

BONE SPUR DRILLING, A NEW TECHNIQUE TO CORRECT DEVIATED MAXILLARY CREST

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Abstract

The nasal septum consists of both bony and cartilaginous components which could be deviated resulting in different types of deformities that lead to unilateral or bilateral nasal obstruction in addition to dryness, crustation, and bleeding from the nose. Headache and facial pain may be other presenting features and sinusitis is a possible complication.

ENT surgeons tried different surgical techniques to correct these types of septal deviations to ensure the best results and least complications.

Forty eight patients (32 males and 16 females) were admitted to Al-Sadr Teaching Hospital with septal deviation in the form of bony spur alone or associated with other nasal septal deflections. Correction of the deviated crest was performed following good exposure by elevating mucoperichondrial flap, and using high speed drill with cutting bur to remove the deviated part or fracturing and repositioning.

Patients were monitored for intraoperative bleeding and followed for at least four weeks regarding the development of upper incisors numbness.

The results of this study showed that bleeding was much reduced during surgery and only one patient (2.1%) developed upper incisors anesthesia who have severe maxillary crest deviation that necessitated total excision of the spur.

This study gives another option for bony spur correction by providing more controlled excision with less intraoperative hemorrhage and postoperative numbness, this improves patients health and relieves discomfort after surgery.

Introduction

The nasal septum lies in the central part of the nose or slightly deviated to one or both nasal cavities¹. Its deviation can be developmental or traumatic. The anterior septal deviations are more likely to be environmental caused by injuries of the nose or the central part of the face while posterior septal deflections are mainly inherited². Takashi explained that humans are the only species in which septal deflections occur³. There are six different types of septal deviations that require different

surgical techniques to correct: Septal tilt deviation (the septum not curved but tilted to one side of the nasal cavity anteriorly and to the other side posteriorly), C-shaped anteroposterior deviation, C-shaped cephalocaudal deflection, S-shaped anteroposterior deviation, S-shaped cephalocaudal deviation, and Localized deviation or large spur (Figure 1). This classification is based on shape of deviation, affected part of the septum and location of deflection such as cephalic or caudal^{4,5}.

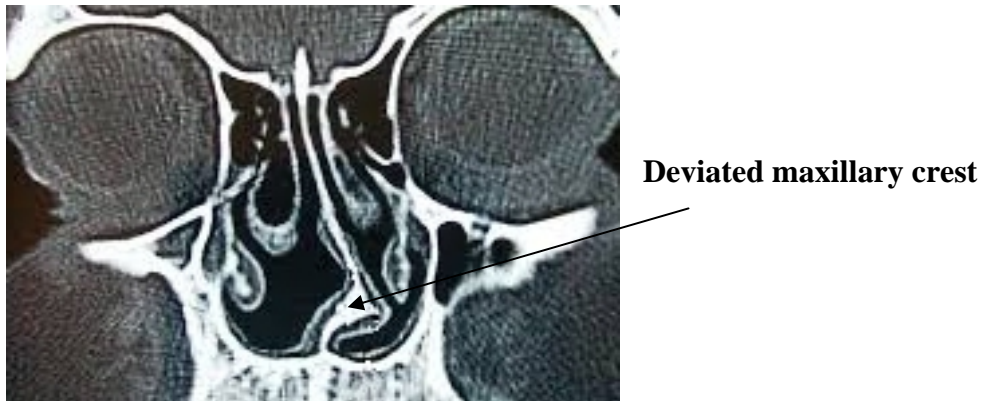


Fig. 1: Deviated maxillary crest to the left nasal cavity

Because septoplasty is one of the common surgical procedures in ENT⁶ and there are different types of septal deformities so there are many thoughts and trials among ENT surgeons to improve their techniques to get the best results and to save time with less complications.

