

# Enhancing Tract Patency and Preventing Recurrence in Recurrent Rathke's Cleft Cysts: A Novel Surgical Approach Using Free Mucosal Grafts and Bioabsorbable Steroid-Eluting Stents with Long-term Outcomes

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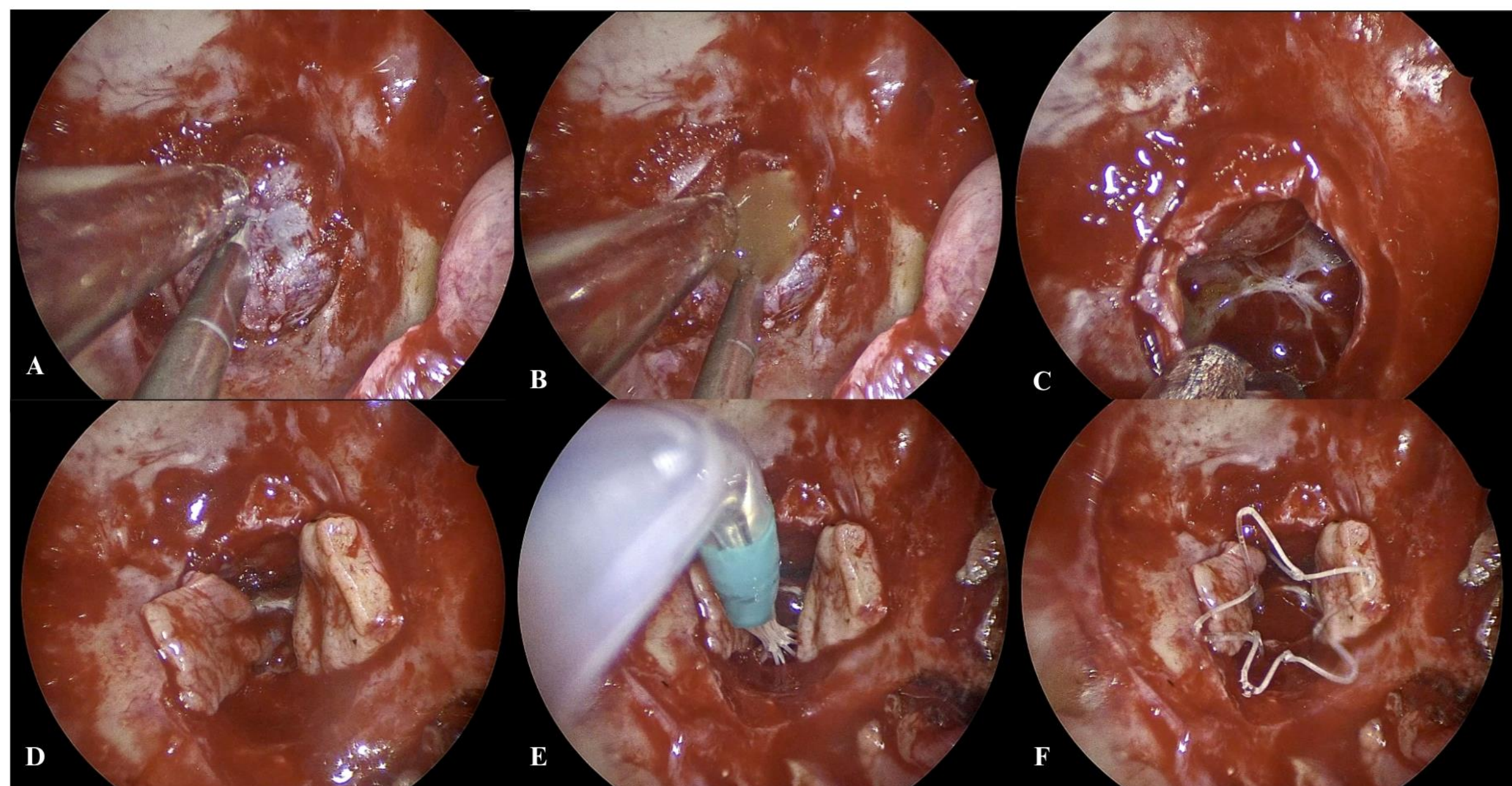
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## Background and Objective

Recurrences can occur after surgical fenestration for symptomatic Rathke's cleft cysts (RCCs). This study aimed to evaluate the efficacy and safety of combining free mucosal grafts (FMGs) and bioabsorbable steroid-eluting stents following the marsupialization of recurrent RCCs.

