

Original Research

Free inferior turbinate graft with bacterial cellulose graft for correction of septal perforation- A comparative study

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ABSTRACT:

Background: Septal perforation is a defect in the integrity of the nasal septum. The present study was conducted to compare free inferior turbinate graft with bacterial cellulose graft for correction of septal perforation in known population. **Materials & Methods:** The present study was conducted on 40 patients with septal perforation of both genders. Patients were divided into 2 groups of 20 each. Group I patients were treated with surgical closure of nasal septal perforation with use of free inferior turbinate graft with bacterial cellulose and group II patients underwent surgical closure of nasal septal perforation with use of free inferior turbinate graft only. **Results:** Epistaxis was present in 12 in group I and 10 in group II, smell disorder 5 in group I and 4 in group II, nasal obstruction 18 in group I and 16 in group II. The difference was non-significant ($P > 0.05$). In group I, healing was seen in 18 post-operatively, nasal obstruction decreased to 4, nasal crustation to 3, epistaxis to 12 and breathing sound to 3. In group II, healing was seen in 20 post-operatively, nasal obstruction decreased to 2, nasal crustation to 1, epistaxis to 1 and breathing sound to 2. **Conclusion:** Septal perforation is not unknown phenomenon. Surgical closure of nasal septal perforation with use of free inferior turbinate graft with bacterial cellulose found to be better than surgical closure of nasal septal perforation with use of free inferior turbinate graft only.

Key words: Bacterial cellulose, Inferior turbinate graft, Nasal septal perforation.

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INTRODUCTION

Septal perforation (SP) is defined as a defect in the integrity of the nasal septum due to necrosis of the septal cartilage and soft tissue. It can have numerous causes, varying from benign ones to local manifestation of systemic diseases.¹ The main cause is the iatrogenic one a complication of surgical correction of nasal septal deviation. These disorders may cause many clinical manifestations like nasal obstruction, crustation, epistaxis, smell disorders, and when the septal perforation is small in size and anterior in site, it may cause whistling sound with breathing.² The main cause of the septum nasal perforation is the iatrogenic, as a surgery nasal complication, however other iatrogenic causes can occur as the use of nasal corticosteroid, mucous membrane' cauterization for the

treatment of epistaxis, nasotracheal intubation and nasal turbinates cryosurgery. In addition, there are descriptions of perforation by diverse kinds of traumas. The perforation rarely occurs in children.³

Septal perforation has always represented a distinctive challenge to otolaryngologists and facial plastic surgeons.⁴ They are a common problem, with countless causes and treatments, and have therefore been the subject of publications all over the world. They are anatomical defects of the nasal septum that can cause dynamic alterations in nasal function, which, in turn, can result in many different symptoms.⁵ They can also cause significant morbidity, so a constant search for a better treatment is imperative. Many surgical techniques are available for the surgical repair of nasal SPs. The variety of techniques is evidence that no

single technique is currently recognized as being uniformly reliable in closing all perforations.⁶ The present study was conducted to compare free inferior turbinate graft with bacterial cellulose graft for correction of septal perforation in known population.

MATERIALS & METHODS

It comprised of 40 patients with septal perforation of both genders. Patients’ age 18- 50 years were included in the study. Exclusion criteria were patients with large size nasal septal perforation (more than 2 cm) and inflammatory causes of nasal septal perforation. The study was approved from institutional ethical committee. All participants were

informed regarding the study and written consent was obtained.

Data such as name, age, gender etc. was recorded. Patients were divided into 2 groups of 20 each. Group I patients were treated with surgical closure of nasal septal perforation with use of free inferior turbinate graft with bacterial cellulose and group II patients underwent surgical closure of nasal septal perforation with use of free inferior turbinate graft only. In all patients, endoscopic nasal and paranasal sinus examination and CT scan of the nose and Para nasal sinus was done. In all patients, clinical features and outcome of treatment was recorded. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

