A Novel Technique for Septal Perforation Repair: Fascia Lata Graft

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Background: Nasal septal perforation (NSP) is an anatomical defect involving the mucosa, cartilage/bone of the nasal septum, most commonly caused by septoplasty. Spontaneous healing of a perforated septum is rare; instead, it tends to worsen over time. Several surgical approaches have been described for NSP repair. In this study, the authors present a novel technique using only fascia lata graft for repairing NSP of various sizes.

Methods: The authors conducted a retrospective study, including 23 patients who underwent NSP repair between January 2020 and January 2022. Grafts were harvested, and the perforation was accessed through an open rhinoplasty approach, followed by insertion and suturing of the graft.

Results: The mean size of the septal perforations was 2.13 mm horizontally and 2.14 mm vertically. The mean follow-up period was 12 months. Complete closure of NSP was achieved in 21 out of 23 patients (91.30%). Among the cases, 17 were males (11.76%), and the age ranged from 20 to 43 years with a mean of 36.5. Eight cases (50%) were smokers. At 12 months postoperatively, 3 medium-sized NSPs were closed successfully, whereas 2 large NSPs did not achieve closure due to smoking.

Conclusion: The fascia lata technique for NSP closure is a safe and reliable approach with a high success rate, which should be considered for patients with NSP.

Key Words: Fascia lata, nasal septum perforation, nasal surgical procedures

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Nasal septal perforation (NSP) refers to a defect that extends through the cartilaginous and/or bony nasal septum and the mucosa covering it on both sides. Nasal septal perforation can have various causes, including traumatic/iatrogenic factors (such as septal surgery, nasal mucosa cauterization, prolonged nasal packing/probing, digital manipulation, or foreign bodies), intranasal drug abuse (using nasal decongestants/corticosteroids or cocaine), occupational exposure (to chromium fumes/sulfuric acid, swarf, or powder glass), inflammatory conditions (such as granulomatosis with polyangiitis, sarcoidosis, systemic lupus erythematosus, or rheumatoid arthritis), infectious diseases (such as syphilis, tuberculosis, human immunodeficiency virus, fungal infections, or leprosy), and neoplasms. However, septal surgery is the most common cause of NSP.[1,2] The reported incidence of septal perforation after septoplasty has previously ranged from 0.5% to 3.1%. Common symptoms of NSP include epistaxis, difficulty breathing, whistling sounds, crusting, and nasal airway blockage. The presence or absence of symptoms directly correlates with the size and location of the NSP.[3]

Although several surgical techniques using open or endoscopic approaches have been described for closing NSPs, there is, at the time of this writing, no universally accepted technique for repairing NSPs of different sizes and locations. In this study, we present a novel technique for NSP repair that utilizes a fascia lata graft alone

METHODS

This retrospective study was conducted with the approval of the Local Ethics Committee and permission was obtained from Prof Cemil Tascioglu City Hospital. Informed consent was obtained from all patients included in the study. The study included more than 50 patients with NSP who were evaluated between January 2020 and January 2022 at Prof Cemil Tascioglu City Hospital. Among them, 23 patients who experienced persistent symptoms, such as crusting, whistling, epistaxis, and nasal obstruction, and agreed to undergo NSP repair with a fascia lata graft were included in the study. Patients who declined surgery, those with comorbidities that prevented the use of general anesthesia, and pediatric age groups were excluded from the study. The age, sex, dimensions of the perforation, and smoking habits of the included patients were recorded. Perforations were categorized as small (<0.5 cm), medium (0.5-2 cm), and large (>2 cm).

All procedures were performed under general anesthesia. The nasal septum mucosa was injected with 1% lidocaine with a 1:100,000 epinephrine solution, and the nasal cavity was treated with nasal packing soaked in 0.1% xylometazoline hydrochloride to minimize intraoperative bleeding. After 5 minutes of decongestion, the size of the septal perforation was measured.

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D.H.: main idea, design, acquisition, analysis, interpretation, data collection, and writing. Ö.İ.O.: data collection, design, analysis, technical design, and writing. H.A.: analysis and literature investigation. Y.U.: supervision.

This study was approved by the University of Health Sciences Prof. Dr. Cemil Tascioglu City Hospital Ethic Committee (23.05.2022, E-48670771-514.99).

The study design was a retrospective study and this research was performed with human participants. All patients signed written informed consent.

The authors report no conflicts of interest.

