Role of Extracorporeal Septoplasty in Deviated Noses

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Abstract Severe gross septal deviations present big surgical challenges for operating surgeon. Septal deviations has direct effect on aesthetic and functional part of nose. Correcting septal deviations during rhinoplasty is basic procedure. Extreme deviations of septum especially on dorsal and caudal end of cartilaginous septum are difficult to treat. The classical septoplasty approach becomes unsuitable for such severe deviations. Gubisch has first reported in 1995 about extracorporeal septoplasty. To report the experience of Extracorporeal septoplasty and the complication rates with the technique. Retrospective study of 112 patients who underwent extracorporeal septoplasty in primary rhinoplasty from May 2009 to June 2014. Patient's pre and postoperatively evaluation was done by

photographs, nasal endoscopy and subjective by symptoms evaluation satisfaction scale 6 and 12 months postoperatively. Nasal endoscopy revealed significant improvement in nasal airway and nasal valve and subjective evaluation satisfaction score was very encouraging. Complications like septal perforation, bleeding, aesthetic complications were minimal (9 %) On basis of results obtained, shows that this technique, increases patients nasal airway and aesthetic look of the patients. Irrespective of extreme nasal deviations.

Keywords Extracorporeal septoplasty · Septoplasty · Rhinoplasty crooked nose

Introduction

Extreme deviations of septum especially on dorsal and caudal end of cartilaginous septum are difficult to treat. The classical septoplasty approach becomes unsuitable for such severe deviations. Gubisch has first reported in 1995 about extracorporeal septoplasty. He has described the approach extensively. Many authors are critical about this technique about the stability in Keystone area and difficulty in performing this procedure. Caudal septal deviation in which the posterior septal angle is slipped off from the nasal spine is treated by the endonasal septoplasty using the “Swinging Door” technique [2]. Gubisch [1] has described complete removal of the entire cartilaginous septum, which he then straightened and returned to the nose. He described areas of fixation to secure the newly reconstructed septum back into the nose. Areas of fixation are the caudal end of the nasal bones, upper lateral cartilage and maxillary crest. He accomplished this by drilling a hole through nasal bones and the nasal spine and suturing the newly reconstructed neo septum. This technique is highly effective for

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straightening a deformed septum and replacing it in the nose to restore nasal function. This technique is difficult to perform and learning phase is slow. There was also a risk of aesthetic complications, especially in the area of transition from the bony dorsum to the reconstructed cartilaginous dorsum.

Methods

A retrospective review was conducted for 112 patients undergoing ECS by the author from May 2009 to May 2014. Patients selected for the ECS technique had a C- or cup-shaped septum and/or the septum came off the nasal spine at an angle of greater than 30° in the axial plane. Data reviewed included age, sex, follow-up, complications, and graft materials. We categorized our complications into 2 groups. Major complications were classified as those necessitating additional surgical procedure and affecting nasal function. Those were septal deviations, septal perforations, nasal deviations, dorsal deviations or irregularities. Minor complications required no further surgical intervention.

The initial exposure of the septum is an external rhinoplasty approach in all cases. The domes are divided in the midline, and the upper lateral cartilages are released laterally, creating excellent exposure of the septum. Bilateral submucoperichondrial flaps are elevated, exposing the entire cartilaginous and anterior bony septum. The majority of the cartilaginous and bony septum (Fig. 1) is then resected by paramedian osteotomy, separating cartilaginous septum from maxillary crest and fracturing bony septum as posterior as possible leaving behind cribriform plate and sphenoid rostrum. The septum is then reconstructed on the back table (Fig. 2). At this point it is determined whether additional cartilage is needed. If only a small amount of non-structural supportive cartilage is required, then an ear cartilage graft or rib cartilage is obtained. Bilateral spreader grafts (Fig. 3) are placed on dorsal part of septum. Lateral osteotomies are performed by external subcutaneous method. Nasal spine often found deviated more than 30° is gouged out or drilled. Neo-septum with spreader graft is kept in nose. Areas of fixation are the caudal end of the nasal bones, upper lateral cartilage and maxillary crest. It is done by drilling a hole through nasal bones and the nasal spine and suturing the newly reconstructed neo septum by PDS. 25 number one and half inch needles are used for helping in fixation of septum. Other required steps like columellar strut, rim grafts, tip grafts are done. To avoid dorsal irregularities as mentioned by Gubisch dorsal diced cartilages either free or in fascia are kept case to case considering height of septum. Soft silicon splints are placed

Fig. 1 Deviated cartilaginous and bony septum

Fig. 2 Reconstructed straight septum

Fig. 3 Spreader graft

along either side of the septum. The inferior and anterior edge of each splint is cut to fit securely along the floor of the nose and just alongside or slightly posterior to the medial crura cartilages. The splints are sutured into place with through-and-through 3–0 black nylon suture. Typically, 3–6 sutures are required for adequate fixation. Closure is followed by Plaster of Paris (POP) cast in all patients. Columellar sutures, POP cast and nasal splints removed on 10th postoperative day.

