

Post-Discharge versus Inpatient-Only Antibiotics after Endoscopic Pituitary Surgery: Infectious and Utilization Outcomes



David Geffen
School of Medicine

Larissa Nicolas, MPH¹; Rory J. Lubner, MD¹; Jeffrey D. Suh, MD¹; Won Kim, MD²; Marvin Bergsneider, MD²; Jivianne T. Lee, MD¹; Marilene B. Wang, MD¹

1. Department of Head and Neck Surgery, University of California, Los Angeles, California, USA

2. Department of Neurosurgery, University of California, Los Angeles, California, USA

BACKGROUND

- Endoscopic endonasal transsphenoidal surgery is a standard approach for pituitary and parasellar lesions.
- Postoperative central nervous system infection is uncommon but Many patients receive oral antibiotics after discharge despite limited evidence supporting the optimal agent, route, or duration of prophylaxis.
- Extended antibiotic exposure may contribute to adverse drug effects, antimicrobial resistance, and unnecessary health-care utilization.
- The effect of post-discharge antibiotic prophylaxis on infection-related outcomes and postoperative patient communication after pituitary surgery remains unclear.

OBJECTIVES

Primary Objective

To compare 30-day postoperative infectious complications among patients receiving a 7-day post-discharge oral antibiotic course versus inpatient-only antibiotic prophylaxis after endoscopic transsphenoidal pituitary surgery.

Secondary Objectives

- Compare 90-day infection-related emergency department visits and hospital readmissions.
- Evaluate whether post-discharge antibiotics are associated with the number of postoperative telephone calls and electronic messages to the surgical team.
- Identify clinical factors associated with postoperative infection and communication burden.

METHODS

Design: Retrospective cohort study of patients undergoing endoscopic endonasal transsphenoidal pituitary surgery at a tertiary center (May 2024–May 2026; n=119).

Groups: Post-discharge oral cephalexin for 7 days (n=64) versus inpatient-only cefazolin prophylaxis (n=55).

Outcomes: 30-day composite infectious complication (sinusitis, meningitis, or sepsis/bacteremia); 90-day infection-related ED visit/readmission; and postoperative calls or electronic messages to the surgical team.

Analysis: Multivariable logistic and negative-binomial regression adjusted for age, sex, tumor category, length of stay, and intraoperative CSF leak; p<0.05 was considered significant.

REFERENCES



COHORT CHARACTERISTICS

Demographic Variable	Total Cohort n=119	Post-discharge Antibiotics n=64	Inpatient Only Antibiotics n=55
Sex N (%)			
Male	50 (42%)	24 (38%)	26 (47%)
Female	69 (58%)	40 (62%)	29 (53%)
Age at time of surgery median (SD)		50.25 (15.39)	49.73 (15.47)
Smoking status N (%)			
Current Smoker	5 (4%)	1 (2%)	4 (7%)
Former Smoker	20 (17%)	9 (14%)	11 (20%)
Never Smoker	92 (77%)	52 (81%)	40 (73%)
Not Listed*	2 (2%)	2 (3%)	0
Tumor Volume N, median (SD)	114, 1.62 (3.36)	60, 1.76 (3.58)	54, 1.69 (3.49)
Presence of intraoperative CSF leak N (%)			
Yes	38 (32%)	27 (42%)	11 (20%)
No	81 (68%)	37 (58%)	44 (80%)

Table 1. Baseline cohort characteristics by post-discharge antibiotic strategy.
The 119-patient cohort was generally similar across treatment groups; however, intraoperative CSF leak was more frequent among patients receiving post-discharge antibiotics (42% vs 20%). Values are N (%) unless otherwise specified.

POST-OPERATIVE OUTCOMES

Variable	Post-Discharge Antibiotics	Inpatient Only Antibiotics	p-value
Readmission/ED visit for infection within 90 days	4 (3%)	0 (0%)	p= 0.059
Any post-operative infectious complication within 30 days	4 (3%)	2 (2%)	p = 0.516
Number of post-operative calls or messages	59	61	p=0.733

Table 2. Postoperative outcomes by antibiotic strategy.
Patients receiving a 7-day post-discharge oral antibiotic course had similar rates of 30-day infectious complications and postoperative calls/messages compared with patients receiving inpatient-only prophylaxis. Infection-related ED visits or readmissions were rare in both groups.

30-day infectious complications included sinusitis, meningitis, or sepsis/bacteremia. ED, emergency department.

CLINICAL IMPLICATIONS

- Rather than universally extending antibiotics after discharge, high-risk patients may benefit more from tailored postoperative counseling, symptom triage, and early follow-up.
- Intraoperative CSF leak may identify patients who need enhanced post-discharge communication planning.
- Because there were few infectious events, these findings should be interpreted as hypothesis-generating rather than evidence of equivalence between antibiotic strategies.

ADJUSTED OUTCOMES

Predictor	Adjusted IRR	p-value
Post-discharge antibiotics (Y vs N)	0.74 (0.46-1.19)	0.215
Intraoperative CSF leak (Y vs N)	1.94 (1.17-3.22)	0.010
Length of stay (per additional day)	0.78 (0.66-0.93)	0.005

Table 3. Adjusted predictors of postoperative calls and electronic messages.

Post-discharge antibiotic use was not associated with postoperative communication volume. In contrast, intraoperative CSF leak was associated with more calls/messages, whereas longer hospital stay was associated with fewer calls/messages. IRRs were estimated using multivariable negative-binomial regression. An IRR greater than 1 indicates a higher expected number of calls/messages. The model adjusted for age, sex, tumor category, length of stay, intraoperative CSF leak, and post-discharge antibiotic use.

CONCLUSIONS

- Post-discharge oral antibiotic prophylaxis was **not associated with lower 30-day infectious-complication rates** after endoscopic transsphenoidal pituitary surgery.
- Post-discharge antibiotics were also **not associated with fewer postoperative calls or electronic messages** to the surgical team.
- Infectious events and infection-related acute-care use were rare in both groups.
- Intraoperative CSF leak was associated with greater post-discharge communication burden, while longer hospital stay was associated with fewer calls/messages.
- These findings suggest that routine post-discharge antibiotics may offer limited benefit and support consideration of a more selective, risk-stratified antibiotic-stewardship approach

FUTURE DIRECTIONS

- Conduct larger, prospective, multicenter studies with sufficient power to assess rare infectious complications.
- Develop standardized, risk-stratified postoperative antibiotic protocols incorporating factors such as CSF leak, skull-base reconstruction complexity, tumor characteristics, and length of stay.
- Study whether targeted discharge education, standardized CSF-leak precautions, nurse triage pathways, or earlier follow-up can reduce postoperative messaging and unplanned acute-care utilization.
- Assess whether communication burden can serve as a patient-centered marker of postoperative recovery and support needs.