

Background

- Endonasal endoscopic surgery has significantly advanced the management of skull base lesions. This technique is particularly beneficial for the resection of pituitary adenomas, which are the most commonly treated lesions via this route.
- The evolution from transsphenoidal to extended approaches in endoscopic surgery has enabled the management of larger and more complex skull base tumors, albeit with an inherent risk of complications such as cerebrospinal fluid (CSF) leaks. Innovations in reconstruction techniques, including the use of vascularized flaps, have substantially reduced this risk.
- Our epidemiological analysis of skull base endoscopic surgeries performed at our institution from 2018 to 2023 encompasses surgical techniques, adenoma characteristics, approach extensions, fistula rates, and reconstruction strategies.

Methods and Materials

- A retrospective survey was conducted on patients who underwent endoscopic skull base surgeries from 2018 to 2023. Data were extracted from hospital records, including demographic information, type of surgery, presence of intraoperative fistula, need for reoperation, postoperative complications, and degree of tumor resection.
- Descriptive statistical analysis was performed on the variables. Correlation between nominal variables was also assessed using the chi-square test.

Results

- The study evaluated 85 patients who underwent endoscopic skull base surgery.
- Half of the patients with available data presented with visual deficits, and 16.2% had diplopia.
- Most patients did not have endocrine disorders (65.9%).
- Among pituitary neuroendocrine tumors, non-functioning adenomas were the most frequent (65.2%). Complications included intraoperative fistula (36.5%), diabetes insipidus (2.4%), and meningitis (1.2%).
- Total resection was achieved in 81.2% of cases.
- Among patients with intraoperative fistula, the creation of a vascularized nasoseptal flap was associated with a lower incidence of postoperative fistula (OR 0.021; 0.002 – 0.287, 95% CI; $p < 0.001$), whereas the implantation of a lumbar drain did not show a significant correlation (OR 0.167; 0.008 – 3.367, 95% CI; $p = 0.286$).**