Results

112 patients undergoing ECS by the senior author from May 2009 to May 2014 at Ghaisas ENT Hospital and MIMER Medical College for correction of a severely deviated caudal septum (Figs. 4, 5, 6, 7, 8). All these patients were primary septorhinoplasties. Ages ranged

Fig. 6 Post-operative photographs

Fig. 4 Preoperative deviated nose

Fig. 7 Preoperative deviated nose

Fig. 5 Preoperative deviated nose

Fig. 8 Postoperative photos

from 16 to 42 years, with an average age of 24. Male to female ratio was 60:40. Only 16 cases required conchal cartilage and 1 required rib harvesting. 9 patients (8 %) experienced a complications. 3 (5 %) were minor and 2 (4 %) were major complications. The major complication rate of patients undergoing primary surgery was 4 % (2 patients). One patient developed a 4-mm septal perforation that was discovered 3 months after surgery. This perforation was closed without difficulty but required an tragal cartilage graft to aid in the closure. The functional and aesthetic results were not compromised. The second patient had dorsal irregularity, patient refused revision surgery. A few patients mentioned that they noticed nasal tip firmness after the procedure. We educate all our patients about the likelihood of nasal tip firmness, bruising over face specially near eyes, thus setting appropriate expectations. We also have this outcome listed in and discussed on our written risk and consent form. Because many of these procedures are performed for functional reasons, most patients are not concerned with nasal tip firmness.

Comment

Extracorporeal septoplasty is a newer, rapidly evolving technique. It was first discussed in the 1950s by King and Ashley [3]. Gubisch, [1, 4], [5], was the first to publish a large and highest series on this topic in 1995. That series included more than 1000 patients during a 15-year clinical experience. Two follow-up studies were performed in 1995 and 2005.6 A few other authors have reported their cases, but there are still relatively few data about the complications of this surgical technique, especially with further application of some of the technique modifications described by Most [6]. Bloom [7] et al. published a review article covering a large number of studies about the complications for endonasal septoplasty. The possible complications from a standard endonasal approach include hemorrhage or septal hematoma (6–14 %), cerebrospinal fluid leak (rare), infection (0.048–2.5 %), overcorrection (2 %), septal perforation (1–6.7 %), adhesions or synechiae (7 %), hyposmia (0.3 %), and aesthetic deformities (4 %–8 %). All these complications are also possible when performing the extracorporeal technique, but can be avoided by nasal splint, dorsal free diced cartilage with or without fascia. This study adds additional information to the literature to minimise the said complications of ECS compared with the more evolved technique of ECS. As mentioned previously, Gubisch was the first to report his data. He reported a haemorrhage/septal hematoma rate of 0 %, an infection rate of less than 1 %, a septal perforation rate of less than 1 %, and an aesthetic complication rate of 7–11 %. We have

attempted to divide our complications into major and minor ones. We had major and minor complication rates of 4 % each. Our minor complications were limited to 3 patients who had granulation over suture at rim graft, and thus started 7-day course of oral antibiotic therapy with local steroid ointment. None of these patients in the minor complication group had frank pus, purulence, or systemic fever. Our major complication rate was similar to that of endonasal septoplasty. Our septal perforation rate was 2 %, and our major infection rate was also 2 %; both rates are comparable to the risks of these complications for traditional septoplasty and rhinoplasty. No patients in our series experienced haemorrhage, septal hematomas. All patients had subjective improvement in their nasal obstructive symptoms. With increased understanding of nasal anatomy and its support mechanisms, septal surgery continues to evolve. Conventional endonasal septoplasty continues to be the standard of care for many deviated septa but may not reliably provide an opportunity to correct the more deviated, deformed, C- or cup-shaped septa. For caudal deviations that are cup shaped or deviate off the nasal spine more than 30° in the axial plane, a more aggressive approach is often required to relieve nasal obstruction. To simplify the surgical maneuvers necessary for neoseptum fixation in our technique, we adopted drilling only one hole at nasal bones after keeping neoseptum in position. We suture the septum to nasal bones with figure of 8 simplifies the fixation in the area of the nasal spine and posterior septal angle.

The use of soft silicon nasal splints reduces nasal complications. These splints are easy to remove without much pain or bleeding, fit perfectly along the nasal floor, and also fit much more anteriorly along the reconstructed septum, which provides excellent midline stability. Because these splints are sewn in place with through-and-through sutures inferiorly, they tend to pull everything snug into the midline position as the splints pull firmly against the maxillary crest.

To avoid dorsal irregularities we routinely place crushed cartilage with or without fascia on the dorsum depending on height of dorsum. We believe that, as the technique of ECS continues to evolve and simplify, more nasal surgeons will embrace this new surgical method with which they can more reliably correct some of the most challenging septal deformities.

Conclusions

The use of ECS for the correction of the severely deviated caudal septum should be done by more and more surgeons. Data indicate the rates to be comparable to those of standard endonasal septoplasty, making this a safe procedure to perform inspite of severe deformities. Stabilisation to nasal

bones, upper lateral cartilage and nasal spine with nasal silicone splints is must. No compromise should be done in fixation of septum free diced cartilage will prevent dorsal irregularities. Septal perforation can be avoided by meticulous elevation and by keeping mucosa and perichondrium intact.

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