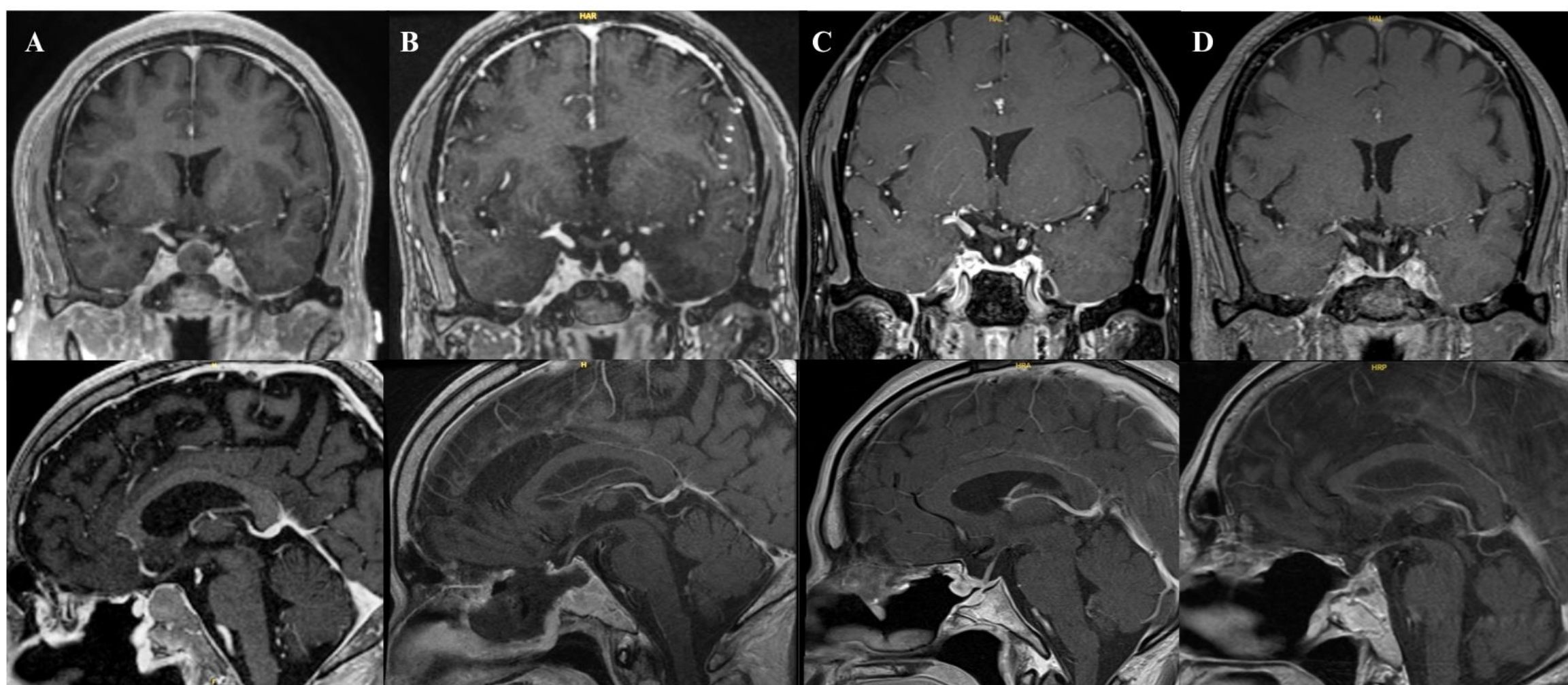
## Method

This study retrospectively reviewed three patients with recurrent RCCs who underwent cyst decompression followed by FMG and PROPEL steroid-eluting stent placement via an endoscopic transsphenoidal approach. The stents, embedded with mometasone furoate, are designed to dissolve over 30-45 days, reducing inflammation and scarring.



**Figure 1.**

- A. The recurrent Rathke's Cleft Cyst is opened
- B. Rathke's Cleft Cyst was found and removed
- C. After Rathke's Cleft Cyst was removed
- D. The mucosal graft was used to line the marsupialized cyst cavity.
- E. The stent is placed in the cyst opening
- F. The Stent is well situated, and Cyst opening is patent

