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Rhinoplasty for Nasal Deformity due to Birth**Trauma: A Case Report**

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Abstract

This case report examines the application of rhinoplasty for correcting nasal deformities arising from birth trauma. Birth trauma can lead to significant functional and aesthetic complications in the nasal structure due to mechanical forces during delivery, impacting the infant's respiratory efficacy and nasal appearance. The subject of the case report is a 21-year-old female who presented with dissatisfaction regarding her nasal appearance, characterized by deviated structure, poor projection, and breathing difficulties—issues traced back to nasal deformities caused at birth. This report details the surgical techniques utilized, focusing on the use of septal extension grafts to correct the nasal axis and improve both the aesthetic and functional outcomes of the nasal structure. The successful use of rhinoplasty enhanced the patient's nasal functionality and overall facial symmetry, demonstrating the procedure's efficacy in addressing birth-related nasal deformities.

Introduction

Birth trauma refers to any condition adversely affecting the fetus during birth due to hypoxia or mechanical reasons(1). This trauma can cause stridor, respiratory distress, feeding difficulties, or cosmetic deformities in newborns(2). Impacts to the nose during birth are significant due to the vital importance of nasal functions for breathing and feeding in newborns, leading to serious complications(2). Nasal trauma also causes significant cosmetic problems, such as loss of rotation and projection(2). In noses with severe rotation and projection loss, septal extension grafts become prominent to restore projection and rotation(3). This study presents a case of rhinoplasty with a septal extension graft applied to a patient with no known nasal trauma other than birth.

Case Report

A 21-year-old female patient consulted the Plastic Reconstructive and Aesthetic Surgery clinic due to dissatisfaction with the appearance of her nose. Her medical history revealed no known additional illnesses or medication use. The patient reported having intermittent difficulty breathing through her nose for a long time. Physical examination showed that her nose had thick skin, was deviated to the left, and had very insufficient rotation and low projection. A short columella was noted. The lower lateral cartilages were found to be broad and wide. Intranasal examination with a speculum revealed a septal deviation and minimal inferior turbinate hypertrophy, with no other pathologies noted. Upon inquiry about her history of nasal trauma, it was learned that her nose had been like this since childhood and that her mother had difficulties during childbirth. Preoperative paranasal tomography requested for the patient confirmed the septal deviation and inferior turbinate hypertrophy, and a rhinoplasty operation was planned. The patient's preoperative appearance is shown in Figures 1 and 2.



Figure 1 and 2: Preoperative appearance of the patient from the front and lateral profiles.



Figure 3 Early postoperative appearance of the patient.



Figure 4 and 5: Postoperative 6-month appearance of the patient from the front and lateral profiles.

Open rhinoplasty technique was employed using transclumellar and infracartilaginous incisions to elevate the nasal flap through SubSMAS and subperiosteal planes. Cartilage excision of appropriate length was performed from the caudal septum to decrease nasal length and increase rotation, and the septum was fixed to the anterior nasal spine to correct axis deviation. A graft was obtained while preserving a 1 cm safe L strut from the residual septum. The dorsal hump was excised, and cephalic resection was performed on the lower lateral cartilages. New dome points were identified and transdomal sutures were placed. The aim was to provide the patient with projection and rotation using a septal extension graft. A type 3 septal extension graft was prepared from the cartilage obtained from the septum, adapted to be parallel to the caudal septum. The new dome points and the septal extension graft were stitched together with interdomal sutures. The inferior turbinates were lateralized. Following the standard rhinoplasty steps, the operation was concluded with the placement of silicone packing and a thermoplastic splint. The patient's early postoperative appearance is shown in Figure 3.

The patient was satisfied with both respiratory and aesthetic outcomes during follow-ups at 1 week, 1 month, 3 months, and 6 months postoperatively. Photographs taken during her visits showed no loss of projection or rotation in the long term postoperatively. The patient's appearance at 6 months postoperative is shown in Figures 4 and 5.

Discussion

The incidence of head and neck traumas during birth is around 1%(2). These traumas include cephalohematoma, skull fractures, skin lacerations, clavicular fractures, facial, phrenic, laryngeal nerve injuries, brachial plexus damage, vocal cord paralysis, and nasal traumas(2). High birth weight, vaginal delivery, primiparity, the use of forceps and vacuum during delivery, and male fetus are predisposing factors that increase the risk of birth trauma(2).

In nasal traumas caused by birth, asymmetry and airway obstruction in the nose usually occur due to the dislocation of the cartilaginous septum from the maxilla. Nasal bone fractures, often resulting from lateral impacts, are the most common type of facial fracture, while septal deviations due to birth trauma were first described by Metzenbaum in 1929(4, 5). Septal deformities are classified as anterior deformities involving only the cartilaginous septum and combined nasal deformities involving the nasal bones. The extent of damage varies depending on the intensity of pressure the fetus is exposed to during pregnancy or birth.

The nose is a triangular pyramid consisting of skin, muscle, mucosa, nerve, and vascular structures supported by external nasal cartilage and bone. The nose has different characteristics during childhood and adulthood

(3, 4, 6). In infancy, the nose has less anterior projection, is predominantly cartilaginous, and contains multiple growth centers. The cartilaginous septum acts as the main growth center for the midface. The increased cartilage area in the nose during infancy enhances its compressibility, thereby better absorbing impacts to the face (4). In cases of nasal obstruction during infancy or childhood, the mouth remains open for extended periods, buccal muscles apply extra lateral force to the alveolar processes, pushing the anterior part of the alveolar arch forward, resulting in an elliptical shape of the alveolar arch and elevation and pathologies of the hard palate and midface (5). Although the patient in the case report does not have significant airway obstruction, the history indicates intermittent breathing difficulties over a long period.

Septal extension grafts (SEG), defined as grafts placed between the upper lateral cartilages and the caudal or dorsal septum either unilaterally or bilaterally, were first described by Bryd in 1997 (7). SEGs are very beneficial in controlling nasal tip rotation, projection, shape, and overall nasal length (8). They are particularly advantageous in thick-skinned noses where the medial crura of the lower lateral cartilages have been weakened by impact or are congenitally short and weak, providing superior projection (3). The literature suggests that SEGs are more successful in preventing long-term rotation and projection losses compared to the columellar strut technique (3). Three types of SEGs have been described in the literature, all of which require a robust septum for support. In the case described, an open technique was chosen to improve intraoperative visibility, and a unilateral type 3 SEG was used parallel to the caudal septum for enhancing nasal tip projection and correcting the nasal axis. This adjustment significantly increased the rotation and projection of the nose as desired (3, 9).

Conclusion

The nose is a respiratory organ with functions such as sound production, the nasopalveolar reflex, and heating, filtering, and humidifying air; it also serves as a multifunctional organ with a contractile function acting as a secondary sexual characteristic (3). Although rare, birth traumas can cause significant functional and aesthetic losses to the nose. Septal extension grafts are beneficial in correcting existing deformities in cases of projection and rotation loss in the nose due to birth trauma or other reasons.

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