



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en



International consensus

International consensus (ICON) on functional and aesthetic rhinoplasty



S. Albert^{a,*}, F. Simon^b, A.-J. Tasman^c, D. Chua^d, R. Grigg^e, A. Jaklis^f, T. Wang^g, F. Disant^h

^a Otolaryngology, head and neck surgery department, facial plastic surgery, Bichat University Hospital, 46, rue Henri-Huchard, 75018 Paris, France

^b Pediatric otolaryngology, head and neck surgery department, Necker-Enfants-Malades, University Hospital, 75015 Paris, France

^c European academy of facial plastic surgery, rhinology, facial plastic surgery, ENT department, Gallen, Switzerland

^d Otolaryngology, ENT surgeons medical centre, Mount Elizabeth medical centre, Singapore

^e Medici medical centre, Toowoomba, Australia

^f Saint-George hospital, University Medical Center, Beirut, Libanon

^g Facial plastic surgery, Oregon health & science university, Portland, USA

^h Otolaryngology, head and neck surgery department, facial plastic surgery, Edouard-Herriot hospital, 69003 Lyon, France

ARTICLE INFO

Keywords:

Functional rhinoplasty
 Aesthetic rhinoplasty
 Cosmetic rhinoplasty
 IFOS
 Rhinoplasty consensus

ABSTRACT

During the 2017 IFOS international congress in Paris, a roundtable discussion on the topic of functional and aesthetic rhinoplasty was organised. Five experts, from the five continents and renown in the field of rhinoplasty, were brought together to discuss the issue from an international perspective and to put forward a consensus or on the contrary practical differences. Five questions were put to the experts beforehand to guarantee independent answers, which were then discussed during the roundtable. The questions were the following:

- What are the age limits for achieving a rhinoplasty?
- Do you use objective measurements before, during and after surgery? (facial landmarks, airflow, peroperative measurements)
- How do you manage the preoperative general information and computer imaging of the patient?
- What are the indications in your practice to perform a CT-scan or endoscopic examination before doing a rhinoplasty?
- What kind of graft or prosthesis do you use for an augmentation rhinoplasty? This paper offers a synthesis of the roundtable based on the experts' answers to the different questions.

© 2018 Elsevier Masson SAS. All rights reserved.

1. Introduction

This international roundtable did not have the ambition to establish normative recommendations but only to assess convergences comparing the practice of five rhinoplasty experts from the five continents. The method used was to submit a series of 5 frequent questions to each expert beforehand. Thereby, the five experts answered independently from each other in order to avoid any circumstantial consensus.

2. What are the age limits for achieving a rhinoplasty?

The age limits to achieve a rhinoplasty depend on the context and indications. Concerning the inferior age limit, the experts rec-

ommended to wait till the end of the maxillo-facial development (at the end of puberty) and of the nasal growth, that is to say until about 15–16 years of age for females and 17–18 for males. If a genuine functional problem or a major malformation due to a congenital anomaly or trauma is present, a surgical procedure could be proposed at a younger age. Some authors have studied the consequences of nasal trauma in childhood on nasal growth and found worsening during nasal maturation [1]. A meta-analysis on this topic [2] showed that rhinoplasty in young patients was possible but with an increased rate of secondary procedures. However, the patients did not undergo any post-surgery psychological evaluation, which is an important element to consider. Although no real consensus can be found in the literature on this issue, there is sometimes a real dilemma between the possible psychological effects of rhinoplasty in childhood and the absence of rhinoplasty in cases of severe nasal deformation. Surgery should therefore be considered in deformations due to major nasal trauma or congenital malformations [3]. The specific case of cleft lip management is

* Corresponding author.

E-mail address: sebastien.albert@gmail.com (S. Albert).

of course better described and a nasal procedure can be combined to that of the lip during the initial surgery as early as 3 months of age.

In some countries such as in Australia, a psychological evaluation is compulsory for any demand of aesthetic surgery including rhinoplasty for patients under the age of 18. Furthermore, this evaluation must be conducted by an independent professional, who does not depend from the surgeon's workplace. The surgeon must also make sure that the patient is able to understand and give his consent and that the parents are also fully informed and accept the surgical procedure. In the cases of rhinoseptoplasty in the younger patients, some authors recommend the following rules: the prime objective is functional while cosmetic issues come second; the surgical procedure itself must be limited and as conservative as possible; osteotomies must be precise as the tissues are more elastic; incisions in the sphenoethmoidal region must be avoided (posterior part of the septal cartilage), as well as cartilaginous resections or posterior chondrotomies in order to preserve cartilage growth; the greater risk of secondary rhinoplasty should be acknowledged and the patient informed [4].

The superior age limit is unclear and according to the experts is usually set around 65 years of age (one example of an 81-year-old patient whose general condition was excellent was discussed but for a limited procedure). The age limit depends of the patient's general health (medical history, anticoagulant therapy) and demand. Facial rejuvenation is the most frequent motivation associating demands for cervico-facial lifts and/or blepharoplasties. In rhinoplasty, lateral osteotomies should sometimes be avoided due to the bone's decreased elasticity. Local anaesthesia can sometimes be sufficient for very limited surgery of the tip of the nose.

