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Introductory Chapter: Nasal Aesthetics, Defining a Correct Diagnosis and Treatment Planning

Elmer Sebastian Torres Farr

1. Nasal aesthetics

Beauty is a condition that is always admired by masses. For that reason, great interest has been given into finding a common denominator that would allow to establish and define a setting to evaluate, replicate and improve this character.

From antiquity, beauty has tried to be defined through anthropometric, planimetric and esthereometric measurements. The truth is that beauty has always been hard to measure due to intrinsic subjectivity within it.

Beauty is associated with youth, health and strength in nature, all valuable features for survival in the animal kingdom.

Facial beauty has objective parameters that are related to mathematics (angles and heights) and subjective perceptions that are automatic and innate [1]. The observer defines within seconds if what they look is attractive or not. The former causes that to define beauty we shall combine science and art.

Facial beauty is a combination of features that should be harmonic, defined, balanced, elevated, symmetric, characteristic and in volumetric proportion. Each face is unique, and as such the difference between a normal and a beautiful face differs in a few millimetres or angular degrees.

Facial traits differ in importance order, being the nose at the intermediate level behind the eyes, eyebrow, cheekbones and lips. Nevertheless, the nose being at the centre of the face connects all the elements together and allows the eye of the beholder to flow in a complete facial beauty perception or to stay trapped in isolated components categorised as beautiful [2].

A beautiful nose is defined as:

- Straight or slight concave dorsum
- Moderate nasofrontal angle at radix
- Mild width bony pyramid
- Good tip projection/rotation
- Parallel aesthetic dorsal lines
- Length proportional to facial height

2. Defining a correct diagnosis

Nasal aesthetics, although with experience is instantly evaluated by the surgeon at consultation, at first must be incorporated in a schematised protocol of photograph analysis to assist the professional to achieve a correct diagnosis that will command a related correction and satisfactory outcome [3].

The consultation should start with complete nasal history, taking into consideration aesthetic and functional disorders. Previous nasal aesthetic procedures such as dermal fillers, lasers and others should be promptly recorded as they may alter the surgical result.

The use of dermal fillers, nowadays widely spread, merits special attention as some of them may be dissolved prior to the surgery (hyaluronic acid), while others are more difficult to eliminate (hydroxyapatite, polycaprolactone). Some may compromise vascularisation and skin viability, and removal may be difficult or impossible (silicone, polymethylmethacrylate) [4].

Previous nasal surgeries must be clarified as they may provoke scarring and inflammation and reduce potential cartilage graft availability.

An initial physical nasal exam should be performed including external and internal morphology with both aesthetic and functional assessments.

Imaging should be the subsequent step in the correct case recording, through conventional or 3D imaging devices (3D LifeViz, QuantifiCare, Paris, France). The former will allow detailed nasal mathematical analysis that will be balanced with clinical impression and patients' requests to obtain a final treatment plan.

The measurements of distances and angles are suitable to be done with basic printed photographs and pencils or with more modern software and calibrated distances. The latter allow impressive virtual surgery simulations that may shorten the distance between the patient wishes and surgeons' understanding (**Figure 1**).

Nasal Anatomic Examination



Figure 1.
Virtual rhinoplasty 3D morphing treatment plan.

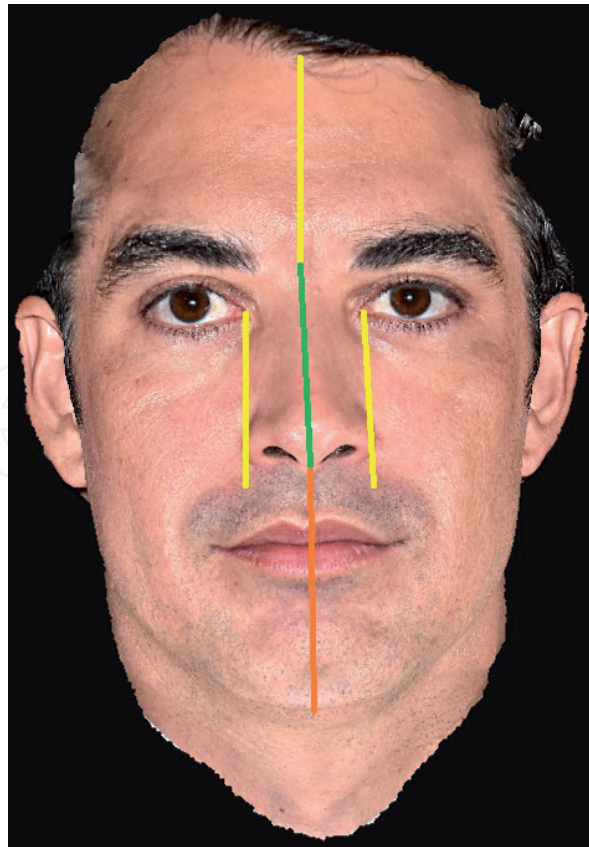


Figure 2.
Facial thirds and (upper, middle, lower) nose width. The latter should be within the vertical lines that descend from the inner canthus.

