

Case Report

Septocolumellar Suture Technique for Correction of Septal Caudal Dislocation

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² Conception of study

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Abstract

Objectives: To describe this technique for the treatment of caudal septal dislocation and to evaluate the effectiveness of this technique in terms of correction of cosmetic deformity and relief of nasal obstruction.

Materials and Methods: This was a descriptive case series study performed at the ENT department of Services Institute of Medical Sciences (SIMS), Services Hospital, Jail Road, Lahore. 30 Cases of mild to moderate degree of septal caudal dislocation were selected and operated on. The septum was fixed by sutures to the anterior nasal spine. The columellar pocket was made and the septum was sutured in the pocket by two sutures at upper and lower levels to increase the stability of the corrected septum.

Results: We performed this suturing technique on 30 septoplasty cases for 3 years from Jan-2016 to Jan-2019. Among them 12 (40%) were male and 18 (60%) were female. The total follow-up period ranged between 3 to 6 months. Anterior rhinoscopy showed no persistence of deviation or dislocation in 25 patients. 5 cases had a mild deviation of the septum on the non-operated side.

Conclusion: Two-level septocolumellar suture technique is very effective, easy to learn & perform, and shows long-term reliability in the correction of caudal septal dislocation. This is effective in improving cosmesis and nasal airflow.

Keywords: Caudal Septal Dislocation, Septal Fixation, Suture Technique.

Introduction

Nasal obstruction is the most common complaint in an average rhinology practice.¹ It has been estimated that as many as one-third of the population has some nasal obstruction and as many as one-quarter of these patients pursue surgical treatment.² When assessing individual symptoms of chronic rhinosinusitis, Nasal Obstruction often ranks highest, in patients reporting symptom severity.³ The main etiologies for nasal obstruction are septal deviation, hypertrophy of inferior and middle turbinate, nasal polyposis, and hypertrophy of nasopharyngeal tonsils.⁴

The deviated nasal septum is recognized as a cause of nasal obstruction which may lead to epistaxis, nasal crusting, nasal discharge, and cosmetic deformity.⁵ Patients' quality of life is disturbed when deviated nasal septum produces symptoms. The etiology of the deviated nasal septum is generally congenital but may also be caused by trauma, accidental or iatrogenic. Deviation and obstruction can occur at any point of the bony or cartilaginous septum. Deflection of the caudal end of the septum results in direct airway obstruction at the nasal vestibule, tip ptosis, and airway collapse.

Correction of septal caudal dislocation is a challenging problem for both surgeon and the patient. Often these defects cause both an aesthetic distortion of nasal base and nasal obstruction.

The fact that so many techniques have been described and tested to correct caudal septal dislocations, manifests to the difficulty of correcting this problem. If it were easily corrected, one technique probably would be used more universally. The caudal septum fixation can be inadequate due to damaged septal and nasal spine connections, thereby leading to failure of the procedure and re-dislocation of the septum.⁵ Also insufficient support or over resection may cosmetically produce tip ptosis, columellar retraction, and supratip depression. Patients with caudal dislocation have been grouped as mild, moderate, and severe, depending on the degree of narrowing of the nares by dislocated caudal end of the nasal septum. Dislocations narrowing the nares medially up to 25% were accepted as mild, from 25% to 50% as moderate, and over 50% as severe.^{6,7}

No single method of correction has been shown to be effective in all cases. Most methods of addressing the caudal septum can be classified as either cartilage reshaping procedures or septal reconstruction procedures.⁸

Septoplasty is one of the major surgeries in Ear, Nose & Throat practice. As the anterior part of the septum is

mostly involved, this part should be robustly fixed by sutures, to prevent post-operative complications like the expansion of the nasal base, re-dislocation of the anterior nasal septum, columellar retraction, and supratip depression. Our suture technique describes an effective way to fix the caudal septum between medial crura of the lower lateral cartilages in addition to fixation to anterior nasal spine and relocation of the septum to another side of the nasal spine.⁹

Inclusion Criteria: This suture technique was used in patients undergoing Septoplasty due to mild to moderate septal caudal dislocation with or without deviation of other parts of the nasal septum. 30 patients were enrolled, 12(40%) were males & 18(60%) females.

