

Abstract

Objectives: Repair of septal perforation performed concurrently with endoscopic sinus surgery (ESS) for chronic rhinosinusitis has not been evaluated. Surgical outcomes of patients undergoing simultaneous ESS and septal perforation repair are presented.

Study Design: Retrospective review.

Methods: Adult patients who underwent ESS combined with septal perforation repair from January 1997 to October 2015 were identified. Medical records were reviewed for demographics, clinical findings, perforation size, operative technique, histopathology, complications and outcomes. Septal perforation repair was performed using a combination of bipediced advancement or rotational mucosal flaps allowing a tension-free closure. An interposition graft was placed and the repair protected by thin silastic sheeting in all cases.

Results: Thirty-eight patients underwent concurrent ESS and septal perforation repair. Maxillary antrostomy and anterior ethmoidectomy were the most common procedures performed. Revision ESS accounted for 57.9% of procedures. Average perforation size was 15.4 (range 3-45) mm length by 10.7 (range 3-25) mm height. In the first 7 years of the study, 3 of 8 surgeries resulted in re-perforation, while no patient had re-perforation in the last 11 years. Overall, successful septal perforation closure was achieved in 35 of 38 patients (92.1%).

Conclusions: Septal perforation repair is a delicate operation with a wide range of historical success rates. Concurrent ESS, with additional nasal instrumentation/manipulation both intra- and postoperatively, may seem contraindicated. However, this study demonstrates that septal perforation repair and ESS can be performed simultaneously with high probability of success. In our series, this held true for even large perforations measuring greater than 2 cm.