- **Facial Proportions (mm) (Figure 2):**
 - **Upper:**
 - **Middle:**
 - **Lower:** (Maxilla, Occlusion, Chin)
 - Vertical:** Normal/ Excess / Deficit
 - Anterior/Posterior:** Normal/ Retrusion/Protrusion
- **Skin:** Normal/Thick/Thin Phototype: Scars:
- **Dorsum:**
 - **Ideal Nasal Length** (Radix to Tip -RT) = $0,67 \times \text{MFH}$ (Midfacial height) → GB (Glabella)- ABP (Alar Base Plane)
 - **Radix:** Projection (from Corneal Plane): $\text{RT} \times 0,28$ (9-14mm Average 11mm)
Normal /Low/ High
 - **Nasofrontal Angle:** (115-130 °, Average 120 °) (Figure 3)
 - **Height:** Hump +/- Bony/Cartilage
 - **Width:** Dorsal Aesthetic Lines Symmetric / Asymmetric / Deviation L/R
 - **Other:**
- **Tip:**
 - Projection (from Alar Crease- AC) = $0,67 \times \text{RT}$
 - Domes Shape: Normal/ Bulbous/ Boxy/ Pinch
 - Columellar-Lobular Angle (30-45 °) (Figure 3)
 - Columellar-Lip Angle (100-115 ° ♀ / 90-105 ° ♂) (Figure 3)
 - Other:

- **Base (Figure 4):**
 - Columellar Lobule Ratio: (2/1)
 - Nostrils: Shape /Symmetry Normal/ Hanging/ Retracted
 - Columella: Normal/ Hanging/ Retracted
 - Alar Width: (Inner Canthus-IC to IC) Normal/ Augmented/ Reduced

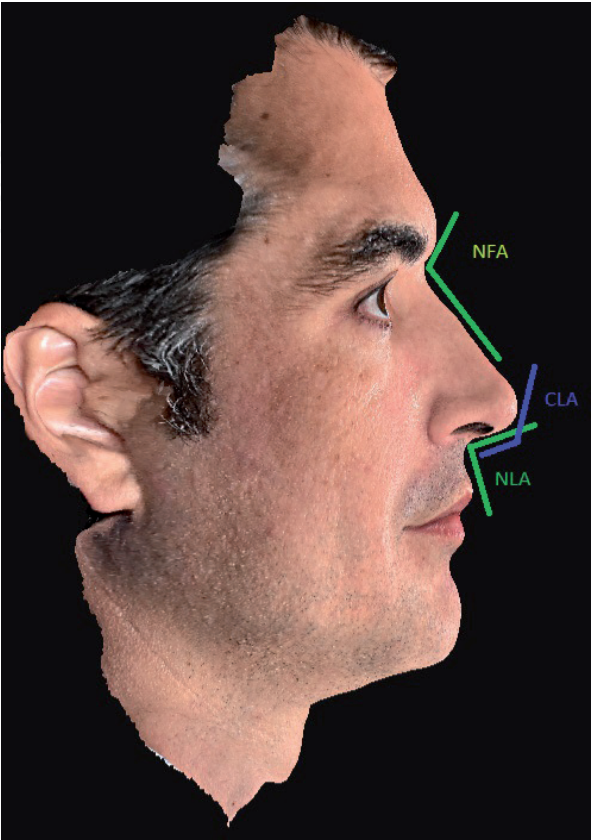


Figure 3.
Nasal angles. NFA, nasofrontal angle. NLA, nasolabial angle, CLA, columellar lobular angle.

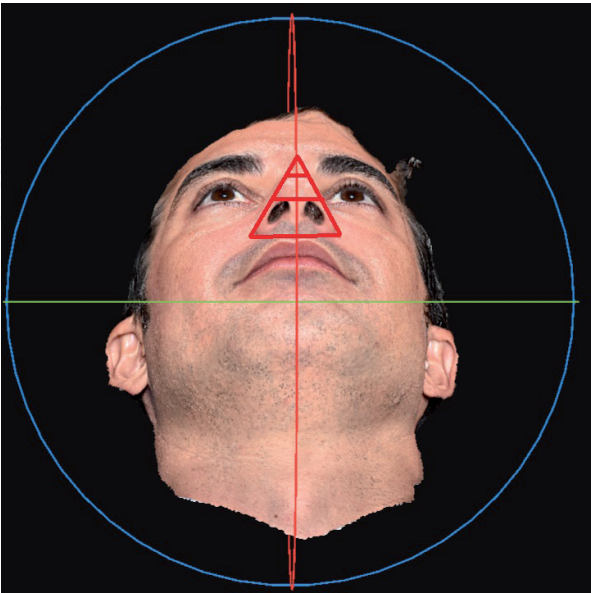


Figure 4.
Nasal base. The equilateral triangle that forms should be centred, symmetrical and well projected. The distance between the base of the columella and anterior portion of the nostrils should be 2/3 of the total distance to the nose tip.

