

Anatomical Study of the Medial Crura and its Effect on Nasal Tip Projection

Kamlesh B. Patel, MD; Derick Mendonca, MD; Gary Skolnick, BA; Albert S. Woo, MD.

Abstract

Background: Our observation is that changes in nasal tip projection depend on the shape and strength of the medial crus. Common variations in morphology of the medial crus have been described.¹⁻³ Asymmetric parallel is the most common variant followed by flared symmetric and straight symmetric (Figure 1). The aim of our study is to investigate how differences in the shape of the medial crura affect tip projection after surgical intervention.

Methods: Twelve cadaver heads were dissected with an open rhinoplasty approach. Two observers obtained four anthropometric measurements: columellar length (sn-c), columellar width (c-c), nasal tip projection (sn-prn) and nasal bridge length (n-prn). The shape of the medial crus was noted. Anthropometric measurements were made prior to any intervention and after each of the following procedures: (1) elevation of skin envelope and closure of the columellar incision, (2) interdomal and medial crural sutures, (3) placement and fixation of a floating columellar strut.

Results: Three anatomical variations of the medial crura were noted: weak, asymmetric parallel (type 1, n=5), flared symmetric (type 2, n=3) and strong, straight symmetric (type 3, n=4). Greater reduction in tip projection after elevation of skin envelope and closure was discovered between type 1 and type 3 (-2.1mm and +0.6mm, $p=0.003$). Type 2 medial crus was found to have a mean reduction of 1.33mm. Suture techniques resulted in return to baseline tip projection for types 1 and 2 (type1 +0.1mm, type 2 -0.1mm, type 3 +1.1mm). Columellar strut placement increased tip projection in all types (type1 +1.7mm, type 2 +1.0mm, type 3 +1.9mm).

Conclusions: Changes in columellar length and tip protrusion are dependent on the shape and strength of the medial crura. Asymmetric parallel (type 1) or flared symmetric (type 2) will require interdomal and medial crural sutures to maintain baseline tip projection after an open rhinoplasty.

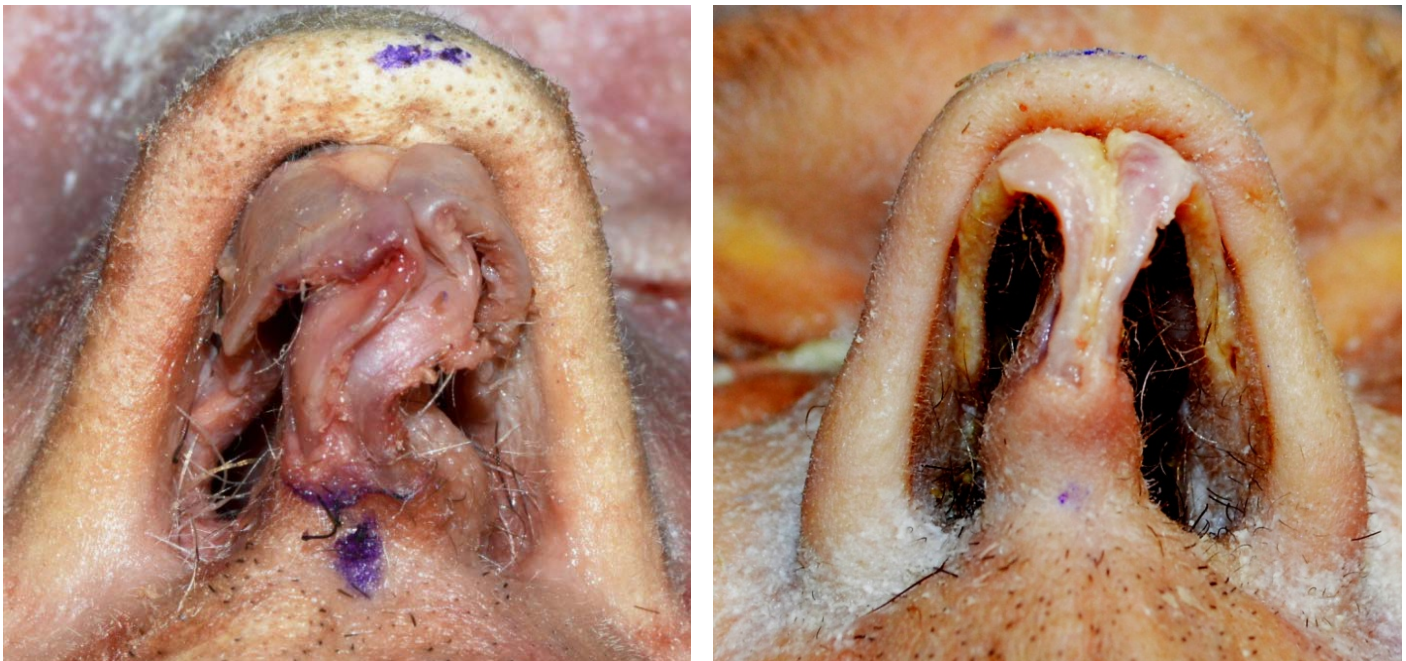


Figure 1. Variations in shape of the medial crus: (Left) Asymmetric parallel (type 1). (Right) Straight symmetric (type 3).

References:

1. Natvig P, Sether LA, Gingrass RP, Gardner WD. Anatomical details of the osseous-cartilaginous framework of the nose. *Plast Reconstr Surg.* 1971;48:528-532.

2. Rohrich RJ, Griffin JR. Correction of intrinsic nasal tip asymmetries in primary rhinoplasty. *Plast Reconstr Surg.* 2003;112:1699-712; discussion 713-5.

3. ONeal RM, Beil RJ. Surgical anatomy of the nose. *Clin Plast Surg.* 2010;37:191-211.

Disclosure/Financial Support:

None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.