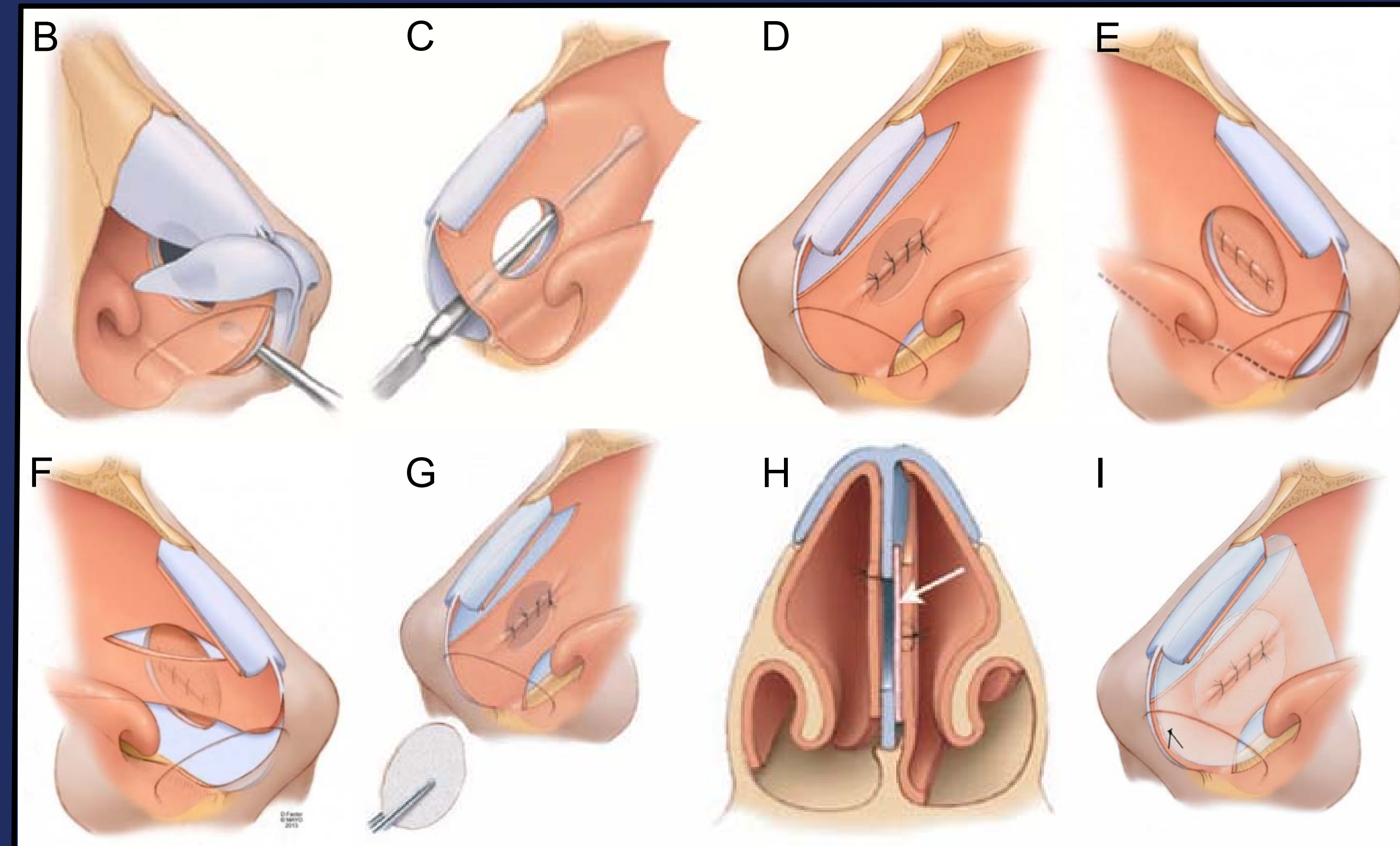
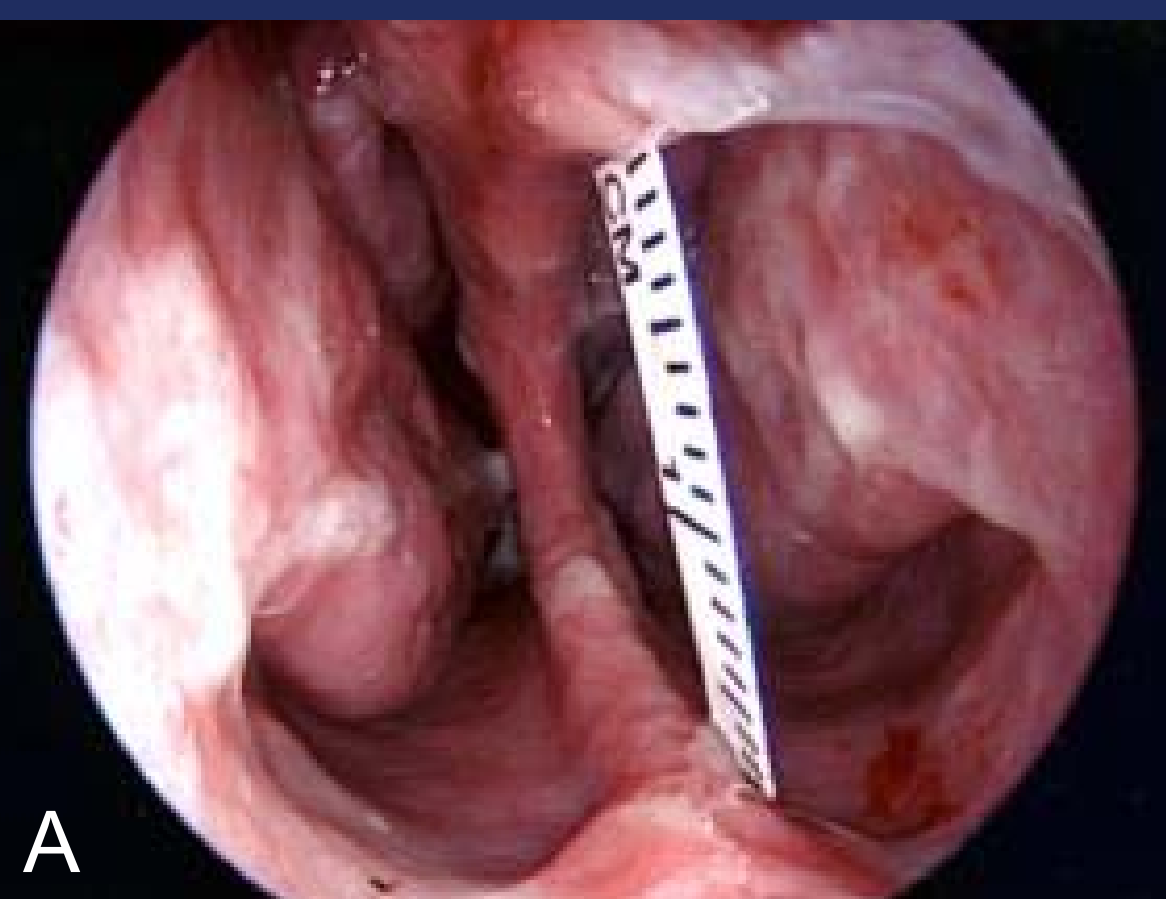


