INPLASY

30-Day Unplanned Readmission After Transsphenoidal Pituitary Surgery: A Meta-Analysis of Incidence and Risk Factors

INPLASY202570112
doi: 10.37766/inplasy2025.7.0112
Received: 27 July 2025
Published: 27 July 2025

Zhang, YY; Che, XH; Huang, Y; Yang, WQ.

Corresponding author:
Jiajun Chen

1030112394@qq.com

Author Affiliation:
Huashan Hospital, Fudan University.

ADMINISTRATIVE INFORMATION

Support - None.

Review Stage at time of this submission - Preliminary searches.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202570112

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 27 July 2025 and was last updated on 27 July 2025.

INTRODUCTION

Review question / Objective This meta-analysis aims to determine (1) the incidence of 30-day unplanned readmission after pituitary tumor resection, (2) the leading causes of readmission, and (3) the key risk factors associated with readmission.

Condition being studied Unplanned 30-day readmission after transsphenoidal pituitary surgery is a critical quality-of-care indicator, yet its global incidence remains inconsistent across studies (estimated 5-20%). Previous single-center cohorts identified risk factors like CSF leakage and adrenal insufficiency, but these findings lack synthesis. A meta-analysis is urgently needed to:
1.Establish pooled readmission rates across healthcare systems,
2.Resolve controversies over modifiable risk factors (e.., surgical technique vs. endocrine management),
3.Guide clinical pathways for high-risk patients.
This study will provide the first Level-1 evidence to optimize postoperative surveillance strategies.

METHODS

Search strategy ("pituitary" OR "pituitary adenoma") AND ("readmi*" OR "rehospitali*") AND ("risk" OR "predict*" OR "protect*").

Participant or population Patients with 30-Day unplanned readmission after transsphenoidal pituitary tumor surgery.

Intervention Exposure group: Patients with unplanned readmission within 30 days after discharge following pituitary adenoma surgery.

Comparator Patients without unplanned readmission within 30 days after discharge following pituitary adenoma surgery.

Study designs to be included Case-Control Study and Cohort Study.

Eligibility criteria
(1) publications in a peer - reviewed journal in English
(2)Clearly document risk factors associated with unplanned readmission
(3)Patients undergoing transsphenoidal pituitary adenoma surgery
(4)Studies report or provide data convertible to odds ratios (ORs) with 95% confidence intervals (CIs) and standard errors (SEs).

Information sources We will systematically search peer-reviewed articles across four major biomedical databases: PubMed,Embase,Web of Science and scopus. The search will encompass:
All primary studies published in peer-reviewed journals
Relevant articles identified through reference lists of included publications (i.e., backward citation tracking)
For studies with incomplete or missing data, we will make direct contact with corresponding authors to request additional information. This will include but not be limited to:
Unpublished outcome measures
Raw data necessary for effect size calculation.

Main outcome(s) 1.Incidence and primary causes of unplanned 30-day readmission after transsphenoidal pituitary adenoma surgery 2.Risk factors for unplanned 30-day readmission following transsphenoidal pituitary adenoma resection.

Additional outcome(s) 1.Time to unplanned readmission (days post-discharge) 2.Disease-specific intervals for leading etiologies (e.g., endocrine crises, or CSF leakage).

Quality assessment / Risk of bias analysis Quality assessment will be performed using the Newcastle-Ottawa Scale (NOS) for non-randomized studies. The NOS evaluates three domains:

Selection (representativeness of exposed/non-exposed cohorts, ascertainment of exposure, demonstration that outcome was not present at baseline);

Comparability (control for confounding factors, e.g., age, sex);

Outcome (assessment method, follow-up duration, adequacy of follow-up).

For cohort studies, a maximum of 4 stars is allocated for Selection, 2 stars for Comparability, and 3 stars for Outcome (total 9 stars).
For case-control studies, Selection can receive up to 4 stars, Comparability 2 stars, and Exposure 3 stars.

Studies scoring ≥7 stars will be considered high quality, 5-6 stars moderate, and ≤4 stars low quality. Two reviewers will independently assess each study, with discrepancies resolved by consensus or a third reviewer.

Strategy of data synthesis Data synthesis will be performed as follows:
Statistical Analysis:
Dichotomous outcomes will be pooled using risk ratios (RR) or odds ratios (OR) with 95% confidence intervals (CIs).
Continuous outcomes (e.g., length of stay before readmission) will be analyzed using mean differences (MD) or standardized mean differences (SMD) if different scales are used.
Heterogeneity Assessment:
Cochran's Q test (p 50% suggesting substantial heterogeneity) will be used.
If heterogeneity is high, a random-effects model (DerSimonian-Laird method) will be applied; otherwise, a fixed-effects model (Mantel-Haenszel method) will be used.
Software:
All analyses will be conducted using Stata 18.0.

Subgroup analysis
Subgroup analyses will be stratified by:
1.Study design (prospective cohort vs. retrospective cohort vs. case-control)
2.Study scale (single-center vs. multicenter designs)
3.Sample size
4.Temporal trends.

Sensitivity analysis Sequential exclusion of individual studies to evaluate consistency.

Language restriction Only English-language publications will be included.

Country(ies) involved China.

Keywords pituitary adenoma; unplanned readmission; risk factors.

Contributions of each author
Author 1 - Jiajun Chen - He will perform literature screening and manuscript drafting.
Email: 1030112394@qq.com

Author 2 - Yingyue Zhang - She will conduct literature screening and data extraction.
Email: 1987543156@qq.com
Author 3 - Xuehua Che - He designed the study protocol and will serve as arbitrator to resolve discrepancies between Author 1 and Author 2 during the review process.
Author 4 - Ying Huang - She oversees the entire research process, including protocol development, methodology refinement, and quality control.
Author 5 - Weiqiang Yang - Search strategy formulation.