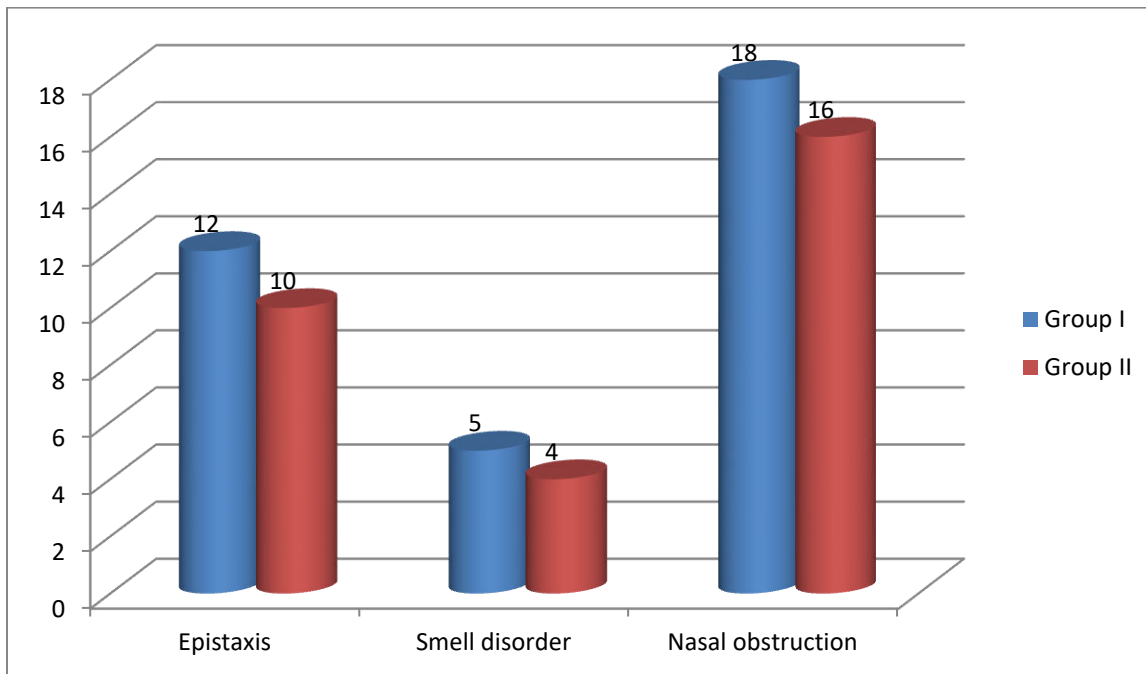
RESULTS

Table I Distribution of patients

Gender	Group I	Group II
Graft	Free inferior turbinate graft with bacterial cellulose	Free inferior turbinate graft
Number	20	20

Table I shows that out of 40 patients, group I patients were treated with free inferior turbinate graft with bacterial cellulose and group II patients were treated with use of free inferior turbinate graft only.

Table II Clinical features in patients



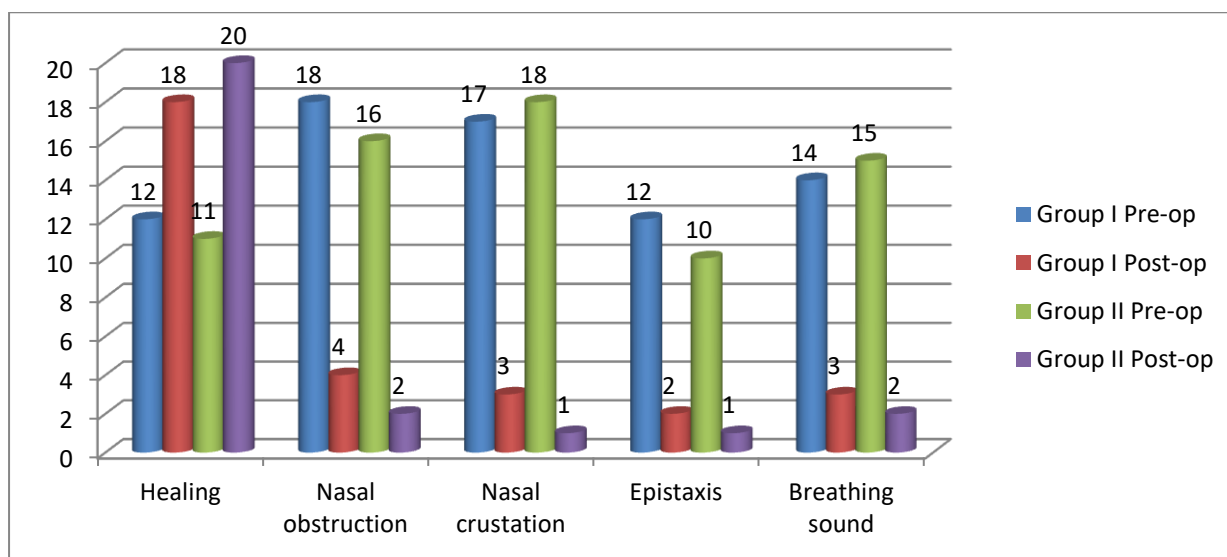
Graph I shows that epistaxis was present in 12 in group I and 10 in group II, smell disorder 5 in group I and 4 in group II, nasal obstruction 18 in group I and 16 in group II. The difference was non-significant (P> 0.05).

