European Annals of Otorhinolaryngology, Head and Neck diseases xxx (2016) xxx–xxx

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Original article

Nasal or canthal-alar parentheses: A study of the facial base of the nose

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ARTICLE INFO

Keywords:
Nasal parentheses
Nasal pyramid
Piriform aperture
Iris-dependent calibration
Facial landmarks
Rhinoplasty

ABSTRACT

Objectives: The facial implantation of the osseous nasal pyramid corresponds to the piriform aperture, the shape of which is projected on the facial skin in the form of bracket-shaped parentheses. The objective of this study was to compare inter-parenthesis width with subjective visibility on frontal photographs.
Material and methods: The "patient" group came from a retrospective cohort of photographs taken ahead of septorhinoplasty. The "model" group photographs were collected from the Web or magazines. Nasal parentheses were first judged subjectively as frank or faint. Then, independently, parenthesis width was measured by computer in pixels and converted into millimeters by iris-dependent calibration. Inter-parenthesis width was compared statistically with the frank/faint assessment, according to gender and group.
Results: A total of 113 photographs were included: 46 patients (19 women, 27 men) and 67 models (43 women, 24 men). Sixty-seven of the 113 nasal parentheses appeared frank (59.3%), more frequently in men than women (70.6% vs 50.0%, $P=0.02$) and in patients than models (69.6% vs 52.2%, $P=0.06$). Inter-parenthesis width was significantly greater in frank than faint presentations (34.9 ± 3.5 mm vs 30.7 ± 3.4 mm, $P<0.0001$), in men than women (35.2 ± 4.1 mm vs 31.5 ± 3.1 mm, $P<0.0001$), and in patients than models (34.9 ± 4.0 mm vs 32.0 ± 3.6 mm, $P<0.0001$).
Conclusion: Frank nasal parentheses correspond to wider facial implantation of the nose.
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1. Introduction

Classically, the nose can be described as a triangular pyramid with an anatomic base including the nostril orifices and the summit reaching the forehead between the eyes. It comprises two lateral sides (the lateral sides of the nose) and a theoretic posterior side covering the nasal cavities.

The edges of the posterior side can be described as the limits of facial implantation base of the nose. Laterally, this base is contoured by two conjoined arcs (alar-labial and canthal-alar lines) forming an epsilon shape (ε). The alar-labial line is the groove between the nasal ala and the cheek and lip. The canthal-alar line is the cutaneous groove between the lateral side of the nasal pyramid and the cheek and between the medial canthus of the eye above and the nasal ala below. This canthal-alar line corresponds to the "basal groove" between the body and frontal apophysis of the maxillary bone (Fig. 1). Frontally, the two canthal-alar lines form bracket-shaped parentheses corresponding to the implantation of the nasal pyramid on the facial bone structure; we refer to these as "nasal parentheses". In other words, the nasal pyramid rises frontally from the face from the basal groove of the nasal skeleton, the cutaneous projection of which displays the canthal-alar or nasal parentheses.

The nasal parentheses are clearly visible in some subjects and appear subjectively frank, obvious on inspection. In other subjects, they are faint and scarcely visible. The present study compared measured inter-parenthesis width and subjectively assessed "frank" or "faint" aspect.

2. Materials and methods

The study was based on frontal photographs of two groups of male and female caucasian adults. The first group ("patients") was a retrospective cohort of patients consulting for primary septorhinoplasty. The procedure was not finally performed within our department. Photographs were taken on the day of consultation, by

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http://dx.doi.org/10.1016/j.anorl.2016.05.005
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Please cite this article in press as: Bonfort G, et al. Nasal or canthal-alar parentheses: A study of the facial base of the nose. European Annals of Otorhinolaryngology, Head and Neck diseases (2016), http://dx.doi.org/10.1016/j.anorl.2016.05.005

Fig. 1. Anatomy of the nasal parentheses. Frontal facial CT scan with 3D bone reconstruction of the nasal pyramid. The basal groove (dotted line) separates the body of the maxillary bone (*) from its frontal apophysis (**) on the facial skeleton and is a border of nasal bone pyramid implantation.

a single investigator (RJ) in the department's photo-studio, using a digital Nikon DX® 18–105 mm camera coupled to a synchronous umbrella lamp. The protocol adhered to the standard criteria for pre-septorhinoplasty photography [1,2] and comprised 8 views, only the frontal ("portrait") view being used in the present study. Photographs showing major facial dysmorphia extending beyond the nasal pyramid, such as facial cleft or syndromic dysmorphia, were excluded. All patients gave written consent for the use of their photographs for research purposes under anonymous data processing.