Bony septal spurs removal by the classical technique (osteotomy using gauge and mallet) can be associated with

excessive bleeding especially after chiseling large spur in addition to the development of numbness in the maxillary incisors teeth due to injury of the nasaopalatine nerve and also avoiding troublesome bleeding from the nasopalatine artery injury⁷, for these reasons this study aimed to do bony spur drilling technique to minimize or avoid these complications (Figure 2).

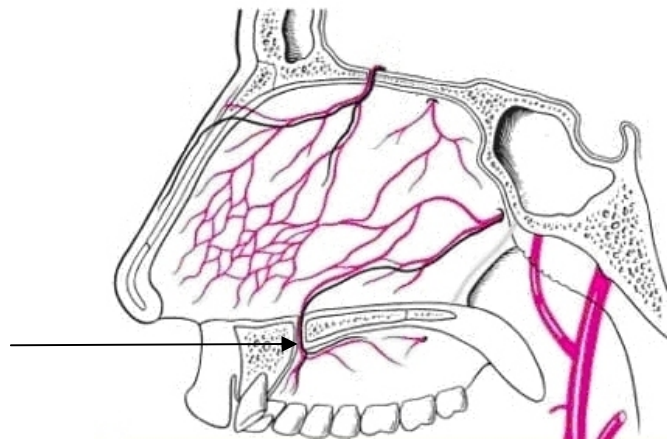


Fig. 2: The nasopalatine nerve and nasopalatine artery running close to the bony septum and passing through the incisive canal.

Patients and methods

This study was conducted at Al-Sadr Teaching Hospital, Basrah, Iraq from July, 2015 to July, 2017. The study included 48 cases (32 males and 16 females) with deviated nasal septum in the form of septal spur with or without other types of septal deformities.

Admitted patients were between the age of 18 to 50 years.

Preoperative evaluation was performed for all the patients including; history, clinical examination using headlight and nasal speculum and/or nasal endoscope, radiological investigations such as X-ray

or CT-scan of the nose and paranasal sinuses, and laboratory investigations including bleeding profile.

All patients were operated upon under general anesthesia after informed consent regarding the complications of surgery or the possible risk of general anesthesia.

Surgical procedure: Both endonasal and open rhinoplasty approaches were used according to the type of septal deviation whether bony spur alone or associated with other types of septal deflections. Mucoperichondrial flap elevation was done through anterior and inferior tunnels or as a part of septorhinoplasty. Careful exploration of the bony spur after uniting

the two tunnels was performed. A high speed drill (size of the cutting bur 4.5mm) that is usually used in mastoid surgery was applied to excise only the deviated part of the bony crest instead of using chisel. Severely deviated crests are drilled, fractured and repositioned in the central part of the nasal floor (Figures 3 & 4). All patients were followed up in the outpatient department for at least 4 weeks and the result was assessed by asking the patients about the presence of numbness in the maxillary incisors, while any abnormal bleeding was assessed during surgery.