Figure Legend: A) Perforations are measured intranasally with a 0-degree endoscope and plastic ruler. B) A right hemitransfixion incision is made, and a left anterior tunnel is elevated to the anterior margin of the perforation. C) Elevation is carried superiorly along the dorsal strut. The mucosal margins of the perforation are then elevated. Submucosal dissection is then carried along the floor of the nose to the inferior meatus. Mucosal elevation is then carried out in a similar fashion on the contralateral side. D-F) A combination of bipediced advancement or rotational mucosal flaps are then created, based on perforation size and location. Flaps are designed to allow for a tension-free closure of the perforation, with mucosal edges sutured together using 5-0 chromic gut. G,H) An interposition graft (temporalis fascia, septal cartilage/bone, or allogeneic acellular dermis) is placed between mucosal flaps in all cases. I) Thin (0.02 inch) silastic sheeting is trimmed to size and placed in the anterior nasal cavity on each side of the septum to completely cover the repair. A nylon suture is used to secure the silastic splints to the membranous septum. Light nasal packing is then placed.

Introduction

Chronic rhinosinusitis (CRS) may be present in a substantial proportion of patients presenting with septal perforation. Though the incidence of coexistent CRS and septal perforation has not been evaluated in any large population study, a small investigation involving patients with newly diagnosed septal perforations found 57% of these patients had radiographic evidence of CRS.¹ While there is some overlap in symptoms caused by septal perforation and CRS, each can be uniquely symptomatic, and the two conditions can be a significant quality of life issue. Both CRS and septal perforation should therefore be addressed for complete restoration of nasal form and function.

Table 1. Patient symptoms reported before and after (>4 weeks) concurrent septal perforation repair and ESS.

Symptom	Crusting	Epistaxis	Whistling	Congestion	Discolored drainage	Pain
Pre-op (No.)	26	18	7	33	17	3
Post-op (No.)	5	1	0	13	6	0

Methods

Adult patients who underwent ESS combined with septal perforation repair from January 1997 to September 2015 were identified. Patients with follow-up of 4 weeks or greater were included. Medical records were reviewed for demographics, symptoms, CT and endoscopy findings, septal perforation size, operative technique, histopathology, complications and outcomes.

ESS was typically performed prior to septal perforation repair, though if a septal deformity complicated access to the sinuses, septoplasty was completed first. Septal perforation repair was performed using an endonasal approach with loupe magnification.

Table 2. Sinuses addressed during ESS performed concurrently with septal perforation repair.

	Maxillary	Anterior ethmoids	Posterior ethmoids	Frontal	Sphenoid
Primary (n=16)	16	16	10	3	5
Revision (n=22)	20	19	15	5	12
Total (bilateral)	36 (26)	35 (28)	25 (24)	8 (5)	17 (15)

Results

- 38 patients underwent concurrent septal perforation repair and ESS
- Average patient age: 53 years
- Average follow-up: 90 weeks
- 22 patients (57.9%) had revision ESS at the time of septal perforation repair
- Average septal perforation size: 15.4 mm length (range 3-45 mm) by 10.7 mm height (range 3-25 mm)
- In the first 7 years of the study, 3 of 8 surgeries resulted in re-perforation, while no patient had re-perforation in the last 11 years
- Long-term septal perforation closure was achieved in 35 of 38 patients (92.1%)

Discussion

Septal perforations often cause symptoms such as crusting, bleeding, and whistling. While CRS has separate well-established symptoms² there can be overlap between the two conditions. Surgery, along with medical management, plays an important role in treatment of both perforations and CRS. Prior to undertaking such surgery, patient factors such as perforation size, location, and etiology should be considered.

Conclusions

- Septal perforation repair and ESS can be safely and successfully performed in a single-stage procedure, saving time, expense, and the need for additional surgery.
- After the initial 8 perforation repairs in our series, the long-term perforation closure rate was 100%. This emphasizes the learning curve involved in septal perforation repair.

References

1. Bhattacharyya N. Clinical symptomatology and paranasal sinus involvement with nasal septal perforation. *Laryngoscope*. 2007;117:691-4.
2. Rosenfeld RM, Piccirillo JF, Chandrasekhar SS, et al. Clinical practice guideline (update): adult sinusitis. *Otolaryngol Head Neck Surg*. 2015;152(2 Suppl):S1-S39.