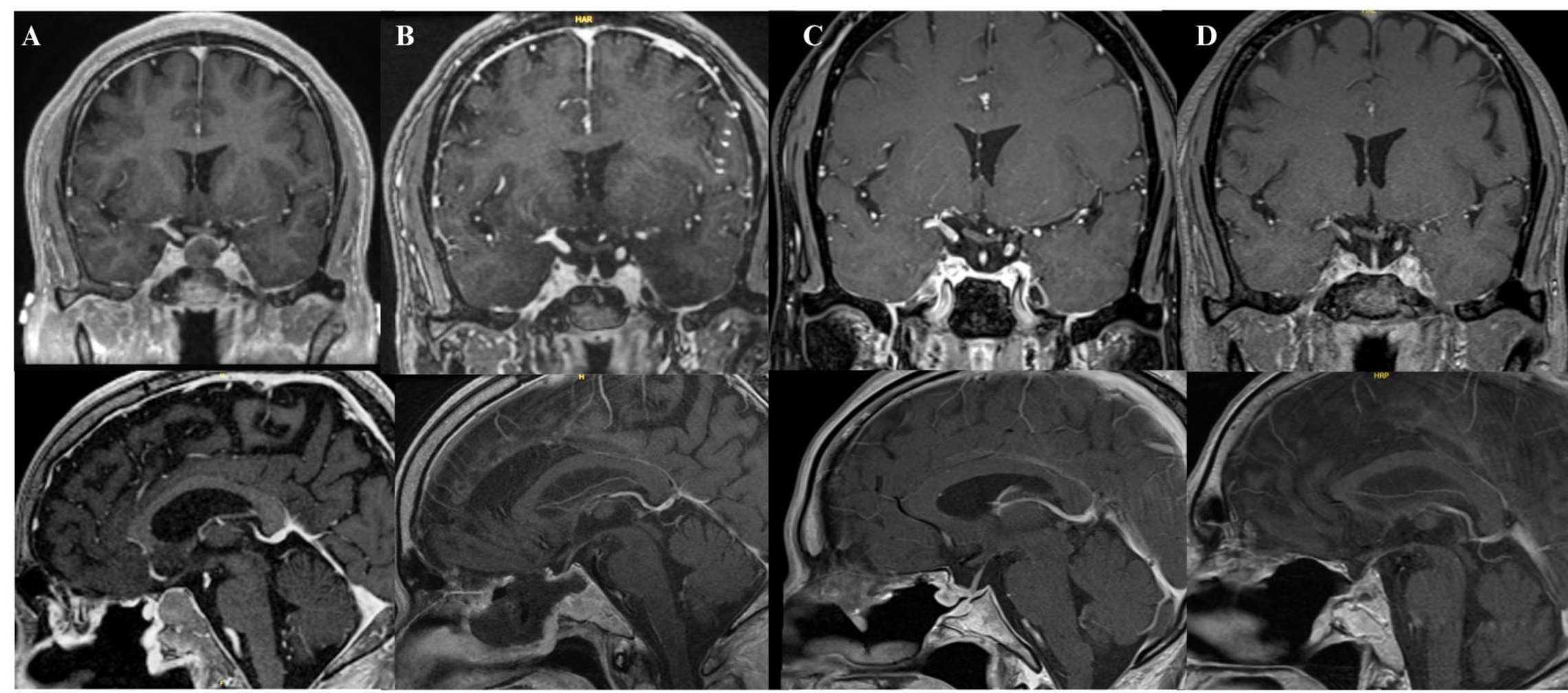


**Figure 2.** Patient 1, A 39-year-old female, presented with recurrent RCCs after two prior EEA that had increased in size 1.3x1.6x1.4 cm. The patient underwent re-EEA surgery, during which the cyst cavity was marsupialized using a free mucosal flap from the posterior septum, and a Propel stent was placed to facilitate drainage. The patient was discharged on day 3 post-surgery. At the 39-month follow-up, there was no recurrence.

(A) Preop, (B) Immediate postoperative, (C) at 12 months, (D) at 36 months Up Coronal view, Down Sagittal view

