

Description of columellar defects and its tridimensional remedial techniques

D.J. BOTTINI, V. GALANTE, P. GENTILE, F. MAGGIULLI, L. PALLA,
G.M. D'ASERO, V. CERVELLI

Department of Plastic and Reconstructive Surgery, University of Study Tor Vergata, Rome (Italy)

Abstract. – Columella is an important facial component and provides support and projection to the tip of the nose. Columella defects may cause significant aesthetic and functional deformities.

We present our case-load of 2007: 61 patients operated in that year had been carried out and concluded. Surgical techniques for the correction of columellar defects were classified as "open tip" and "closed tip". Then, depending on the defect, it was possible to intervene on different structures.

Of the 61 patients who underwent corrective surgery, only 6 (<10%) maintained or presented again, after a temporary improvement, with the columellar defect at the end of the follow-up. For all the other patients, the final outcome was more than satisfactory.

A very good aesthetic result was obtained with no functional complications. In fact, nose functionality is supported by medial crura, laid one upon the other, providing considerable resistance to the columella.

Key Words:

Columella show, Long columella, Medial crura.

Introduction

The columella is a fundamental part of the external nasal components. It consists of the connecting structure between the nasal tip and the superior lip in the central part of the nose.

It covers the inferior portion of the cartilaginous nasal septum. The horseshoe-shaped lower lateral cartilages support and characterize the nasal tip and the columella. Septal cartilage and medial crus form the columellar cartilaginous structure. From an aesthetic point of view, columella is an important facial component. It pro-

vides support and projection to the tip of the nose. Columella defects may cause significant aesthetic and functional deformities^{1,2}.

Columellar Defects

Anatomic criteria to define a regular nose (i.e. well integrated with the rest of the face) depend on the observation angle of the nose.

From a lateral view, the concave curvature of the alar border should be S-shaped towards the facial insertion, almost parallel to columellar caudal border. Ideally 2-4 mm of the columellar caudal portion, composed by medial crus, should be visible. From a lateral view, in attractive noses the nostrils have an oval shape. When the columella is exposed too much, the nasal look is not ideal because its lower portion appears out of proportion since medial and middle crura are abnormally curved, describing a convexity. Sometimes, a part of the membranous columella in the form of a pink-reddish portion is too visible from a lateral and oblique point of view. This anatomic variant is known as "columella show". From a frontal view a "sea-gull flight" is the ideal configuration; the seagull body is represented by the lower columellar portion and the sea-gull wings are represented by the proximal part of alar borders.

Ideally, imaginary horizontal lines passing through the definition points of the tip, the higher points of the alar border and the junction between columella and alarfacial line, divide the region in equal segments. Moreover, nasal look and columellar projection are influenced by the vertical level of the alar insertion in the face. When the insertion is too high, columellar exposure is aesthetically unacceptable. When lobular infrapunta is at a significant lower level compared to the higher lateral alar insertion ("lobulo-infrapunta show"), the nose can look like a "smirk", producing a fake and unpleasant facial expression.

Lower alar insertion is another common defect generally characterized by a lateral alar portion excessively heavy and thick. This anatomic abnormality, known as "large ala" is more likely to occur with flat and excessively large ala. This way the base of the nose results too large.

This defect is colloquially known as "hidden columella".

Materials and Methods

Hereunder we report the surgical techniques that let us achieve the best results for the correction of columellar defects described above. As reference, we present the case histories of 2007, since the follow-ups, between 6 and 12 months, of all the patients operated in that year, had been carried out and concluded. Of the 61 patients who underwent corrective surgery, only 6 (<10%) maintained or presented again, after a temporary improvement, with the columellar defect at the end of the follow-up. For all the other patients, the final outcome was more than satisfactory. Like all rhinoplasties, surgical techniques for the correction of columellar defects, can be first of all classified as "open tip" and "closed tip". Then, depending on the defect, it is possible to intervene on different structures. In case of columellar deviation, we correct the defect with the disinsertion of the septal cartilage from the anteroposterior nasal spine; with which, the fracture and the remodelling of the anterior spine can be associated afterwards. Alternatively, after the disinsertion of the septal cartilage, the latter is weakened by making incisions close to each other. Everything is then fixed in the correct position with transfixed sutures. In case of hidden columella, the procedure is the same, with a remodelling of the septal cartilage, which can be completed with a lifting of the nasal tip, obtained by remodelling the alar cartilages with delivery approach. Finally, in case of columellar show, we can precede exploiting two techniques in particular. The first technique includes the resection and the remodelling of the columellar septum, which is repositioned at a higher level, in order to fill the excessive space that, from a lateral view, separates the columella from the lower alar rim (Figures 1 and 2). The second technique is characterised by the resection and the longitudinal sliding of the medial crus that overlaps, giving an adequate length to the columella (Figure 3). Once the stumps of