16(53%) patients with mild degree deviation and 14(47%) patients with moderate degree deviation.

Exclusion Criteria: Patients with a previous history of septal surgery and external nasal deformities were excluded from our study respectively.

Routine pre-operative detailed ENT examination was done in every patient included in the study. The surgical procedure was done under general anesthesia, after informed consent. On the day of operation, patients were advised to do a nasal spray of 0.05% Oxymetazoline after every 02 hours, 03 times.

Then after induction of anaesthesia anterior nasal packing was done with a diluted 1:10 solution of 1:1000 adrenaline for 15 minutes, leading to maximum vasoconstriction of the nasal mucosa. 2% xylocaine with 1:200,000 adrenaline was injected in submucoperichondrial plane of the nasal septum on both sides. After 10 - 15 minutes, a "FREER" incision was made on the mucocutaneous junction and nasal septum mucoperichondrial flaps were raised on both sides. Septal cartilage was disunited from the perpendicular plate of ethmoid bone and vomer. A cut was made with scissors at the upper part of the perpendicular plate of the ethmoid to avoid cribriform plate injury and CSF Rhinorrhea. The bony septum was removed below the cut. Septal cartilage was dislocated from the maxillary crest, so that septum was freed from all mucosal connections except superiorly. This is called the swinging door technique. Deviation of the maxillary crest was corrected by excision or displacement. Excess cartilage in the caudal septal base was resected. Other techniques including scoring or small triangular cartilage resection were carried out before shifting the anterior caudal septum to the opposite side of dislocation. A tunnel between the medial crura of the lower lateral cartilage was made with pointed IRIS scissors. The septum was

initially re-attached to the anterior maxillary spine periosteum with vicryl 3.0 sutures.

The cartilage was then prepared and sutured at the superior septocollumellar site with 3.0 prolene non-absorbable sutures. The first suture was placed superiorly, the needle first passed through medial crus of lower lateral cartilage on the side of incision from lateral to medial 3.0 mm anterior to mucoperichondrial incision, then the needle was passed through septal cartilage on non-incised side mucoperichondrium from medial to lateral side and full-thickness was reinforced 2 mm posterior to the mucoperichondrial incision, the needle was removed and suture tightened.

Inferior septocollumellar suturing was performed with 3.0 absorbable vicryl, similar to superior septocollumellar suture. The needle first passed through medial crus of lower lateral cartilage of incision side from lateral to medial 3.0 mm anterior to mucoperichondrial incision, then the needle was passed through septal cartilage on non-incised side mucoperichondrium from medial to lateral side and full-thickness was reinforced 2 mm posterior to the mucoperichondrial incision, the needle was removed and suture tightened.

Materials and Methods

The primary objective was to observe the efficiency & safety of Topiramate in refractory epilepsies in children in Pakistan.

Study Design and settings: A cross-sectional prospective consecutive series of children aged between (1-14 years) with refractory epilepsy were identified from January 2019 to December 2020. The children were recruited from the Paediatric Neurology clinic of Izzat Ali Shah Hospital.

Patients were selected according to the following criteria: (i) age between 1-14 years. (ii) Refractory epilepsy (iii) currently on two or more AEDs. Electroencephalograph (EEG) & Computerized Tomography (CT) or MRI Brain was performed in all patients. Epilepsy was classified into three categories according to ILAE 2017 Operational Classification. (i) Generalized Epilepsy (ii) Focal Epilepsy and (iii) Unknown.

