

Time to Cerebrospinal Fluid Rhinorrhea following Transsphenoidal Pituitary Resection

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Abstract

Transsphenoidal pituitary resection is a minimally invasive approach to extirpate pituitary lesions via a transnasal approach to the sella. Despite improvement in techniques to create watertight closures following tumor resection, persistent leakage of the cerebrospinal fluid (CSF) remains a relatively common complication. Timing of CSF leaks is presumed to occur shortly after surgery, however, rigorous analysis of post-operative intervals to CSF leaks remain limited. In our pilot institutional review, the majority of CSF leaks occurred within 30 postoperative days.

Introduction

Persistent leakage of the cerebrospinal fluid (CSF) may result from transsphenoidal resection of pituitary lesions (Figure 1) and remain a leading complication despite advancements in surgical repair techniques.^{1,2} Post-operative CSF leaks typically occur in a relatively brief window following surgery and are often recognized early in the recovery period³. Delayed rhinorrhea does not preclude a CSF leak origin, and late presentations of possible CSF leaks remain a diagnostic challenge for surgeons. We sought to improve characterization of postoperative CSF leak timing by performing a pilot single institutional analysis to examine cumulative incidence between transsphenoidal pituitary resection and CSF leak as a function of time.

Methods

Using ATLAS, we identified transsphenoidal sinus surgery using billing codes 07.65 or 07.62. The first procedure occurrence restriction was applied. The outcome was identified by any descendants of “cerebrospinal fluid leak” or “cerebrospinal fluid rhinorrhea” condition codes. The time between outcome and exposure was adjusted to calculate cumulative incidence. The study data came from the Columbia University Irving Medical Center (CUIMC) 2018q4 database. Our methods were approved by institutional review board (IRB #AAS8661).

Results

A total of 988 patients had a transsphenoidal pituitary resection. Post-operative CSF leaks developed in 16 (1.6%) cases between 0 and all days following the operation. The 1-year incidence of CSF leak was 1.2%, and the 30-day incidence of CSF leak was 1.1% (Figure 2).

Discussion/Conclusion

The majority of CSF leaks following transsphenoidal pituitary resection occur within 30 days, and 37.5% of cases occur within the first week. Post-operative rhinorrhea beyond this interval that lacks a

characteristic clinical history and physical examination findings is less likely to reflect a CSF leak. Overall, delayed CSF leaks following transsphenoidal resections of pituitary lesions are exceedingly rare.

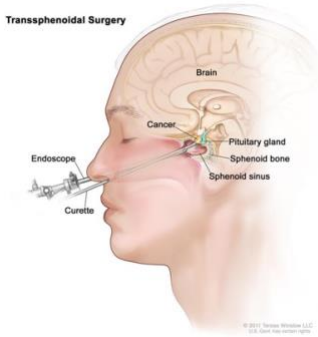


Figure 1: Schematic of Transsphenoidal Sinus Surgery⁴

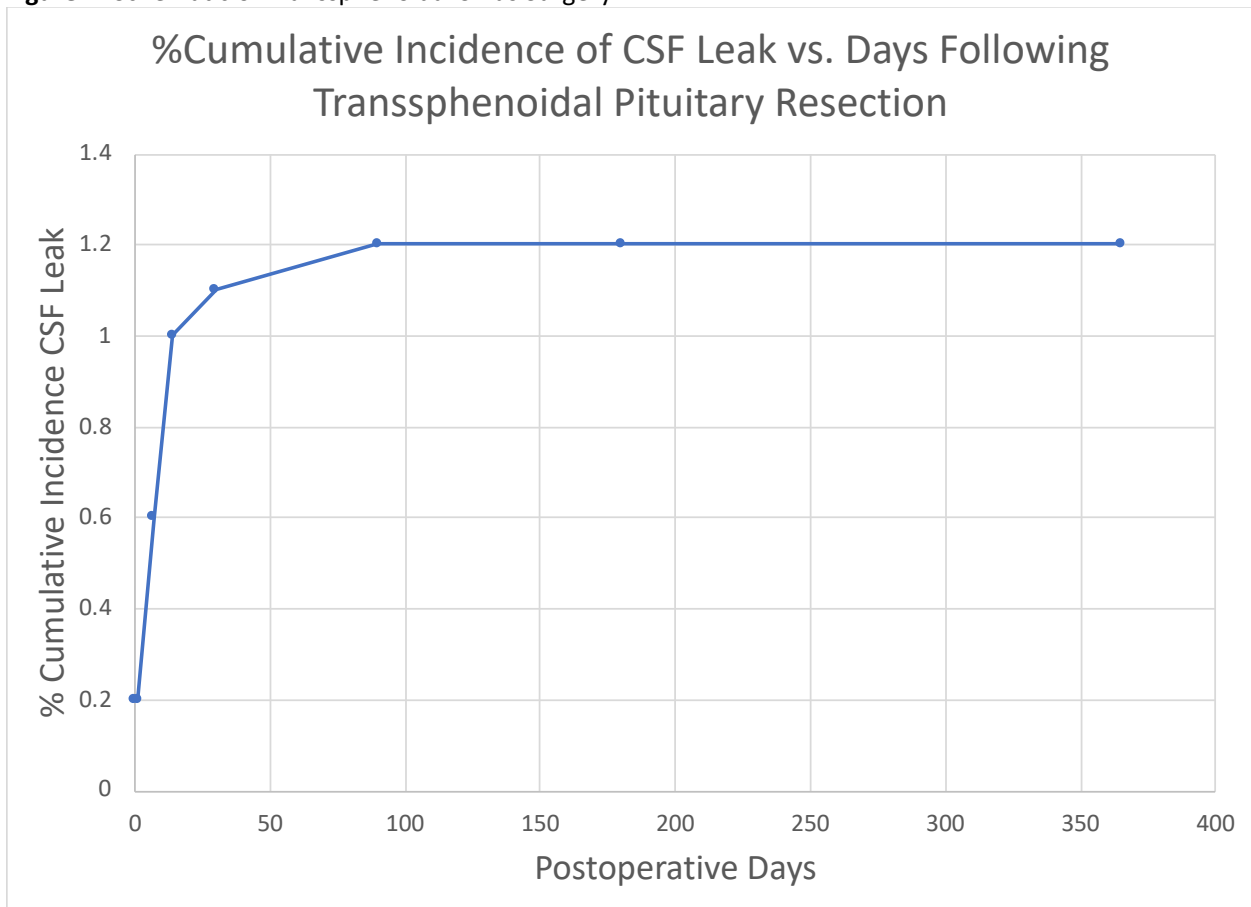


Figure 2: 1-year Cumulative Incidence of Cerebrospinal Fluid Leak following Transsphenoidal Pituitary Resection.

References

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