RELATIVE DISTRIBUTION OF PITNET TYPES

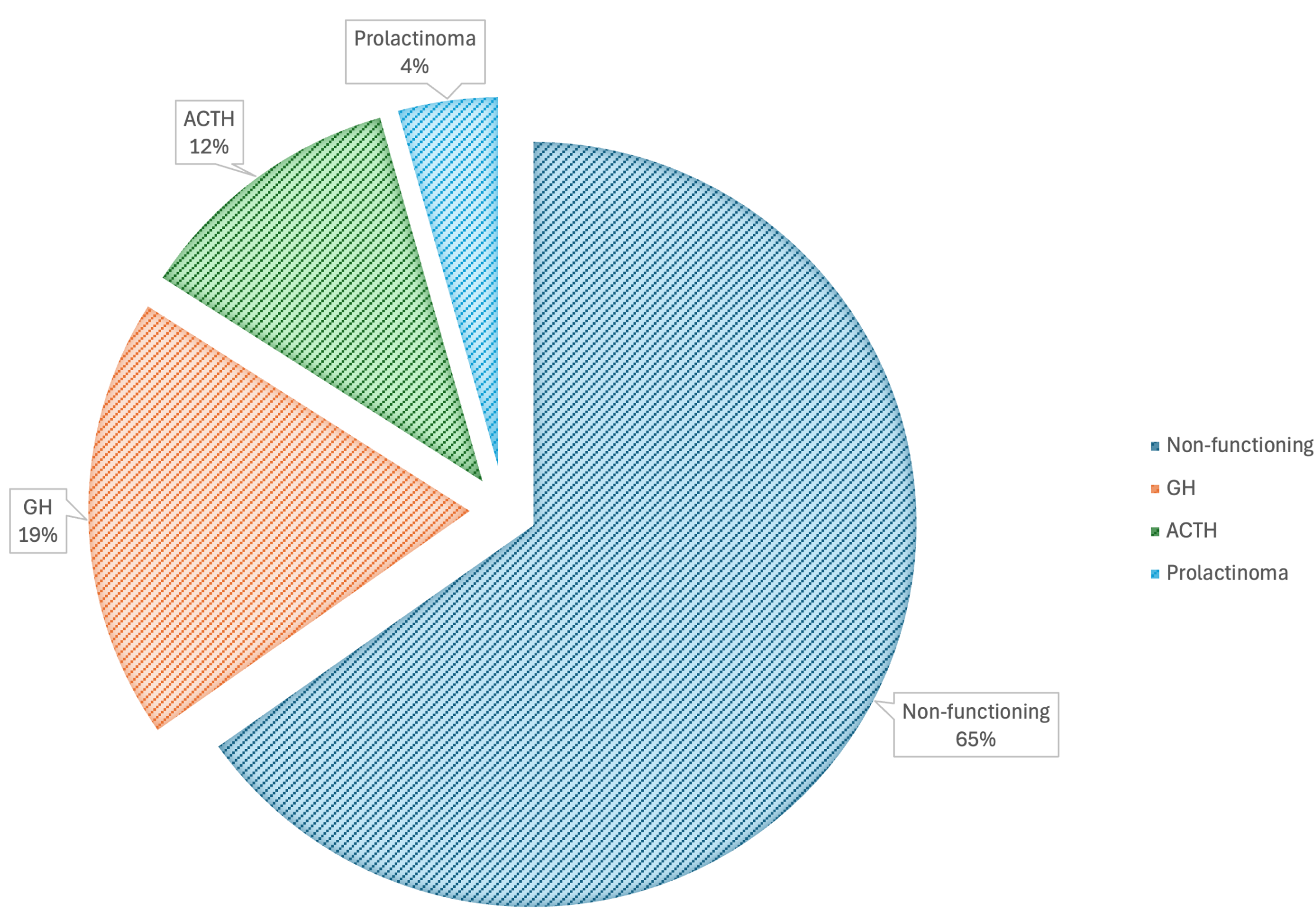


Figure 1. Pie chart showing the relative distribution of PitNET subtypes, according to the hormone produced.