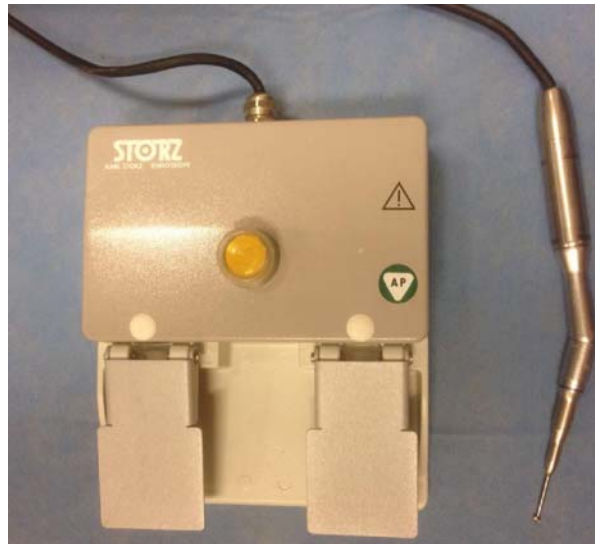


Fig. 3: High speed drill used for excision of deviated maxillary crest

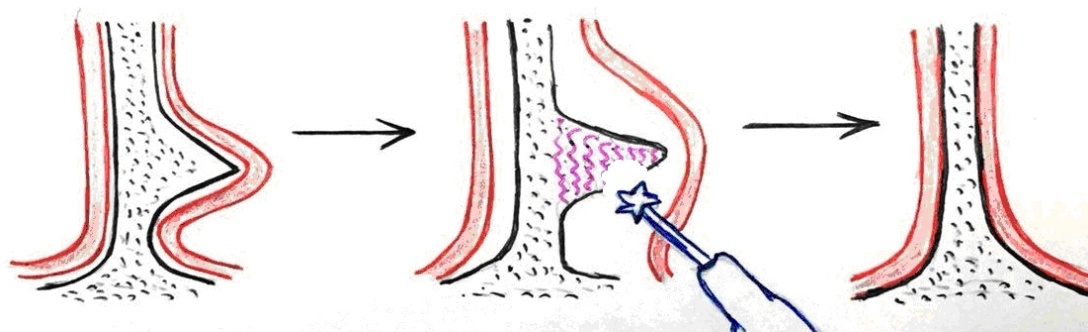


Fig. 4: Excision of deviated part of the bony septum only by using cutting bur.

Results

Forty eight cases were selected to remove maxillary crest spur. They were 32 males (66.7%) and 16 females (33.3%) as shown in table I.

Table 1 : Gender distribution

Gender	No. of patients	Percent
Male	32	66.7%
Female	16	33.3%

Patients included in this study have different types of septal deflections, the most common were those with C-shaped deformity accompanied by bone spur (58.3%) as demonstrated in table II.

Table II : Types of septal deflections in patients participating in this study.

Type of deflection	No. of patients	Males	Females
c-shaped deformity + spur	28	20	8
s-shaped deformity + spur	12	9	3
Bony spur only	8	3	5

This study revealed that performing this modification in septoplasty give best results regarding troublesome intraoperative bleeding (0%) and upper incisor numbness that occurs only in one female patient (2.1%) as shown in table III.

Table III: Incidence of troublesome bleeding & numbness in this study

Type of problem	No. of patients	Percent
Troublesome bleeding	-	-
Upper incisor numbness	1	2.1%

Discussion

Septal deviation is a common problem encountered in the ENT practice^{6,7}. A large number of people have nasal obstruction, because of this deviation septal correction is necessary.

Among the admitted 48 patients, males was more common than females (32, 66.7%) this may be due to that males are more prone to physical injuries as they have extra physical activities this goes with a similar result that found in a study done in Poland by Tul et al⁸. and another

study performed in Croatia by Subaric and Mladina⁹, they concluded that high incidence of septal deflections in males are caused by nasal hit and sport trauma. On the other hand Rahman et al. showed that septal deviation was more prevalent in females¹⁰.

The results in table II showed a higher incidence of the C-shaped deformity, nothing written in the literature about the reason for that. The cause may be the direction and the force of the trauma or

the association with nasal bone deviation and should be further investigated.

Intra operative bleeding after spur drilling procedure was minimal in this study. The follow-up of four weeks after surgery showed only one patient of the 48 (2.1%) developed mild numbness of the maxillary teeth this because the patient had severe maxillary crest deviation that needed total excision of the deformity which might be the cause of nasaopalatine nerve injury.

Conclusion and recommendation

ENT Surgeons noticed a large number of patients following nasal septal deviation correction especially those with severe maxillary crest deflection,

developed troublesome bleeding intra-operatively or complaining from numbness in the upper incisors following the uncontrolled classical osteotomy of the deviated crest using gauge and mallet. With the use of high speed drill and good exposure of the operative field, the intra operative hemorrhage is much reduced and almost all patients except one (2.1%) got temporary numbness in the upper incisors.

This study recommend the use of drilling technique as it is much easier, time saving and gives much controlled excision of only the deviated part of the bony crest and leaving good bony base for septal cartilage to sit on.

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