Unsatisfactory results
- Tanning, sun exposure
- Hair removal
- Skin sensitivity
- Scarring
- Infection
- Fire
- Laser smoke
- Skin tissue pathology (may compromise laboratory examination)
- Distortion of anatomic features
- Healing issues in previously damaged skin
- Healing issues following the use of isotretinoin

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - LIPOSUCTION

SPECIFIC Talking points:

- Patient selection
- Incisions
- Pubic distortions
- Umbilicus malposition/scarring/necrosis
- Fluid shifts and lidocaine toxicity
- Blood transfer
- Asymmetry
- Seroma
- Swelling
- Haematoma
- Bruising
- Fibrosis
- Cellulite or skin irregularities
- Skin pigmentation/discolouration
- Change in skin sensation
- Change in skin sensitivity
- Fat embolism
- Damage to deeper structures (nerves/vessels/muscle/bowel perforation/pneumothorax)

SPECIFIC Talking points - Ultrasound-Assisted Lipectomy

- Burns
- Seroma
- Cannula fragmentation
- Unknown risks

SPECIFIC Talking points: - Radiofrequency Assisted Lipectomy

- Burns (superficial/deep/periportal)
- Seroma
- Thermal damage to deep structures

SPECIFIC Talking points: - Laser Assisted Lipectomy

- Burns (superficial/deep/periportal)
- Seroma
- Thermal damage to deep structures

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - OTOPLASTY

SPECIFIC Talking points:

- Incisions
- Ear trauma
- Asymmetry
- Cartilage fracture
- Haematoma
- Skin necrosis
- Infection
- Healing issues

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - PECTORAL AUGMENTATION

SPECIFIC Talking points:

- Incision
- Combination of procedures (fat grafting/mastectomy)
- Position of the implant (pre-pectoral or sub-muscular)
- Asymmetry
- Rupture of implant
- Silicone gel bleed
- Risk of surface contamination of the implant (biofilm)
- Capsular contracture
- Implant extrusion
- Palpable implant
- Implant displacement
- BIA-ALCL
- BII (breast implant illness)
- Muscle deformity
- Change in nipple and skin sensation

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - USE OF RADIOFREQUENCY IN BODY CONTOURING

SPECIFIC Talking points:

- Incisions
- Patient selection
- Asymmetry
- Seroma
- Swelling
- Haematoma
- Bruising
- Fibrosis
- Cellulite or skin irregularities
- Skin pigmentation
- Skin sensitivity
- Damage to deeper structures (nerves/vessels/muscle/bowel perforation/pneumothorax)
- Thermal damage to deep structures
- Burns (superficial/deep/periportal)
- Neuropraxia

COMMENTS:

DATE:

Signature - MD

TALKING POINTS - THIGH LIFT

SPECIFIC Talking points:

- Scar (short/long/inguinal/vertical)
- Sensation of thigh tightness
- Pubic distortions
- Major wound separation
- Wound infection
- Skin contour irregularities
- Combined procedures (suction assisted lipectomy)—please refer to the specific talking point list
- Damage to deeper structures
- Drains (with/without)

COMMENTS:

DATE:

Signature - MD

ANNEX 2. WHO SURGICAL CHECKLIST

Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?

- ☐ Yes

Is the site marked?

- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?

- ☐ Yes

Is the pulse oximeter on the patient and functioning?

- ☐ Yes

Does the patient have a:

Known allergy?

- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?

- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?

- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?

- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:

- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:

- ☐ Are there any patient-specific concerns?

To Nursing Team:

- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?

- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:

- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:

- ☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

ANNEX 3. PRE-OPERATIVE INSTRUCTIONS FOR PATIENTS UNDERGOING SURGERY UNDER LOCAL ANAESTHESIA

Do not take aspirin, medications containing aspirin, or any anti-inflammatory or herbal alternatives two weeks prior to surgery. Please refer to the list of medications to avoid. If you are unsure if a medication that you are taking is to be avoided, please ask the doctor. If needed, Tylenol may be taken after consulting with the doctor.

