Using the NOSE-Perf Scale for symptom assessment after endoscopic transsphenoidal approach to the pituitary gland

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Background

- Nasal septal perforation is a full-thickness defect between right and left nasal cavities. Perforations can be symptomatic and substantially impact the quality of life. Major symptoms include crusting, congestion, obstruction, bleeding, and drainage.[1,2]
- Trans-sphenoidal endonasal approach to the pituitary gland (TSEP) usually entails creating a wide posterosuperior septal defect.[3]
- The specific long-term patient-perceived morbidity of posterior septectomies has not been studied with a specific quality of life instrument.
- The NOSE-Perf Scale (NPerfS) is a 12-item patient-reported outcome measure (PROM) (scored 0 to 48; higher is worse) recently validated for reporting patient-perceived impact of septal perforations. [3,4]
- The minimal clinically important difference (MCID) for the NPerfS is 3.1 (standard deviation-based method) and 4.8 (standard error of mean [SEM]-based method). [3,4]

Aims

- Assess the long-term patient-perceived morbidity specifically associated with a posterior septal defect created after a TSEP.
- Assess the burden of a posterior septal defect created after a TSEP by comparing their NPerfS scores with healthy subjects, subjects with symptomatic septal perforation, and subjects who underwent septal perforation surgical repair.

Methods and Materials

- IRB approval was obtained (24-006502).
- This was a cross-sectional observational study.
- Subjects who underwent TSEP for pituitary adenoma resection at Mayo Clinic Arizona between January 2022 and January 2024 were invited to participate. Subjects with less than 3 months of follow-up were excluded.
- For enrolled TSEP patients, the NPerfS was administered via a phone survey.
- Data was reported on age, gender, follow-up duration, body mass index, smoking status, SNOT-22 scores, concomitant septoplasty, nasoseptal flap harvest, sinonasal comorbidities, topical nasal medications, nasal packing, and nasal splints
- Subject groups used to validate the NPerfS were used for comparison. They comprised 3 other cohorts: one with 22 healthy subjects (control), one with 117 subjects with symptomatic septal perforation, and one with the same 117 subjects after they underwent septal perforation surgical repair.

TABLE 1. Study population

Age (years)	Median 63 (IQR 46-70)
Sex	Female: 48% Male: 52%
BMI	Median 30.6 (IQR 25.8-32.8)
Follow-up time (months)	Median 15 (IQR 5-22)
Smoking status	Current: 12% Former: 16% Never: 72%
Splints	28%
Nasal packing	12%
Concurrent septoplasty	64%
Nasoseptal flap	44%
Previous TSEP	2
Previous perforation	1

TABLE 2. NOSE-Perf scale scores.

Subjects	Median (IQR)
Healthy	1 (0-3)
Septal perforation repair	7 (3-14)
Posterior septectomy	7 (2-10)
Symptomatic perforation	24 (18-33)

Results

- Twenty-five TSEP subjects participated. Data was reported as median (IQR).
- Total NPerfS was 7 (IQR 2-10) for the TSEP posterior septectomy group, 1 (IQR 0-3) for healthy controls, 24 (IQR 18-33) for symptomatic perforation controls, and 7 (IQR 3-14) for perforation repair controls.
- There was no significant difference between posterior septectomy and perforation repair groups (p=1).

Results

- Scores were significantly lower for healthy controls (p=0.037) and higher for symptomatic perforation (p<0.001) when compared to the posterior septectomy group.
- Three subjects were outliers in the posterior septectomy group, with NPerfS of 23, 26, and 27. The first had undergone a pre-TSEP and had previous anterior septal perforation, the second had pre-TSEP transoral resection of pituitary adenoma while the third was an active smoker with persistent crusting 10 months post-TSEP. The first two subjects had undergone CSF leak repair with nasoseptal flap while the 3rd did not have CSF leak or septal flap harvest.
- Finally, no significant differences in total NPerfS score were noted between those with (11/25) or without (14/25) nasoseptal flap harvest in the TSEP group (p=0.13).

FIGURE 1: NOSE-Perf Scale

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Name:
Date:

NOSE-Perf Scale

Department of Otorhinolaryngology: Head and Neck Surgery

Please help us better understand the impact of septal perforation on your quality of life by **completing the following survey**. Thank you!

Over the past ONE month, how much of a problem were the following conditions for you?

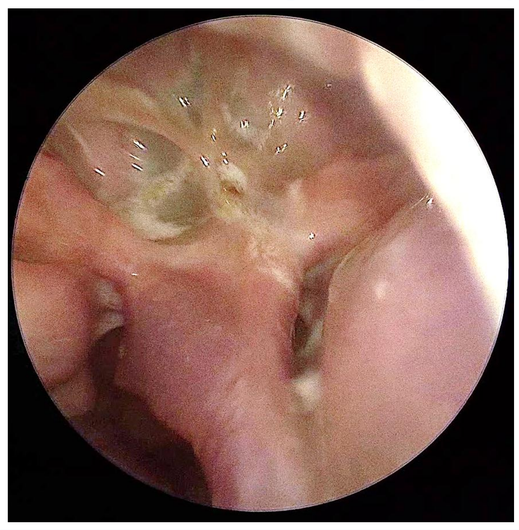
Please circle the most correct response

	Not a Problem	Very Mild Problem	Moderate Problem	Fairly Bad Problem	Severe Problem
1. Nasal congestion or stuffiness	0	1	2	3	4
2. Nasal blockage or obstruction	0	1	2	3	4
3. Trouble breathing through my nose	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Unable to get enough air through my nose during exercise or exertion	0	1	2	3	4
6.Trouble with crusting in my nose	0	1	2	3	4
7. Whistling from my nose	0	1	2	3	4
8. Bleeding from my nose	0	1	2	3	4
9. Facial pain or headache	0	1	2	3	4
10. Decreased sense of smell	0	1	2	3	4
11. Foul or odd smell in my nose	0	1	2	3	4
12. Runny nose or post-nasal drip	0	1	2	3	4

Discussion

- Pituitary surgery through an endoscopic endonasal approach may have impacted symptom scores regardless of the presence of a posterior septectomy.
- The residual symptomatic burden was no worse than in patients who underwent septal perforation surgical repair; however, scores were worse than in healthy subjects without septal perforations.
- Nasoseptal flap harvest was not significantly associated with additional long-term morbidity in TSEP patients.
- Expectation adjustments that a posterior septectomy might be associated with modest long-term symptomatic burden can be helpful for patient counseling and shared decision-making.
- Smoking status and presence of prior perforations may detrimentally impact NperfS.

FIGURE 2: Well-healed posterior septectomy



Conclusions

- Posterior septectomy morbidity appears to be low as assessed by the NperfS.
- Larger prospective studies can further characterize morbidity from posterior septectomy.

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