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Otolaryngology -- Head and Neck Surgery 2014 151: 176 originally published online 31 March 2014
DOI: 10.1177/0194599814528465

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>> Version of Record - Jun 23, 2014
OnlineFirst Version of Record - Mar 31, 2014
What is This?
Endoscopic Repair of Nasal Septal Perforation with “Slide and Patch” Technique

Michele Cassano, MD

No sponsorships or competing interests have been disclosed for this article.

Abstract

Objective. The aim of this study is to report our new endoscopic technique for the repair of nasal septal perforations, called the “slide and patch” technique because it combines a mucoperiosteal free graft of the inferior turbinate with a mucosal rotational or advancement flap from the nasal septum.

Methods. Twenty-two patients with symptomatic septal nasal perforation of various sizes underwent our method of repair.

Results. At the last follow-up, 21 (95.4%) perforations were closed. There was a partial closure in only 1 patient with a large perforation (3.5 cm in diameter). After surgery, 19 (86.3%) patients were asymptomatic, 2 (9%) showed persistence of crusting, and 1 (4.5%) showed the appearance of nasal obstruction 1 month postoperatively.

Conclusion. The method described herein has shown to be effective in nasal septal perforation repair and in nasal symptoms relief with the advantage of not requiring grafts from outside the nose.

Keywords
mucoperiosteal free graft, nasal endoscopy, nasal septal perforations, septal flap, septal perforations repair, “slide and patch” technique

Introduction

Many surgical techniques for septal perforation repair have been reported in the literature, but most of them are technically difficult and require experienced surgeons, and the rate of success is not very high, as evidenced by the high number of re-perforations. During the past decade, many papers have described optimal results with closed endoscopic techniques. The aim of this study is to report our new endoscopic technique for the repair of nasal septal perforations, called the “slide and patch” technique because it combines a mucoperiosteal free graft of the inferior turbinate with a mucosal rotational or advancement flap from the nasal septum.

Material and Methods

From November 2007 to November 2012, 22 consecutive patients (5 women and 17 men; age range, 19-54 years; mean, 34.7 years) with septal nasal perforation underwent endoscopic reparation using the “slide and patch” technique at the Department of Otorhinolaryngology of the University Hospital of Foggia (Italy).

All the patients were preoperatively submitted to an examiner-guided questionnaire (to investigate nasal symptoms) and fiber endoscopy (to measure the diameter of the perforation).

Inclusion criteria were symptomatic nasal perforations less than 4 cm. Exclusion criteria were current cocaine abuse, endoscopic signs of additional sinonasal disease (rhinosinusitis, nasal tumor), and concomitant active chronic inflammatory diseases (Wegener granulomatosis, lupus erythematosus, etc).

Postoperative follow-up assessment included a symptoms questionnaire (to evaluate symptoms after surgery) and fiber endoscopy (to measure the diameter of the perforation).

Inclusion criteria were symptomatic nasal perforations less than 4 cm. Exclusion criteria were current cocaine abuse, endoscopic signs of additional sinonasal disease (rhinosinusitis, nasal tumor), and concomitant active chronic inflammatory diseases (Wegener granulomatosis, lupus erythematosus, etc).

The study was approved by the Institutional Review Board of the Department of Otorhinolaryngology of the University of Foggia (prot. 16/2013)

“Slide and Patch” Technique

All surgeries were performed under general anesthesia and by an endoscopic approach using a 4-mm 30° rigid endoscope.

- After topical vasoconstriction, the nasal mucosa and perforation borders were bilaterally infiltrated with 1% lidocaine and adrenaline, 1:100,000.

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With a sickle knife, the perforation margins were bilaterally scarified, and then the mucoperichondrium/mucoperiosteum around the margins was separated from the underlying cartilage or bone (Figure 1A).

Through a hemitransfix incision, the mucoperichondrial and mucoperiosteal layers on 1 side of the nasal septum were then separated extensively (Figure 1B).