the medial crus are sutured in this position, the shape of the columella appears more stable and distortion resistant (Figures 4 and 5).

Discussion

Alar and columellar defects can be corrected by lowering or lifting alar rim or by reducing or increasing the length of the columella, or the caudal septum or the medial crura. An appropriate columellar remodelling can be performed after the determination of the anatomic defect. In order to correct columellar defects, autologous grafts can be used. Such grafts are placed under and/or between medial and intermediate crura to provide support and therefore, to provide projection to the nasal tip^{3,4,9}. Cartilage fragments, known as "bulk grafts", are placed in the inferior columellar portion through a lower lateral incision. These grafts provide support to the nasal

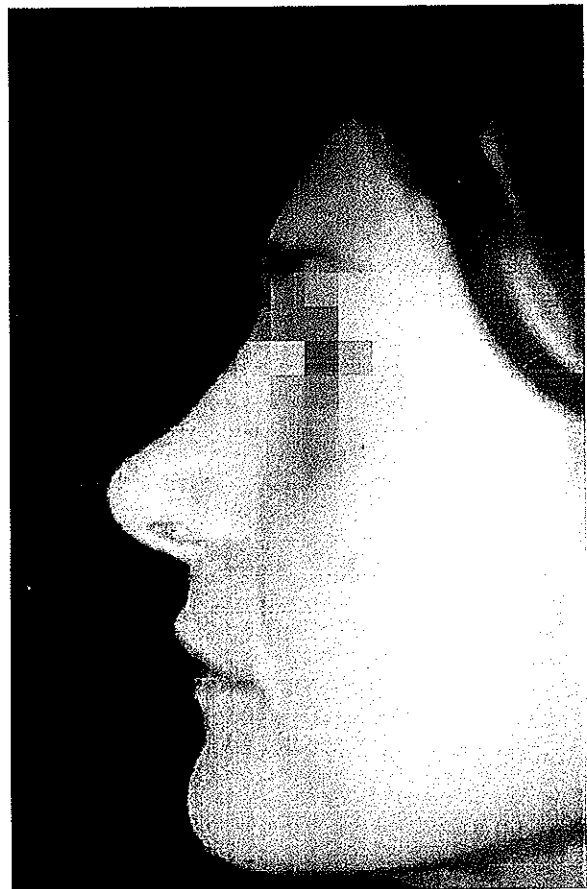


Figure 1. Pre-surgery picture of a patient with columellar show.



Figure 2. Post-surgery picture of the same patient.



Figure 4. Pre-surgery picture of a patient with a long columella, in which is visible its excessive length.

tip, especially when associated with remodelling and filling of the columella-labial angle 3.

Cartilage grafts should have a gentle curvature in order to simulate columellar anatomy and create a pleasant "double interruption" with a correct nasal tip projection^{1,2,5,9}. Sometimes, the medial crura footplate expands laterally and increas-

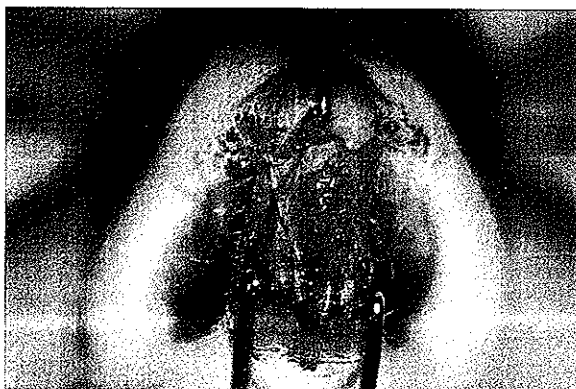


Figure 3. Intra-surgery picture of the same patient that shows the mutual overlap of the medial crura in longitudinal sense, resulting in a columella shorten.