RELATIVE DISTRIBUTION OF ENDOCRINOLOGICAL DISTURBANCES

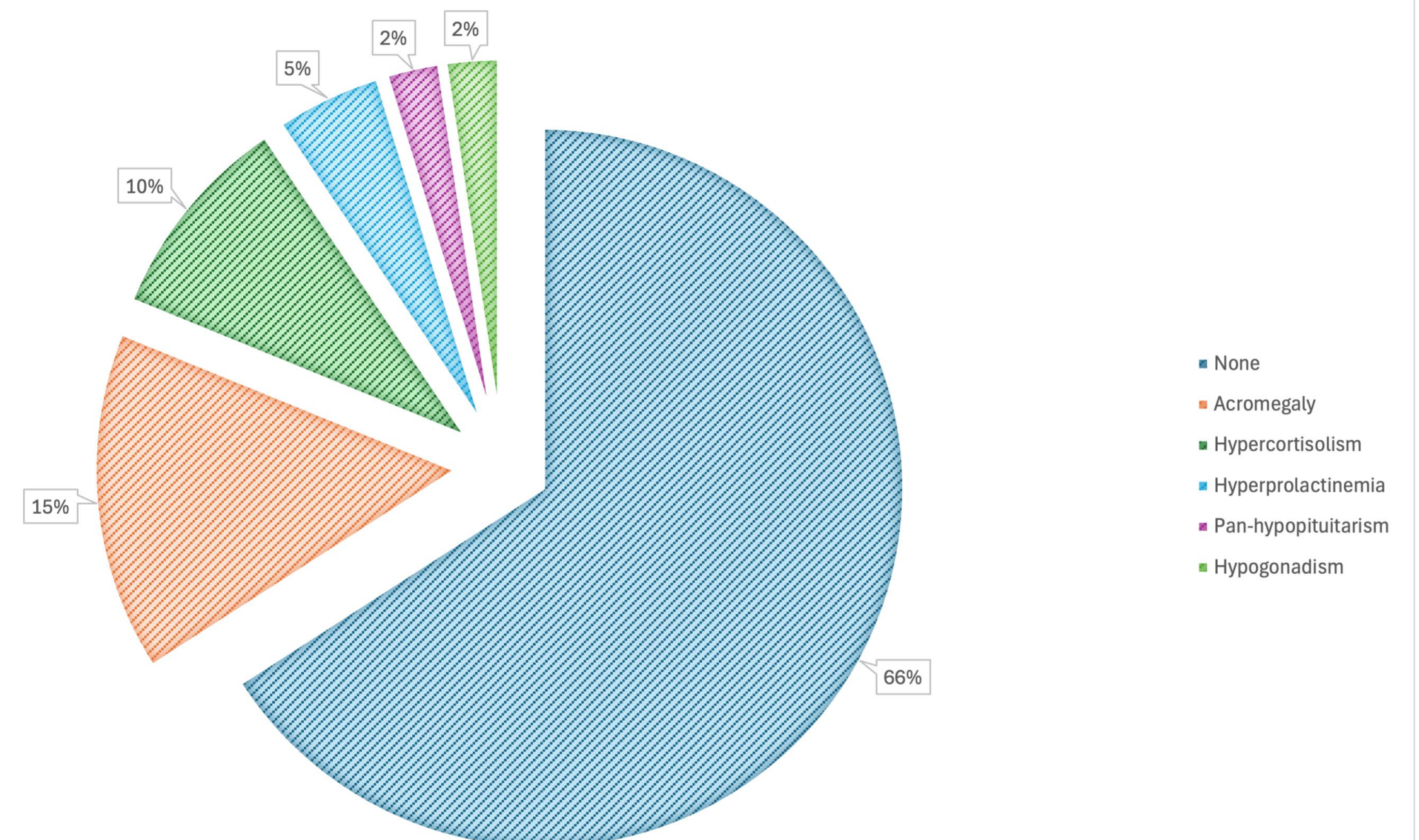


Figure 2. Pie chart showing the relative distribution of endocrinological disturbances.

Contingency Table 1				Contingency Table 2			
CSF leak	Nasoseptal Flap		Total	CSF leak	Lumbar Drain		Total
	With Flap	No Flap			With Lumbar Drain	No Lumbar Drain	
With leak	1	4	5	With leak	0	5	5
No Leak	24	2	26	No Leak	9	17	26
Total	25	6	31	Total	9	22	31
Odds Ratio				Odds Ratio			
	95% Confidence Intervals		p		95% Confidence Intervals		p
	Odds Ratio	Lower			Odds Ratio	Lower	
Odds ratio	0.021	0.002	0.287	Odds ratio	0.167	0.008	3.367
Fisher's exact test	0.027	0.000	0.412	Fisher's exact test	0.000	0.000	2.598

Figure 3. Contingency tables and odds ratios calculated using Fisher's exact test, comparing the incidence of postoperative cerebrospinal fluid (CSF) leaks in two patient groups: (1) those with and without a nasoseptal flap (Contingency Table 1) and (2) those with and without a lumbar drain placed immediately after surgery (Contingency Table 2). The odds ratios, 95% confidence intervals, and p-values indicate the statistical significance of these associations.

Conclusions

- The results of this study support the current trend of employing endonasal endoscopic surgery as an effective approach for skull base lesions, especially pituitary adenomas.
- The high rate of total resection observed (81.2%) aligns with rates reported in previous studies, reinforcing the efficacy of this modality in providing adequate tumor control.
- The incidence of intraoperative CSF leaks (36.5%) underscores the importance of improved reconstruction techniques.
- In this context, the use of vascularized nasoseptal flaps has proven to be a valuable strategy, significantly reducing the occurrence of postoperative fistulas, a finding consistent with the literature that emphasizes the importance of a robust reconstruction barrier.

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