On the other side, in oval perforations, a horizontal incision the same length as the oval perforation horizontal large diameter was performed using a sickle knife on nasal mucosa at least 1 cm from the dorsal border of septal cartilage. The mucoperichondrial flap was then elevated from the perforation margin up to the incision and the flap was transposed downward and the borders of the perforation were sutured together with a No. 5.0 Vicryl suture (Figures 2A and 2B).

In the case of round perforations, a rotation/advancement mucoperiosteal flap based on the nasal-septal artery was designed by a round incision. The flap was then rotated in order to reach the inferior border of the perforation (Figures 2C and 2D).

- A mucoperiosteal graft was harvested from the inferior turbinate by an endoscopic turbinoplasty and trimmed to size (minimum 1 cm in diameter larger than the perforation) (Figure 3).
- The mucoperiosteal graft was then inserted through the hemitransfix incision in the tunnel between the septal cartilage and the elevated septal mucoperichondrium. Graft borders were positioned under the previously separated margins in underlay fashion for a minimum of 5 mm all around (Figure 4).
- Silastic sheets were inserted bilaterally and sutured.

Checkups were performed weekly until the full integrity of the mucosa was restored. Silastic sheets were removed at about 3 weeks postoperatively.

**Results**

**Preoperative Findings**

From clinical history taking, 21 (95.4%) patients complained of crusting, 18 (81.8%) nasal obstruction, 12 (54.5%) recurrent epistaxis, 11 (50%) whistling, and 4 (18.2%) cacosmia.

The size of perforation was < 1 cm in 2 (9%) cases, between 1 and 2 cm in 13 (59%), and larger than 2 cm in 7 (31.8%).

**Postoperative Findings**

There were no complications during or after the operations.
The follow-up period ranged from 3 to 36 months (mean, 23 months). At the last follow-up, 21 (95.4%) perforations were closed. Only in 1 patient, with a large perforation (3.5 cm in diameter), was there a partial closure with reduction of the perforation diameter up to 1.8 cm due to the graft rejection.

At the last follow-up, 19 (86.3%) patients were asymptomatic, 2 (9%) showed persistence of crusting (including the case of partial closure), and 1 (4.5%) the appearance of nasal obstruction 1 month postoperatively.

**Discussion**

Although numerous surgical techniques have been described, the surgical closure of nasal septal perforations is still challenging for the surgeon and operative techniques are not yet standardized.

In a review of various studies on nasal septal perforation repair, reporting an extensive range of surgical techniques, Goh and Hussain\(^5\) found that the reported results were rarely statistically significant. This can be explained by the scant experience of almost all the surgeons with this surgery: in fact, very few authors reported a large number of operations in their study.\(^3\)

The endoscopic endonasal approach has gained ground in the past decade, and many studies have been published, reporting a percentage of postoperative repair variables between 76.4%\(^2\) and 100%.\(^3\)

The endoscopic “slide and patch” technique combines the use of a flap of native septal tissue (with the advantage of the rich vascular supply and the proximity to the defect) with an interposition graft of inferior turbinate, providing optimal results in the closure of nasal septal perforation.

Our technique showed a percentage of success (95.4%) as high as, or in some cases higher than, those reported in studies in which bilateral flaps and interposition graft were used.\(^5\) These results may be due to the use of nasal endoscopy that enables a better control of perforation margins and a more precise positioning of the graft and harvesting of the flap.

The percentage of disappearance of symptoms was another factor of success in our technique. Indeed, after surgery, 86.3% of our sample were completely asymptomatic.

**Acknowledgments**

The author thanks Prof. Brian Molloy (professor of English language and literature at the University of Bari, Italy) for English language assistance. A special thank you also to Annalisa Rosano for drawing the figures in the article.

**Author Contributions**

Michele Cassano, designed study, collected data, wrote article, revised article.

**Disclosures**

**Competing interests:** None.

**Sponsorships:** None.

**Funding source:** None.

**References**