3. Do you use objective measurements before, during and after surgery? (facial landmarks, airflow, peroperative measurements)

Nasal and facial measurements are not routinely used, each face being different and not systematically corresponding to the so-called "beauty" criteria. It is also important to have a perception of the nose in relation to the patient's own individual face as a whole. Patients are overall quite responsive to "social norms" and to trends or fashion especially in the younger age group. Measurements can, to some extent, be used postoperatively to better explain differences to the patients. It is therefore paramount to take pictures of the patients before and after surgery using standardised views and conditions. Regarding nasal function, acoustic rhinometry and rhinomanometry are rarely used in routine practice. Their results are disappointing and their benefits are debated in the literature [5]. These objective measurements can however be of interest to show pre- and post-surgery variations especially for internal valve procedures or in cases of allergy or congestive mucosa with tests based on local therapy. Questionnaires including functional scores can similarly be used before and after surgery and as well as the peak nasal inspiratory flow which is a simple, quick and comparative test. Ultrasound is likewise seldom used but can measure subcutaneous thickness or check cartilage position and thickness postoperatively.

4. How do you manage the preoperative general informations and computer imaging of the patient?

Patient information must include written information as complete as possible, detailing the modalities, the objectives, the risks and possible complications. The document must be signed by the patient. The functional aspect must also be included with a systematic clinical evaluation of nasal obstruction, which is one of the specificities of ENT surgeons. Bleeding risk must be assessed and

discussed with the patient. Pre- and postoperative photos must be shot in standardised conditions and views (frontal, lateral, 45° oblique, base and top view).

Concerning the cosmetic aspect, the demands which are sometimes explained using the patient's own photos, must be well understood. It is very important to assess the patient's psychological dimension and be able to refuse the demand if the expectations are unrealistic or if the patient seems psychologically instable. The patient must also sometimes be convinced to seek a second opinion. Regarding cosmetic rhinoplasty, some surgeons recommend that the patient be seen twice before any surgery is scheduled thus leaving enough reflection time.

Simulations or morphing can be used and can help to explain the main issues or help adapt and understand the patient's demands. It must however be emphasised that the simulations do not guarantee any results. They can also be very helpful to guide patients when their demands are unclear or unrealistic. Indeed, it is important to be realistic rather than optimistic in these simulations, "one must be better operator than the simulation program". Finally, the experts recommend that the simulation should remain a tool to facilitate the consultation and a copy should not be given to the patient.

5. What are the indications in your practice to perform a CT-scan or endoscopic examination before doing a rhinoplasty?

Endoscopic nasal examination is recommended for all cosmetic and/or functional nasal surgery, whether primary or secondary, even though some experts do not systematically perform them for solely cosmetic demands. This is indeed a key specificity of ENT surgeons. It is important to make note of endonasal morphology and check for mucus, which could reveal an underlying sinonasal pathology.

Sinus CT-scan is not systematic according to the experts. It is, however, highly recommended in a set of cases: clear nasal/septal deviation, history of sinus pathology, facial pain or facial trauma.

6. What kind of graft or prosthesis do you use for an augmentation rhinoplasty?

Autologous cartilage grafts should be preferred as synthetic grafts are rather used in very specific secondary procedures.

Septal cartilage is the most frequently used graft. It is used in approximately 95% of cases for dorsum augmentation according to some experts. It is easy to harvest, can be single or double-layered or aligned end to end. It can be used in multiple locations: in the dorsum, the tip, or for internal valve procedures as a spreader graft. Conchal cartilage is also used but mostly for the tip of the nose or for the external valve.

In cases of saddle nose correction or when important dorsum augmentation is required (demand frequently found in Asia), a greater amount of cartilage is required. In these cases, it is recommended to harvest costal cartilage. In cases of secondary rhinoplasty when septal cartilage is unavailable, conchal or even costal cartilage can be used. Regarding costal cartilage, some recommendations need to be followed so as to avoid secondary deformations: the freshly harvested cartilage should soak in saline, the central segment of the costal graft should be used, scarifications which could weaken the graft should be avoided and lastly the graft should be firmly secured to fixed facial structures (nasal root, nasal spine . . .). The cartilage (septal, conchal or costal) can be diced and placed or not within fascia (diced cartilage fascia graft) [6], and can therefore be used in augmentation rhinoplasty.

Experts use synthetic implants, some Medpor and others Gore-tex or silicone, only in particular cases when it is not possible to use autologous grafts.

Disclosure of interest

The authors declare that they have no competing interest.

References

- [1] Verwoerd CD, Verwoerd-Verhoef HL. Rhinosurgery in children: basic concepts. *Facial Plast Surg* 2007;23(4):219–30.
- [2] Gupta A, Svider PF, Rayess H, et al. Pediatric rhinoplasty: a discussion of peri-operative considerations and systematic review. *Int J Pediatr Otorhinolaryngol* 2017;92:11–6.
- [3] Bhuskute A, Sumiyoshi M, Senders C. Septorhinoplasty in the pediatric patient. *Facial Plast Surg Clin North Am* 2016;24(3):245–53.
- [4] Maniglia CP, Maniglia JV. Rhinoseptoplasty in children. *Braz J Otorhinolaryngol* 2017;83(4):416–9.
- [5] Baraniuk JN. Subjective nasal fullness objective congestion. *Proc Am Thorac Soc* 2011;8(1):62–9.
- [6] Tasman AJ, Diener PA, Litschel R. The diced cartilage glue graft for nasal augmentation. Morphometric evidence of longevity. *JAMA Facial Plast Surg* 2013;15(2):86–94.