Smoking was stopped two weeks prior to and two weeks after surgery. Nicotine patches and gum MAY NOT BE USED.

PLEASE BE AWARE THAT SMOKING OR THE USE OF UNAUTHORISED MEDICATIONS CAN LEAD TO COMPLICATIONS AND JEOPARDISE THE RESULT OF YOUR SURGERY!

Report any signs of a cold or infection occurring within the week prior to your surgery.

DAY OF SURGERY:

Your surgery is scheduled in the office and is under local anaesthesia. If your surgery is in the morning, you may have a light breakfast but please limit your coffee or tea to one cup. If your surgery is in the afternoon, you may also have a light lunch.

Wear comfortable, loose-fitting clothes, which do not have to be pulled on over your head, i.e., a button-down blouse or shirt and loose-fitting skirt or pants. ABSOLUTELY NO MAKE-UP OR JEWELLERY.

Do not save questions for the morning of your surgery. This is a busy time for us, and it should be relaxing time for you. Please contact the office PRIOR to your surgery if you should have any questions.

If you will be receiving Valium prior to your surgery, please arrive one hour prior to your scheduled surgery time. You must have someone drive you after surgery.

All of the above items are important. Please take the time to read through this one more time the day before your surgery.

YOU MUST ARRIVE AT YOUR SCHEDULED SURGERY TIME. IF YOU ARE LATE, YOUR SURGERY MAY BE CANCELLED.

ANNEX 4. TALKING POINTS ON ITEMS OF PATIENT RESPONSIBILITY

PRE-OPERATIVE INFO	CONTACT	Phone number Ask questions Clarify information Write down information
	MEDICATION SAFETY	List of medications Anticoagulants taken? Herbal supplements
	HEALTH SAFETY	Ensure correct treatment for diabetes, high blood pressure , cardiovascular disease, chronic diseases, and non-healing wounds
	OPTIMISING HEALTH	Patients' responsibility Inform patients about: exercise before surgery, smoking cessation, cessation of drinking/drug use, and nutritional status
	DENTAL STATUS	Regular dental checks Recommend dental status check Poor dental status Infections due to dental status Extraction of teeth day before surgery
	READ INFORMATION	Accurate information Do not use Google
PRE-OPERATIVE PREPARATION	Preparations 2 weeks before surgery	Type of surgery Time of surgery Bring close family/friend to information meeting Clarify when to stop anticoagulants Fill out required forms (CONSENT)

	Inform your surgical ward	Patient forgets to be informed about important information Other medical investigations Healed infections just before surgery
	PREPARE DISCHARGE	Length of hospitalisation Discharged before expected Prolonged hospitalisation due to not having someone at home Home care aids/bandages/medication Planned discharge is safer at home
	ON ADMISSION TO HOSPITAL	Need for a checklist of important info Patients can check and request missing info Remove rings, necklaces, and piercings When to stop eating and drinking Pre-surgery shower routines Allergies Updated medication list including natural medications or nutritional supplements Have you been informed about expected pain?
	JUST BEFORE SURGERY	Are operational areas marked correctly? Avoid getting cold Ask surgical team to use safe surgery
POST-OPERATIVE INFORMATION	PREVENTION OF COMPLICATIONS	Information about complications Often unsure at home What is normal or not What to do in an emergency Special considerations
	RESTRICTIONS AND ACTIVITY	When to start exercising Stayed in bed for weeks Confusion about restrictions
	MEDICATION SAFETY	Start new medications Restart medications Does not remember information

		Rushed information Need a checklist Ask for missing information Medication side effects New medication list
	PAIN RELIEF	Taking too Little Taking too much Regular usage When to stop What to do if still in pain
	STOMACH	Often experiences stomach pain Constipation prevention/medication Worried something is wrong
POST-OPERATIVE PLANS AND FOLLOW UPS	Further care	Wound care Removal of sutures Other treatment Test results Sick certificate When can I shower Whom to contact for questions
	Appointments	Expected time and date Referral to other specialities What to do if no appointment is scheduled