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Metzenbaum's procedure: a forgotten technique in septal surgery

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ABSTRACT

Background: Deviation of the caudal end of the nasal septum is one of the significant challenges encountered in septal surgery. Deviated caudal septum changes lobular and columellar relationships and has a significant effect on tip position and symmetry. Metzenbaum was the first to describe the technique for the mobilisation of the caudal end in a swinging door fashion. Our study aims to highlight the procedure and its advantages.
Methods: This prospective study was conducted in Department of ENT and Head and Neck Surgery, Adichuchanagiri Institute of Medical Sciences, BG Nagara, between January 2018 to January 2019. 30 patients above 18 years of age, presenting with isolated deviation of the caudal end of the nasal septum were included in the study. A detailed clinical and photodocumentation was done and the results were analysed as follows.
Results: The postoperative surgical results were evaluated using a 4 point scale. 26 (86.7%) patients gave a score of 1 on the 4 point scale suggesting that they were completely satisfied with the results. Whereas 3 (10%) patients gave a score of 2 on our 4 pt scale. 1 (3.3%) patient felt that there was only a minimal improvement after the surgery hence gave a score of 3 on the 4 point scale.
Conclusions: We conclude that Metzenbaum's technique is very effective in treating caudal septal deviations. Reviving the Metzenbaum's procedure will help reduce the failure rate in surgeries for correction of caudal septal deviation.

Keywords: Metzenbaum, Caudal end deviation, Septoplasty

INTRODUCTION

Septoplasty is one of the most frequently performed otorhinolaryngology procedure which might be very challenging for the surgeon. An accurate preoperative diagnosis of pathology of the septum in the context of nasal cavity is essential for the success of surgery.[1] Caudal end of the septum is an important component of the septum and its correction can be a challenging problem. Often these defects cause both an aesthetic distortion of nasal base and nasal obstruction.[2] Metzenbaum was the first to describe a procedure for the correction of the caudal septum. He recognised the importance of its preservation for nasal support. His technique called for the mobilisation of caudal septum to the midline in a 'swinging door fashion'. Various other methods have been developed later on for the correction of isolated caudal septal deviation. This prospective study was done to emphasize the invaluable role of Metzenbaum's procedure in septal surgery.

METHODS

This study was conducted in the Department of ENT–Head & Neck Surgery of Adichunchanagiri Institute Of Medical Sciences, BG Nagara between January 2018 to January 2019. 30 cases of caudal septal deviation were included in the study. All the patients above 18 years of

age with isolated deviation of the caudal end of the septum were included in the study. A detailed history taking and thorough ENT examination was done in all the cases. Patients with deviation of the cartilaginous or bony part of the septum were not included in the study. Photodocumentation was done. The procedure was done under general anaesthesia for all the cases. After draping and infiltrating the septum with 2% lignocaine transfixation vertical incision was made posterior to the point of deviation. It was carried up from the floor up through the dorsal septum creating the 'swinging door' and the flaps were elevated on both sides till the caudal end was reached. The cartilage was then separated from its inferior attachment along the floor and a triangle of redundant cartilage was resected from either the posterior or anterocaudal edges. The remaining cartilage was then stented to medial crura with septal columellar hemi-transfixation sutures. The nose was packed with antibiotic smeared ribbon gauze and removed after two days. The patients were followed up after one week, one month and six months after surgery.

Photographs were taken in basal view at two points in our study. First photograph was taken in preoperative period. The second photograph was taken at six months follow up. Both these photographs were shown to the patient and he/she was asked to give a score to rate the difference in appearance on a 4 point scale as given below.

4 point scale for evaluating postoperative outcome

- 1- Little/no photographic evidence of residual caudal septal deviation.
- 2- Marked improvement but was still detectable by careful observation.
- 3- Mild improvement/not improved.
- 4- Made worse after surgical intervention.

RESULTS

Of the 30 patients who underwent Metzenbaum's procedure, 22 (73%) were males and 8 (27%) were females. Age of the patients ranged from 18 to 34 years with a mean of 24 years. 23 (63.3%) underwent surgery for aesthetic reasons whereas 7 (36.7%) had significant nasal obstruction as well.