The second ("models") group was a sample of contemporary models taken from the media: open-access Web or general-public magazine images; the persons concerned had high-profile media exposure: models, actors, celebrities, etc. Photographs were selected on the following criteria: strict frontal portrait, without spectacles, eyes open looking toward the camera, neutral expression, and minimal make-up. Photographs taken from paper supports were digitized; resolution thus varied according to source quality, and low-resolution images were excluded, as were those in which light and shade did not allow reliable identification of the landmarks required for the study measurements. Slight smiles were accepted if they did not crease the skin over the basal groove or affect study landmarks.

Photographs were recentered on the nasal pyramid, and reframed to leave only a horizontal band including eyebrows, eyes and mouth, then analyzed by a single investigator (GB) following a predetermined sequence (Fig. 2).

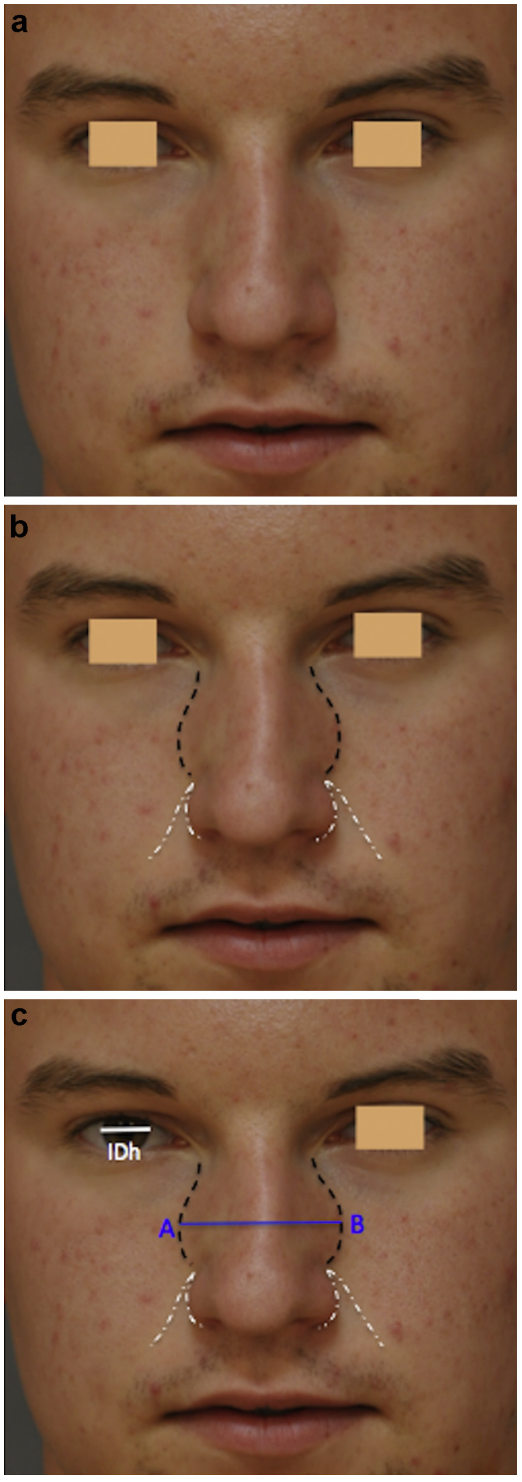

Fig. 2. Photograph analysis sequence. Horizontal image recentered on eyebrows and mouth. a: subjective assessment of parenthesis frankness/faintness; b: drawing of canthal-alar lines or nasal parentheses (black dots), alar-labial lines and naso-genial groove (white dots); c: objective measurement of A–B inter-parenthesis distance and right iris horizontal diameter [IDh]. Photograph shows male patient with frank parentheses. IDh, 29 pixels (11.5 mm); A–B, 96 pixels = 38.0 mm.

The investigator first assessed whether nasal parentheses were "frank" or "faint and scarcely visible" (Fig. 2a): i.e., whether the parentheses were apparent at first glance or else melded into the natural harmony of the face so as to be barely perceptible.

The second step consisted in objective measurement of inter-parenthesis distance.

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