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The edges of the perforation were incised using a sickle scalpel, and the free edges were excised 1 mm circumferentially to create viable mucosa. A Goodman incision combined with alar rim incisions on both sides was performed. The dorsal nasal skin was elevated to reach the nasal septum between the medial crura of the lower lateral cartilages. Bilateral mucoperichondrial flaps were raised to cover every point of the NSP in a 360-degree manner. In the subsequent stage of the surgery, the patient's right thigh was prepared (Fig. 1A, B), and a fascia lata graft was harvested. The fascia lata was sutured in 2 layers and then gently inserted through the mucoperichondrial flaps, covering the NSP circumferentially. Endoscopic examinations at 0-degree and 30-degree angles were conducted to ensure there were no accidental gaps around the graft or NSP (Fig. 1C). Transseptal sutures were performed using a 4/0 Vicryl suture passing through the graft. Columella incisions were sutured with a 5/0 prolene suture. Silastic nasal splints were inserted bilaterally and remained in the nasal cavities for 1 month. All patients received amoxicillin + clavulanic acid (1000 mg B.I.D) until the removal of nasal splints. To maintain moisture in the nasal cavities, patients were advised to use nasal saline and oily sprays (nazalnem) at least three times a day until the removal of the nasal splints. In cases of nasal crusting after splint removal, continued use of nasal sprays was recommended.

Postoperatively, all cases were monitored at the first, second, sixth, and 12th months, and the condition of the graft was noted (Fig. 2A–D).

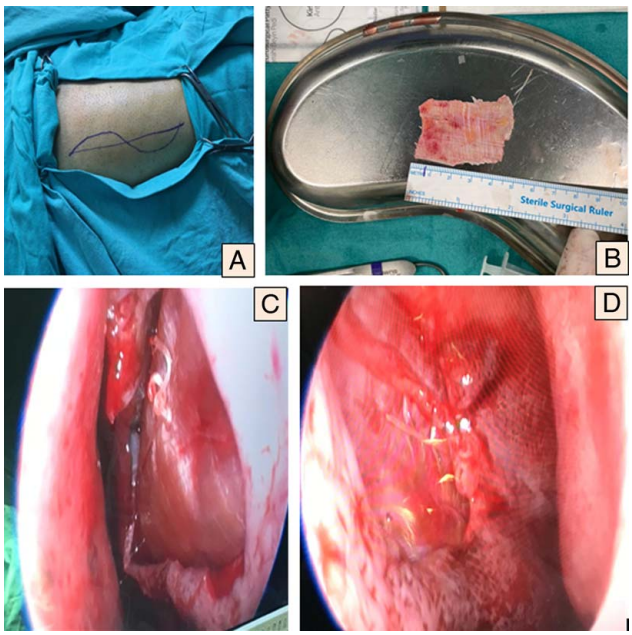

FIGURE 1. (A and B) Harvesting of fascia lata; preparation of the operation site with a loose skin incision. (C and D) Insertion of fascia lata graft through the nasal septum perforation; right and left nasal cavities, respectively.

RESULTS

Our study included a total of 23 cases, consisting of 17 males (73.91%) and 6 females (26.08%). The age of the patients ranged from 20 to 43 years, with a mean age of 36.5 years. Among the cases, 3 (13.04%) had medium-sized NSPs, whereas 20 (86.95%) had large NSPs. Of the total cases, 8 (34.79%) were smokers.

At the 12-month postoperative follow-up, all medium-sized NSPs showed complete closure. We achieved a high success rate in the first operation, with 21 NSPs (91.30%) achieving complete closure. The 2 remaining NSPs that did not completely close were both large NSPs (>2 cm) and were observed in smokers. No complications were observed at the donor site.

DISCUSSION

The treatment of NSP can be categorized into 3 main approaches. Firstly, repairing large NSPs (>2 cm) is known to be challenging and associated with a higher risk of persistent NSP.[4,5] In our study, we encountered 2 cases of total graft failure in patients with NSPs larger than 2 cm. However, we achieved successful outcomes in other patients with large NSPs. Nasal septal buttons can be considered as an option for repairing NSPs larger than 2 cm, but they have limitations such as side effects and potential enlargement of the defect.[6]

Secondly, other techniques involve the use of composite grafts, such as conchal cartilage grafts with intact perichondrium, tragal cartilage interposition grafts, and mucosal transposition flaps with human acellular dermis.[7–10] These techniques have shown high success rates; however, none of them provide a complete cure for all types of NSP. There are drawbacks associated with cartilage grafts, as auricular cartilage is curved and limited in quantity, whereas costal cartilage harvesting can be more challenging. Another study conducted in our clinic reported successful repair of even large NSPs using a fascia lata and costal cartilage sandwich graft.[11] Temporal fascia, although widely used, has its limitations in terms of strength and quantity.[12] In addition, using 2 different graft materials increases the risk of donor site morbidity.