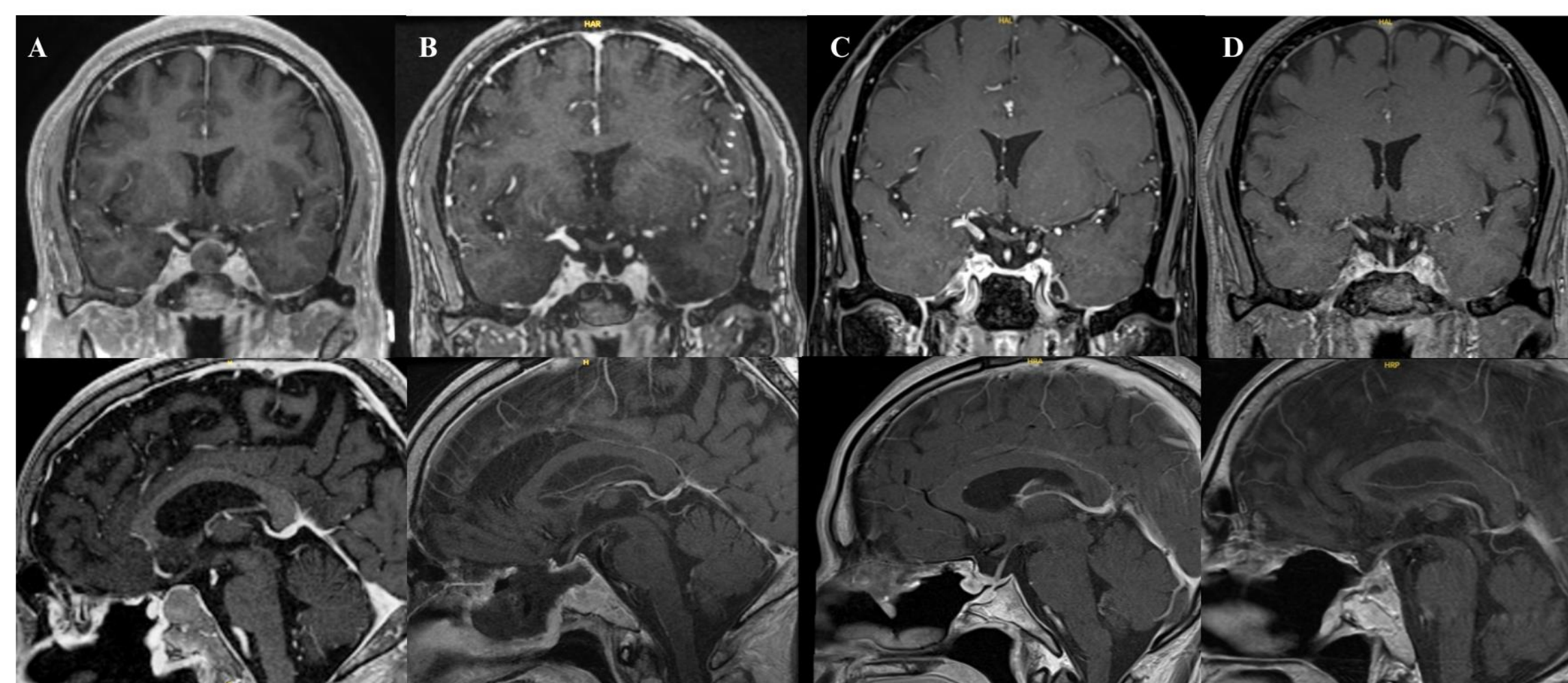
## Results

The endoscopic endonasal approach with FMGs and PROPEL stents resulted in no intraoperative or postoperative complications and no cerebrospinal fluid leaks. Over an average follow-up of 35 months, no cyst recurrence was observed in two patients, while the third patient had a stable residual lesion. All patients remained asymptomatic.



**Figure 3.** Patient 2, A 74-year-old male with RCCs S/P EEA to Fenestrate and covered with Vascular flap presented with a headache, and the MRI showed a recurrent Rathke cleft cyst size 1.6x1.9x1.7cm. The patient underwent re-EEA surgery, during which the cyst cavity was marsupialized using a two free mucosal flap, and a Propel stent was placed to facilitate drainage. The patient was discharged on day 3 post-surgery. At the 36-month follow-up, there was no recurrence.

(A)Preop, (B) Immediate postoperative, (C) at 12 months, (D) at 36 months Up Coronal view, Down Sagittal view



**Figure 4.** A 38-year-old female with RCCs S/P 3 times EEA to fenestrate cyst presented with a headache. The MRI showed a recurrent Rathke's cleft cyst size 1x1.1x1.5 cm. The patient was discharged on day 3 post-surgery. At the 30-month follow-up, there was no recurrence.

(A)Preop, (B) Immediate postoperative, (C) at 12 months, (D) at 30 months Up Coronal view, Down Sagittal view

## Discussion

We present the first detailed description of an operative series of RCCs in which a PROPEL steroid-eluting stent and FMG were combined to delay or prevent recurrence. This combination benefits tract patency more reliably due to the localized distribution of steroids, and the FMGs further stent the cavity and promote faster healing and re-epithelization.

## Conclusions

This study presents a novel approach combining FMGs and bioabsorbable steroid-eluting stents following the marsupialization of recurrent RCCs to promote tract patency and prevent recurrence. The results indicate that this technique is safe and effective, as demonstrated by the absence of intraoperative or postoperative complications and the promising long-term follow-up data, with an average of 35 months. Using mometasone furoate-eluting stents provides localized anti-inflammatory benefits that reduce postoperative inflammation, edema, and scarring, thus maintaining the drainage pathway's patency. Although the study is limited by its small sample size, the outcomes suggest that this combined method may offer a valuable alternative for managing recurrent RCCs. Further research is necessary to validate these findings and assess the long-term safety and efficacy of this innovative approach.



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