Verbal consent was obtained from the caregivers. Topiramate was started at the daily dose of 1 mg/kg followed by 2 weekly increments up to a maximum daily dose of 10 mg/kg at all ages. If a child was not able to tolerate, developed fever or extreme lethargy after starting the Topiramate then he/she was

excluded from the study, and Topiramate was stopped. With minor side effects listed in Table 2, the study was continued. Parents or caregivers were asked to record the change in seizure duration and frequency. All the children were followed up for a mean period of 3-6 months. Responses were recorded according to the following four categories. (i) Complete remission (ii) >50% seizure reduction (iii) <50% seizure reduction (iv) No improvement. All the results were recorded in predesigned proforma. Patients were asked to attend the hospital anytime if any side effect occurred. Side effects were also recorded during follow-up visits. The collected data was analyzed using SPSS version 25.

Results

This was a descriptive case series study performed at the department of ENT and Head & Neck Surgery Unit-II, SIMS/Services Hospital, Lahore, from January- 2016 To January-2019. A sample size of 30 cases was calculated. Non-probability, consecutive sampling technique was used. A total of 30 cases who underwent Septoplasty using the combined septocollumellar suture technique were enrolled. This study was approved by the Ethics in Research Committee of the Institution, under the protocol.

Total Cases 30:

| Gender | Quantity | Percentage |
|--------|----------|------------|
| Male | 12 | 40% |
| Female | 18 | 60% |

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| Male | 12 | 40% |
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The total follow-up period ranged between 03 & 06 months. Two patients approx. (7%) had itching, induration of the columellar region, and stitch site was reddened, after 06 months. Stitch was removed, a broad-spectrum antibiotic was given and the condition resolved. Five patients approx. (17%) complained of mild deviation of the septum on the non-operated side. There was no persistence or recurrence of deviation/dislocation of the caudal septum. Pre-operative and post-operative pictures of two patients:



Pre-operative



Post-operative

Case No. 1

Pre-operative



Post-operative

Case No. 2

Discussion

The correction of caudal septal deviation is a very challenging problem. These defects cause both an aesthetic distortion of the nasal base and nasal obstruction. The fact that so many techniques have been described and tested to correct caudal septal dislocation, indicates the difficulty of correcting this problem. If it was corrected easily then one technique would probably be used universally.

Most methods of addressing the caudal nasal septum are classified as either cartilage reshaping procedures or septal reconstruction procedures. Most caudal septal repositioning procedures are performed by endonasal approaches.⁶ In traditional Septoplasty, Freer stressed the importance of preservation of "L" shaped caudal and dorsal strip of septal cartilage of 1.51 to 2.0 cm to avoid external nasal deformity. This technique does not address the caudal septal deflection.

In 1963 Cottle⁷ and van Dishoeck laid the foundation for nasal surgery. The basic concepts were to reconstruct instead of resecting and to deal with function and cosmetics in one procedure.⁷

Metzenbaum is credited as being the first to address the challenges of the caudal septal deviation. He documented the swinging door method of cartilage repositioning. He describes removing a vertical wedge of cartilage on the convex side of the deformity.⁸ The anterior septum is then repositioned in a swinging door-like manner and the septum is secured to the opposite side of dislocation. Pastorek⁹ describes a modification of the swinging door technique, after excision of the vertical wedge of septal cartilages. He repositions the septum to the other side of the anterior nasal spine. He describes the septal spine as a doorstep to stop the septum from returning to its

native position. Finally, the inferior septum is secured to the spine with a non-absorbable suture.

Sedwick and Simons describe using the translocation technique with excellent results.¹⁰ After standard Septoplasty by complete transfixation incision, bilateral mucoperichondrial flap elevation, the deviated caudal septum was positioned in midline or to the contralateral side of the anterior nasal spine. The caudal end was secured to the septal spine with polydioxanon suture. Sedwick reports 82% success of this procedure. Anderson¹¹ describes spreader grafts of rigid bone, harvested from the ethmoid perpendicular plate, sculpted to fit holes created for suture placement with an 18-gauge needle. Soft tissue attachments are released from the caudal septum and spreader grafts are placed. For improved stability, the septum is sandwiched between two spreader grafts.