- **Functionality**

- External valves: Competent / Incompetent L/R
- Internal valves: Permeable / Impermeable L/R
- Rhinomanometry:
- CT Scan:

- **Mathematical Diagnosis:**

- **Clinical Diagnosis:**

3. Treatment planning

Taking into consideration patient requests or goals, physician first impression and priorities and mathematical analysis, a surgical plan is elaborated. The idea is to have everything set before starting the surgical corrections. Step by step actions are intended to avoid or reduce last minute surprises or improvisation [5].

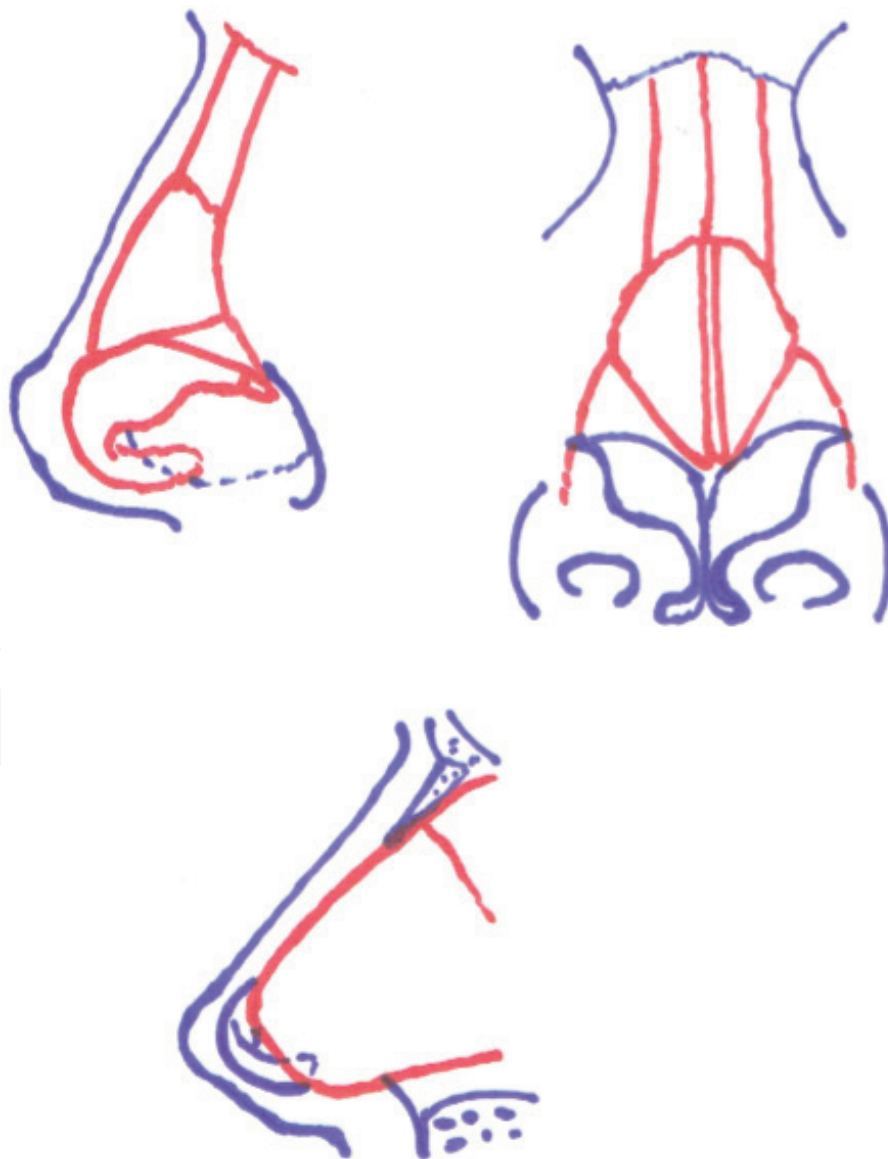


Figure 5.

Surgical plan. All surgical steps should be recorded in this record for better surgical planning and future control and outcome analysis.

Where and what incision should be placed, what corrections are a must, and in what order are they going to be performed? What materials would we need to build the internal framework (grafts)? Which are going to be harvesting sites? The idea is to answer every question in the surgeon's head up front.

To think, to feel and then to perform, that is the safest way to approach rhinoplasty and reduce the revision rate.

- **Surgical Plan (Figure 5)**

- Patient main goals (3):
- Rhinoplasty Primary / Secondary
- Incisions and approach: Transcollumellar/ Other Closed / Open
- Nasal Tip: Rotate / Under rotate Project / Deproject Reduce / Augment (width)
- Dorsum: Augment / Reduce / Smooth
- Dorsal Aesthetic Lines: Define / Deviate L/R
- Osteotomies: Lateral / Transverse / Medial / Continuous Deviate L/R
- Alar Base/ Nostril/ Anterior Nasal Spine Reduction / Augmentation
- Functional: External Valves Correction +/- Internal Valve Correction +/-
- Grafts Needed: Name and Draw
- Graft Harvest Area: Septum / Conchae / Rib
- Other:
- Difficulty (1-10)
- Estimated time:

Author details

Elmer Sebastian Torres Farr

Maxillofacial, Plastic and Aesthetic Surgery, Private Practice, Santiago, Chile

*Address all correspondence to: storres100@gmail.com

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