

# The Morphology of the Posterior Pituitary Gland on Intraoperative Ultrasound During Endoscopic Endonasal Resection of Pituitary Adenoma Correlates with Pre- and Postoperative MRI Findings

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## Introduction

- Two of the most common complications after pituitary adenoma (PA) resection, AVP-D and SIADH, are thought to be secondary to intraoperative manipulation of, or injury to, the posterior pituitary gland (PPG)
- This highlights the importance of intraoperative visualization and protection of the PPG
- We hypothesized that intraoperative endoscopic endonasal ultrasound (IEUS) would be more effective in visualizing the PPG than preoperative T1 MRI

## Methods

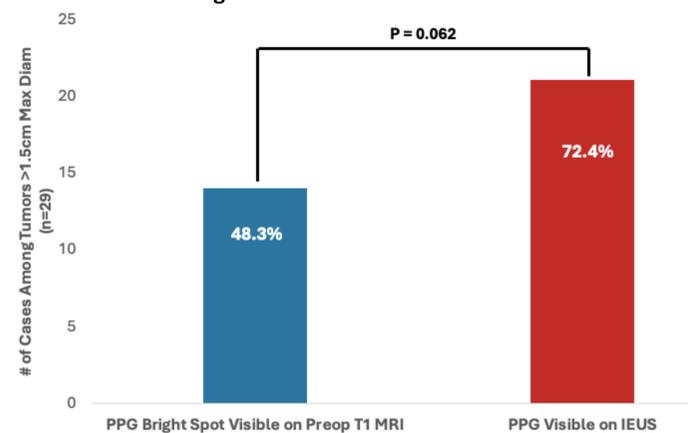
- Patients undergoing pituitary adenoma resection between 2022-2023 with IEUS use were included (n=51)
- Demographic, tumor-related, treatment-related, and outcomes variables were retrospectively collected
- Pre- and postoperative T1 MRIs were reviewed for the presence/absence of the PPG bright spot
- IEUS images were reviewed for the presence/absence of the PPG

## Results

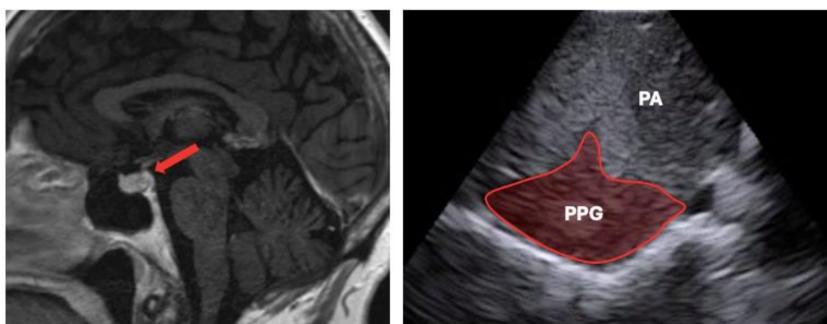
Table 1. Comparison Between Patients with a Present vs. Absent PPG Bright Spot on Preoperative T1 MRI

	PPG Bright Spot Not Visible (n=19)	PPG Bright Spot Visible T1 MRI (n=32)	P-Value
<b>Relationship of Bright Spot to Tumor Size</b>			
Max Diam (cm)	2.00 (1.8 - 2.6)	1.30 (0.9 - 1.7)	<b>0.004</b>
<b>Relationship of Bright Spot to iUS Findings</b>			
PPG Visible on iUS	11 (57.9)	30 (93.8)	<b>0.002</b>
<b>Relationship of Bright Spot to Outcomes</b>			
PPG Visible Post MRI	9 (33.3)	30 (93.8)	<b>&lt;0.001</b>
GTR	16 (84.2)	32 (100.0)	<b>0.021</b>
Postop AVP-D (DI)	6 (31.6)	4 (12.5)	0.097

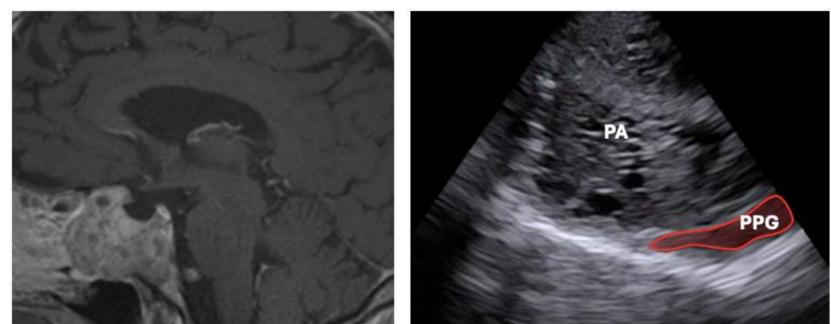
IEUS is More Effective at Visualizing the PPG than Preoperative T1 MRI Among Patients with Macroadenoma >1.5 cm



Case 1: Microadenoma w/PPG Visualized on Preop MRI and IEUS



Case 2: Macroadenoma w/PPG Visualized on IEUS, NOT Preop MRI



## Conclusion

- The presence of the PPG bright spot on preoperative T1 MRI strongly correlates with intraoperative visualization on IEUS during PA resection
- Successful visualization of the PPG on preoperative MRI and IEUS correlated with smaller tumor size and eventual GTR
- Among macroadenomas >1.5 cm in max diameter, IEUS is more effective at visualizing the PPG (72.4%) than preoperative MRI (48.3%) (p=0.062)
- PPG visualization on IEUS correlated with radiographic and surgical, but not clinical outcomes