Wedging, scoring and moralizing are also some of the most conservative methods of managing the caudal septal deviation. Following removal of the deviated quadrangular septal cartilage and preservation of dorsocaudal strut of 1.5 – 2 cm, the deformed cartilage is reshaped to create a midline septum. A series of incomplete incisions are made in a scoring fashion or serial wedges, on the concave surface.

Morselizing the caudal cartilage is an alternative method to remove the warped memory of the caudal strut. Correction of the curved or bowed caudal septum can also be approached with the use of MUSTARDE – Type sutures. ELLIS¹² first described this technique. The convex surface of the deformed cartilage is first scored. Horizontal mattress non-absorbable sutures are then passed through weakened cartilage and secured. 2 – 4 MUSTARDE – Type sutures can mold a curved segment of cartilage and establish a more vertical relationship. Stabilization of the repositioned caudal septum can also be done by way of a Tongue-in-Groove Technique. KRIDLE used this technique on 108 patients. By stabilization of septum in a groove between medial crura, the suture is used to secure the septum in this pocket.¹³ DIGMAN describes the use of batten grafts to stabilize the caudal septum following repositioning or scoring.¹⁴ Multiple incarnations of this theme have been proposed by various authors. The graft material is preferably thin, strong and of sufficient size to span the length of the septal segment using septal cartilage, costal cartilage, the perpendicular plate of the ethmoid, vomer, and calvarial bone.

DYER describes an alternate approach to the batten technique. He describes the complete resection of an isolated segment of the caudal septum, then uses a

small septal cartilage graft to recreate the continuity between the Caudal and Dorsal Septum.

He likes this technique to that of titanium mini plates used in a fracture repair and called it a “Cartilage Plating Graft”¹⁵. Critics of the Batten Technique point out the addition of cartilage graft to the existing cartilage septum further narrowing an already restricted airway.

KINGS and ASHLEY first proposed the principles of extracorporeal Septoplasty in 1952.¹⁶ After opening the nose, bilateral mucoperichondrial flaps are raised and upper lateral cartilages are separated from the dorsal septum. The septal cartilage is then disarticulated from the perpendicular plate of ethmoid, vomer, and Maxillary crest. The septal cartilage is removed. The dimension of the desired strut is identified and carved from the straight segment of the previously resected Quadrangular cartilage. The graft is then placed in the mucoperichondrial pocket and secured to the dorsal remnant with permanent suture or polydioxanon at the anterior septal spine.

GABISH has followed over 2000 patients using extracorporeal septoplasty with excellent results.¹⁷ Complications associated with this technique include the tendency for the development of septal irregularities of the dorsum, notching or saddling of the nose.¹⁸ Goldman describes a technique in which cartilage scoring, resection, and suturing steps were defined. Lawson¹⁹ modified Goldman’s technique which includes triangular cartilage resection from dislocated caudal septal cartilage and suturing with the maxillary spine. These techniques reduce nasal tip sport and columellar retraction due to cartilage excision. Batioglu et al²⁰ described a caudal septal suture technique that can be used as single or complementary to the previous technique, in which the caudal septum is sutured to the soft tissue between the medial crura of the lower lateral cartilages by incising the midpoint of the columellar skin from outside with non-absorbable suture material. As this technique includes a midpoint skin incision to the columella, it may cause scarring and non-absorbable suture material may lead to suture material reaction in the long term.

In another study, Kenyon et al²¹ described a technique that includes fixation of the dislocated caudal septum in the columellar pocket with midpoint mattress suture.

Our suture technique describes a way to fix the caudal septum between two columellar crura. It is used in addition to swinging door or modified swinging door technique and anterior maxillary spine as a doorstop.

This technique gave good results in relation to cosmesis and nasal obstruction. A similar technique was used by Nevzat Damirbilek et al. He suggested that two-level septocolumellar suturing is an effective and easy technique used in the fixation of mild to moderate caudal septal deviations, supporting the nasal tip and preserving its symmetry.

