

Contemporary Techniques for Effective Nasal Lengthening



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KEYWORDS

- Rhinoplasty • Revision rhinoplasty • Secondary rhinoplasty • Short nose • Nasal lengthening
- Tongue-and-groove technique • Septal extension graft • Columellar strut

KEY POINTS

- The correct lengthening procedure is one that elongates deficient/deformed structures and respects overall nasal and facial aesthetic proportions.
- More significant length deficiency requires elongation of the dorsal frame with septal extension grafts, composite grafts, or the tongue-and-groove technique.
- A tongue-and-groove construct consists of paired septal extension spreader grafts that interdigitate with a columellar strut.
- Lateral crural repositioning, alar rim grafting, lateral crural strut grafting, composite grafting, or V-Y mucosal advancements may be necessary if lateral tissues do not advance with central components.
- It may be prudent to sacrifice some central lengthening if there are soft tissue limitations preventing concurrent advancement of lateral tissues.

 Videos of the tongue-and-groove technique accompany this article at <http://www.facialplastic.theclinics.com/>

INTRODUCTION OR OVERVIEW

The short nose represents one of the most challenging problems in rhinoplasty. The shorter the nose, the greater the challenge. A mastery of nasofacial analysis and rhinoplasty dynamics as well as a thorough understanding of the cause of the shortening are prerequisites to designing effective nasal lengthening procedures.

Nasal length is typically measured from radix to pronasale, and, in an otherwise idealized face, nasal length should equal two-thirds the height of the midface (supraorbitale to subnasale) or the

distance from stomion to menton. As an alternative, the Goode ratio defines the ideal nasal length as a ratio with respect to nasal projection (5:3).¹⁻⁶ Although nasal length can be strictly defined in this manner, the short nose deformity often presents as a constellation of features. Hallmark features of the short nose include decreased nasal bridge length, increased nostril show, retracted alae, cephalic tip over-rotation, a low or deep radix, and a long upper lip.^{7,8} Given the variety of characteristics that comprise this deformity, certain investigators have advocated algorithmic classification systems to help guide operative approaches.⁹

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The short nose can be further understood in terms of cause. Deformities are classified as either acquired or congenital, with most cases being acquired. In the past, the most common cause was iatrogenic, characterized by cephalic over-rotation. Additional causes of acquired deformities include trauma, cocaine insufflation, autoimmune disorders, local or systemic infections, or a history of oncologic nasal surgery.^{10,11} In acquired cases, scarred or contracted tissues, fractured skeletal structures, or loss of graft sites can be encountered. Among congenital causes, short noses can arise from uniform hypoplasia of nasal anatomic structures, such as the nasal spine.

As expected for a deformity with diverse features and causes, many different lengthening techniques have been described, including craniofacial osteotomies, locoregional flaps, cartilage grafts, and incisional/dissection techniques. Regardless of the choice of technique or approach, effective nasal lengthening procedures are typically accomplished using well-accepted principles. Principles of nasal lengthening include (1) precise assessment of length deficiency; (2) accurate identification of deficient tissues; (3) adequate release of the soft tissue envelope; and (4) pertinent modification of deficient skin, mucosa, and/or skeletal deformities to restore length.

In the experience of the senior author (BG), the tongue-and-groove technique is a versatile means of achieving consistent, precise, and stable nasal lengthening in most patients with moderate to severe shortening. This technique uses a custom construct consisting of paired septal extension spreader grafts that interdigitate with a columellar strut. Ancillary techniques, such as alar or lateral crural modifications, soft tissue undermining, mucosal advancement flaps, or interpositional composite grafting may be indicated in specific circumstances. In cases of mild anterior shortening, tip grafting in the form of shield grafts may be preferred.

TREATMENT GOALS AND PLANNED OUTCOMES

The ultimate goal is to appropriately lengthen deficient tissues, restoring facial harmony and preserves nasal function. In order to accomplish this goal, the surgeon must understand the cause of nasal shortening, identify specific anatomic structures that are deficient, and execute a sound operative plan in a safe and practical manner. Many of the lengthening techniques, especially in cases of severe shortening, are associated with either unstable alignment or significant rigidity. The ideal lengthening technique is one that offers versatility

in elongation and optimizes the suppleness of the nasal base and stability of the nasal construct.

PREOPERATIVE PLANNING AND PREPARATION

Standard aspects of the preoperative rhinoplasty evaluation apply in cases of short noses. Inquiry about previous nasal surgery, trauma, or substance abuse is particularly important. If prior radiographic imaging was obtained, these studies should be reviewed. If the patient had previous surgery, assessment of donor sites is essential. An understanding of patient expectations is also important, because it is crucial for the surgeon to consider the patient's exact wishes. A review of factors contributing to excessive bleeding can also be performed, including a history of procedural bleeding, known or suspected coagulopathy, and a review of pharmaceutical agents commonly associated with increased bleeding.¹² A comprehensive questionnaire can be helpful in the assessment of nasal dysfunction, including an assessment of breathing dynamics, rhinitis, or sinusitis. Questions related to a history of headache or migraines can guide specific rewarding ancillary procedural interventions. For instance, rhinogenic migraine headaches start from behind the eyes, with headaches arising at night or with atmospheric pressure changes. In patients with severe headache symptoms that do not respond to conventional medical therapies, septorhinoplasty or endoscopic nasal surgery may be indicated to address disorders such as septal spurs or contact points, septum bullosa, and concha bullosa.¹³⁻¹⁵

After a thorough history is obtained, standardized nasofacial analysis is performed to identify nasal flaws and sources of facial disharmony. Observation of patient skin thickness allows an understanding of the way that osseocartilaginous modifications manifest after skin redraping. The ideal radix is 4 mm deep in men and 6 mm deep in women. Women should have a well-defined supratip break. The nasolabial angle for men is 94° to 97° and 97° to 100° for women.^{16,17} The columella protrudes 3 to 4 mm caudal to the alar rim in optimally positioned alae. The septum is observed internally for deviation. A drafting film is placed over profile and anteroposterior (AP) views of life-sized photographs and marked systematically to define flaws in the nasofrontal groove, dorsum, tip, alar bases, and chin position, using the cephalometric analysis described by the senior author (Guyuron¹⁸). A prefabricated template is also used to create an ideal nasal outline in a segmental fashion.

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