Fascia lata graft has been traditionally used for camouflage rhinoplasty due to its thickness and availability in significant sizes. However, it requires a separate incision and may cause minor additional morbidities and scarring on the thigh. In our study, we used only fascia lata as a graft material, considering its thickness and abundance, and found that there was no need for its combination with cartilage as a composite graft. The

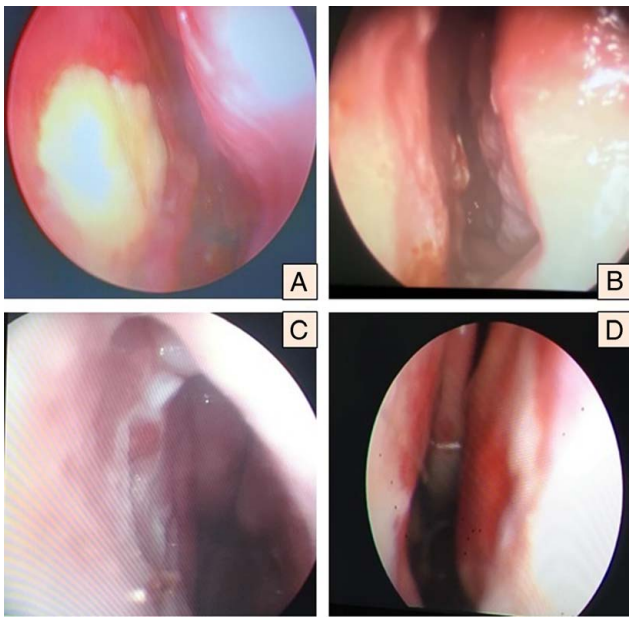

FIGURE 2. (A–D) Endoscopic views of the graft postoperatively at different time points. Respectively, first, second, sixth, and 12th months.

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drawback of this technique is the esthetic concerns on the lateral aspect of the leg, particularly in young women.

In terms of surgical approach, the open approach provides better visibility compared with the endoscopic approach.[13] The endoscopic approach may lack sufficient manipulation of the inferior and posterior septal parts. Endoscopy, however, offers better visualization during surgery and allows for graft stability checks.

Ensuring graft vitality during the postoperative period is crucial. Postoperative drying and crusting are common, so we used nasal splints for 1 month postoperatively to protect the graft. Nasal cavities should be kept moist using normal saline and oily sprays (nazalnem) at least three times a day until the removal of the splints.[14,15]

In our study, we encountered only 2 unsuccessful results, both of which were observed in smokers. There was no correlation between the age range of the patients and the closure rate of perforations. Smoking clearly impairs blood supply and neovascularization in the graft area, leading to rejection.

CONCLUSION

In our study, we successfully repaired NSP using a fascia lata graft through an open approach. We achieved a high success rate in the first operation, with 21 out of 23 patients (91.30%) experiencing complete closure of their NSPs. The use of a fascia lata graft for NSP repair proves to be effective, straightforward, and safe.

REFERENCES

1. Gold M, Boyack I, Caputo N, et al. Imaging prevalence of nasal septal perforation in an urban population. *Clin Imaging* 2017;20: 80–2
2. Williams N. What are the causes of a perforated nasal septum? *Occup Med (Lond)* 2000;50:135–6
3. Pereira C, Santamaria A, Langdon C, et al. Nasoseptal perforation: from etiology to treatment. *Curr Allergy Asthma Rep* 2018;18:5
4. Watson D, Barkdull G. Surgical management of the septal perforation. *Otolaryngol Clin North Am* 2009;42:483–93
5. Pereira C, Santamaría A, Langdon C, et al. Nasoseptal perforation: from etiology to treatment. *Curr Allergy Asthma Rep* 2018;18:5
6. Mullace M, Gorini E, Sbrocca M, et al. Management of nasal septal perforation using silicone nasal septal button. *Acta Otorhinolaryngol Ital* 2006;26:216–8
7. Ozturan O, Yenigun A, Senturk E, et al. Endoscopic endonasal repair of septal perforation with interpositional auricular cartilage grafting via a mucosal regeneration technique. *Otolaryngol Head Neck Surg* 2016;155:714–7
8. Hussain A, Murthy P. Modified tragal cartilage-temporoparietal and deep temporal fascia sandwich graft technique for repair of nasal septal perforations. *J Laryngol Otol* 1997;111:435–7
9. Kridel RW, Appling WD, Wright WK. Septal perforation closure utilizing the external rhinoplasty approach. *Arch Otolaryngol Head Neck Surg* 1986;112:168–72
10. Chhabra N, Houser SM. Endonasal repair of septal perforations using a rotational mucosal flap and a cellular dermal interposition graft. *Int Forum Allergy Rhinol* 2012;2:392–6
11. Hanci D, Gurpinar B, Sari H, et al. A novel technique in septal perforation: fascia lata and costal cartilage sandwich graft. *Niger J Clin Pract* 2021;24:1531–4
12. Goh AY, Hussain SS. Different surgical treatments for nasal septal perforation and their outcomes. *J Laryngol Otol* 2007;121:419–26
13. Ozdilek A, Kilavuz AE, Serin GM. Endoscopic repair of nasal septal perforations with fascia lata. *J Craniofac Surg* 2020;31:1906–9
14. Dosen LK, Haye R. Surgical closure of nasal septal perforation. Early and long-term observations. *Rhinology* 2011;49:486–91
15. Making SD. *History of surgery for wounds*. United States: Missouri: Acute & Chronic Wounds: Current Management Concepts; 2012

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