Conclusion

This technique of two-level septocolumellar suturing is very effective and easy to learn and use in the fixation of mild to moderate caudal septal dislocations. It supports the nasal tip and preserves the septal symmetry. The anterior nasal spine acts as a doorstop and further supports and prevents re-dislocation of the caudal septum.

Based on our experience it can give considerable functional and cosmetic outcomes in the treatment of caudal septal dislocation.

References

1. Konstantinidis I, Triaridis A, et al, long term results following nasal septal surgery focus on patient satisfaction, *auris nasus, larynx* 2005; 32: 369-74.
2. Betman Nd, Wool Ford Tj; informed consent for septal surgery: the evidence based *j laryngol otol* 2003; 117(3): 186-9.
3. Bhattacharya N, Clinical and symptom criteria for the accurate diagnosis of chronic rhinosinusitis. *Laryngoscope* 2006; 116(7 pt 2 suppl 110): 1-22.
4. Proctor Df, Bridger GP, Flow and Nasal Resistance, *An Otol* 1970; 79: 482-88.
5. J. D. Bloom, S.E. Kaplan, B.S. Bleier. S.A. Goldstein Septoplasty complication: avoidance and management *Otolaryngol Clin North Am*, 42(2009), pp.463-481
6. Freer OT The correction of the deflections of the nasal septum with a minimum of traumatism. *JAMA* 1902; 38636.
7. Barelli. PA, Loch EE, Kern EB, Steiner A (EDS) *Rhinology: The collected writings of Maurice H, Cottle MD warwick NY, American Rhinologic Society* (1987).
8. Metzenbaum M. Replacement of the lower end of the dislocated septal cartilage versus submucous resection of the dislocated end of the septal cartilage. *Arch Otolaryngol* 1929,9:282-96.
9. Pastorek NJ. Treating the caudal septal deflection. *Arch Facial Plast Surg* 2000.2: 217-20.
10. Sedwick J, Lopez A, Gajewski B, et al. Caudal Septoplasty for treatment of septal deviation. *Arch Facial Plast Surg* 2005;7: 158-62.
11. Anderson JR Ethmoid bone sandwich grafting for caudal septal defects. *Arch Otolaryngol Head Neck Surg* 1994; 120:1121 – 1125, Article PubMedGoogle Scholar Crossref.
12. Ellis M. Suture technique for caudal septal deviations. *Laryngoscope* 1980;90: 1510-2.
13. Kridel RW. The tongue-in-groove technique in septorhinoplasty. *Arch Facial Plast Surg* 1999; 1:246-56.
14. Digman RO. Correction of nasal deformities due to defects of the septum. *Plast Reconstr Surg* 1956; 18:291-304.
15. Dyer W, Kang J. Correction of severe caudal deflections with a cartilage “plating” rigid fixation graft. *Arch Otolaryngol Head Neck Surg* 2000; 126: 973-8.
16. King ED, Ashley FL. The correction of the internally and externally deviated nose. *Plast Reconstr Surg* 1952; 95: 672-6.
17. Gubisch W. Extracorporeal Septoplasty for the markedly deviated septum. *Arch Facial Plast Surg* 2005; 7: 218-26.
18. Mendelsohn M. Straightening the crooked middle third of the nose: using porous polyethylene extended spreader grafts. *Arch Facial Plast Surg* 2005; 7: 74-80.
19. W. L. Lawson, R. Westreich Correction of caudal deflections of the nasal septum with a modified Goldman Septoplasty technique: how we do it. *Ear Nose Throat J*, 86(2007), pp. 617-620.
20. A. Batioglu-Karaaltin, O. Yigit, Z. Donmez “A new persistent suture technique for correction of caudal septal dislocation.” *J Craniofac Surg*, 25(2014), pp.2169-2171.
21. G.S. Kenyon, A. Kalan, N.S. Jones Columelloplasty: “A new suture technique to correct caudal septal cartilage dislocation. *Clin Otolaryngol Allied Sci*, 27(2002), pp. 188-191.