Table 1: Age and sex distribution.

Age group (in years)	Males	Females	Percentage (%)
<20	3	1	13.3
20-24	13	3	53.3
25-29	5	3	26.7
30-35	1	1	6.7
Total	22 (73%)	8 (27%)	100

26 (86.7%) patients gave a score of 1 on the 4 point scale suggesting that they were completely satisfied with the results. Whereas 3 (10%) patients gave a score of 2 on our 4 pt scale. 1 (3.3%) patient felt that there was only a minimal improvement after the surgery hence gave a score of 3 on the 4 point scale. There were no postoperative complications after the surgery in any of the cases.

Table 2: Postoperative outcome of Metzenbaum's procedure.

Score given	Number of patients	Percentage of patients (%)
1 (Little/no photographic evidence of residual caudal septal deviation)	26	86.7
2 (Marked improvement but was still detectable by careful observation)	3	10
3 (Mild improvement/ not improved)	1	3.3
4 (Made worse after surgical intervention)	0	0

DISCUSSION

Correcting deviations of the caudal septum may be challenging because of cartilage memory, need to provide adequate nasal tip and dorsal septal support and long term effects of healing. In basal view, caudal displacement off the midline can cause asymmetric nares, distortion of the columella and widening of the base from either the deviated cartilage itself or deflection of the medial crural tip cartilage.[3]

Caudal septal deficiencies may be due to congenital underdevelopment or to acquired factors such as surgical excisions or cartilage destruction by nasal trauma or infections.[4] In the time of Freer and Killian, a caudal and dorsal strip was always left. Frequently the most obvious portion of septal deformity, the caudal end was undisturbed and deformity persisted.[5] The earliest attempts to correct caudal septal deflections involved resection of the deformed segment which resulted in columellar retraction and ptosis of the nasal tip.[2] By resecting caudal segment and implanting it separately in the columellar pocket, surgeons have attempted to eliminate the effects of mucosal scar contracture on membranous septum. The swinging door technique was created to maintain closer opposition between the cartilaginous elements. Basic elements of this procedure can be traced back to Metzenbaum in 1924.[6] He described the 'Swinging door' technique in which a wedge of cartilage was excised from the inferior edge of the caudal septal deformity followed by the repositioning of the caudal septum and fixation to the anterior nasal spine.[7] Various methods of formal suturing of posterior inferior margin to cartilage to nasal spine have been described. Ellis described use of Mustarde type of non-

absorbable sutures on concave side to correct deviation. Anderson described ethmoid bone sandwich graft in which small bone grafts are placed on each side of caudal septum to maintain it in the midline. Pastorek described modified swinging door technique in which caudal septum is flipped over nasal spine.[2,7]

Even small anterior deviations cause nasal obstruction because they are located exactly in the narrowest portion of the nasal cavity, the nasal valve.[8] In our series, the nasal obstruction markedly improved after correction of the caudal deviation. Metzenbaum's procedure emphasises on cartilage preservation of the nasal septum. We found out that it avoids loss of tip support and creation of retracted columella. After the procedure, nasal tip appears natural in appearance, the symmetry of the nares are maintained. The results were functionally and aesthetically pleasant.

CONCLUSION

Caudal nasal deviation manifested by a crooked tip, asymmetric nostrils and a deviated columella is one of the most challenging deformities encountered in septorhinoplasty. Historical trend has been a development away from aggressive resection towards more conservative septoplasty techniques with emphasis on realignment, weakening and subsequent reconstruction. The results of this prospective study emphasize on a conservative approach to the caudal septal deviation. We conclude that Metzenbaum's technique is very effective in treating caudal septal deviations. Though the procedure is seldom practiced and taught, it is still very relevant. The high success rate and patient satisfaction in our study highlights the advantages of Metzenbaum's procedure. Reviving the Metzenbaum's procedure will help reduce the failure rate in surgeries for correction of caudal septal deviation.

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