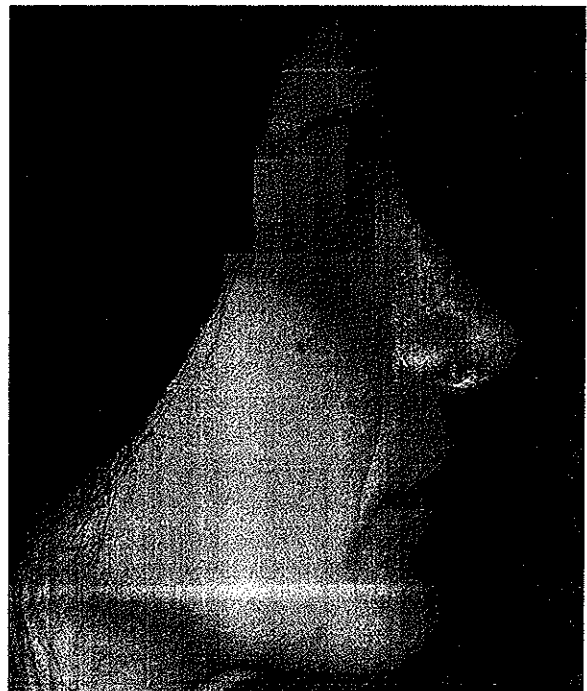


Figure 5. Post-surgery picture of the same patient in which the columella appears shorter.

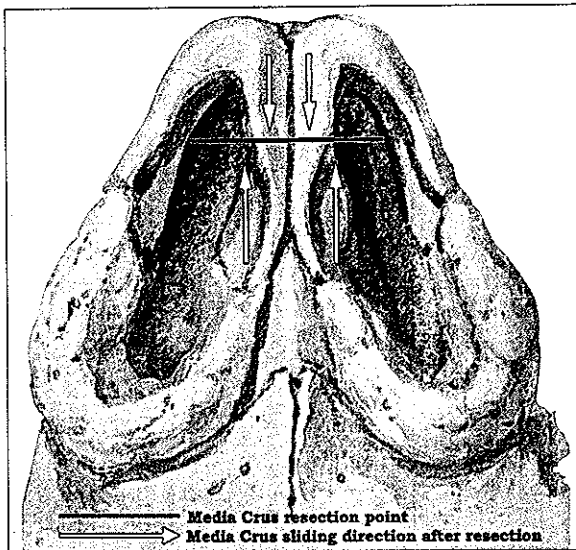


Figure 6. After the resection, the distal portions of the media crura came into their selves proximal portions and they are fixed together by 6/0 nylon stitches that give the columella stability again.

es its dimension. In this case, in order to provide support to the nasal tip, intercrural soft tissues are removed and medial crura sutured, so that the columellar width is reduced and its length increased (columellar narrowing)^{3,4}. Sometimes a wide columella contributes to nasal airway obstruction. In some cases, a large space can separate intermediate and medial crura, resulting in bifid columella. It is often characterized by a vertical furrow on the medial line. Surgical technique consists of incision on both sides of the columella to expose the medial portion of the lower lateral cartilages and of removing all soft tissues between medial crura, which are sutured.

Taking the patient's wishes into account, a thin cartilage strip can be placed in the columellar caudal portion, over the crura, in order to hide intercrural furrows. Finally, protruding medial crura footplates could reduce nostrils dimensions, obstructing nasal breathing^{3,4}. Exposure and releasing of these structures are important to determine the real anatomy. When medial crura footplates are too large, they can be reduced by a "razor excision" or by a wide resection, before medial suture fixation³. In some patients the quantity of soft tissues between medial crura footplates is excessive, resulting in an important widening of columella and obstructing nasal airways. Soft tissue resection and crura fixation with a medial suture improve breathing.

Conclusions

Many techniques can be used to remodel the columella and to correct its defects and we have produced a very good aesthetic results with no functional complications. In fact, nose functionality is supported by medial crura, laid one upon the other, providing considerable resistance to the columella^{6,7}. Remarkable advantages of these techniques are represented by the possibility of repairing columellar defects without using autologous grafts or alloplastic substances. This way, reject, abnormalities, infections and other complications related to these materials are considerably reduced^{6,9,10}.

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