Table II Comparison of Pre-op and Post- op clinical features

Clinical features	Group I		Group II		P value
	Pre-op	Post-op	Pre-op	Post-op	
Healing	12	18	11	20	0.01
Nasal obstruction	18	4	16	2	0.05
Nasal crustation	17	3	18	1	0.21
Epistaxis	12	2	10	1	0.52
Breathing sound	14	3	15	2	0.12

Table II, graph II shows that in group I, healing was seen in 18 post-operatively, nasal obstruction decreased to 4, nasal crustation to 3, epistaxis to 2 and breathing sound to 3. In group II, healing was seen in 20 post-operatively, nasal obstruction decreased to 2, nasal crustation to 1, epistaxis to 1 and breathing sound to 2.

Graph II Comparison of Pre-op and Post- op clinical features



DISCUSSION

The septum nasal perforation is a nosological entity of easy diagnosis; it may be due to the ample variety of etiologies, since extremely benign until local manifestation of severe systemic diseases. The closure of the nasal septal perforation might be a great challenge to the rhinological surgeons. There were different surgical techniques for closure of the nasal septal perforation like endoscopic, external or intranasal approach with use of combined flaps (unilateral or bilateral) or grafts (auto graft or synthetic). The endoscopic approach might have the advantages of its minimal invasive technique, good exposure of the surgical field and optimal control of the septal perforation margins.⁷

The septum nasal perforation vary broadly in relation to the localization, amplitude and symptomatology; thereupon the therapeutic options are multiple, including the conservative treatment and several surgical techniques, musting to be individualized for each patient. In particular regarding the surgical correction, there is not technique that be universally recommended. The option by determined strategy should be based in the etiology, in anatomical characteristics as location and amplitude of the perforation, in the availability of tissues or special materials for the correction of the defect and in the experience of the surgeon. The present study was conducted to

compare free inferior turbinate graft with bacterial cellulose graft for correction of septal perforation in known population.⁸

In this study, epistaxis was present in 12 in group I and 10 in group II, smell disorder 5 in group I and 4 in group II, nasal obstruction 18 in group I and 16 in group II. Kridel et al⁹ found conducted a prospective randomized study in which 30 patients with nasal septal perforation after surgical correction of septal deviation undergoing trials of septal closure were divided into 2 groups; group I (15 patients) in which free inferior turbinate graft with bacterial cellulose would be used in closure of nasal septal perforation; group II (15 patients) in which free inferior turbinate graft only would be used in closure of nasal septal perforation. Septal perforation healing (closure) would be in 10 patients in group I while in 6 patients in group II. Improvement in nasal obstruction, crustion, epistaxis and breathing sound in group I would be better than in group II.

We found that in group I, healing was seen in 18 post-operatively, nasal obstruction decreased to 4, nasal crustation to 3, epistaxis to 2 and breathing sound to 3. In group II, healing was seen in 20 post-operatively, nasal obstruction decreased to 2, nasal crustation to 1, epistaxis to 1 and breathing sound to 2.

There are multiple causes of septal perforation. Between the illnesses related to the septal perforation, nasal abscess, syphilis,

tuberculosis, typhoid fever, diphtheria, granulomatosis of Wegener, lupus erythematosus and sarcoidosis, neoplasias and carcinomas also can cause to the perforation of the septum nasal. In tropical areas in development, the Leprosy and the Leishmaniose are still causes not uncommon of septal perforation. When the perforation of embroiders are covered by mucous membrane, hardly the perforation is related to the gravest illnesses, as tuberculosis or neoplasias.¹⁰

The goals of operations to repair a perforation should be to close the SP and to restore normal function, intranasal advancement flaps can be used to achieve normal nasal structure and function. The SP is a hole in 3 distinct contiguous layers composed of both right and left mucoperichondrial flaps and the intervening cartilage, all 3 of which must be separated from each other and repaired individually. The larger the vertical height of the perforation, the more difficult is the repair. Larger SPs require greater tissue mobilization and can result in greater tension in closure.¹¹

Goodman et al¹² found that the most common symptoms were nasal obstruction (72%), crusts (50%), and epistaxis (31%). Previous nasal surgery was the pathogenetic factor in 39 cases (57%). Fifty-two patients (76%) presented with SPs measuring 1.0 to 3.0 cm in diameter. The internal approach was used in 54 cases (79%), and temporal muscle fascia and conchal cartilage were concomitantly used in 45 cases (66%). The great majority of patients (40 [59%]) received more than 5 years of follow-up. The success rate of closure was 97%. Two patients (3%) presented with re-perforation measuring less than 1.0 cm in diameter.

CONCLUSION

Sepl perforation is not unknown phenomenon. Surgical closure of nasal septal perforation with use of free inferior turbinate graft with bacterial cellulose found to be better than surgical closure of nasal septal perforation with use of free inferior turbinate graft only.

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