

# A New Zealand Experience of Endoscopic Endonasal Management of Craniopharyngiomata

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Introduction

Endoscopic endonasal transphenoidal approaches to craniopharyngiomata has become increasingly popular over the last 15 years. In select patients this procedure that can be performed with ease of access and with minimal morbidity. Currently, only few published reports of this approach are in the literature to date. We present the results of our retrospective series of craniopharyngiomata resected by an endoscopic, endonasal approach.

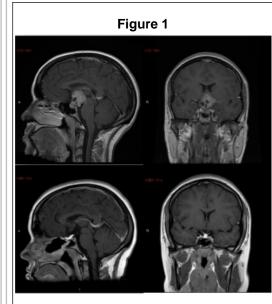
## Methods

From 2011 to 2016, all patients undergoing pure endoscopic endonasal transsphenoidal resection for a craniopharyngioma at our institution were retrospectively assessed. All patients were treated surgically by an endoscopic transsphenoidal surgical approach with access via both nares and a 3-4 hand technique. Neuronavigation was utilised in all of these cases. The subarachnoid space was opened formally. A two-layer dural closure was used with a small fat graft to fit the dural opening, an in-lay and on-lay fascia lata or Duramatrix, then covered by a vascularised nasoseptal mucosal flap.

## Results

## Patient characteristics

Between the years of 2009 and 2016, eight patients underwent endoscopic endonasal transsphenoidal resection for a craniopharyngioma at our institutions. Of these eight patients there were five male and three female patients. The mean age was 37.6 years (range 14-68 years). Of the series eight patients were aged older than 18 years and only two patients were less than 18 years and of the paediatric group.



T 1 weighted sagittal and coronal MRIs with contrast showing a mostly solid suprasellar craniopharyngioma preop (above) and postop (below) with no residual

Clinical Presentation and Imaging Features All patients (100%) reported visual deficits as the most common presenting symptom. The patients presented most commonly with a bitemporal hemianopia. Headache was the next most common presenting symptom and was present in 6 of the 8 patients (75%).

Of the 8 patients, 5 of the tumours were confined to the suprasellar region (62.5%). Three tumours had sellar and suprasellar extension (37.5%). Two patients were noted to have obstructive hydrocephalus on preoperative MRI assessment (25%). All were mixed cystic and solid tumours. The size of the tumours ranged from 1.5 to 3.4 cm in transverse diameter, 1.5 to 4.4 cm in anterior to posterior length, and 1.7 to 4.5 cm in craniocaudal length.

# Figure 2

T 1 weighted sagittal and coronal MRIs with contrast showing a mostly cystic sellar and suprasellar craniopharyngioma preop (above) and postop (below) with the optic nerves and chiasm sagging down into the sella above the fascia lata and fat dural repair

## Surgical Outcomes

Of this patient series a gross macroscopic resection of the tumour was achieved in seven of the eight patients (87.5%). Postoperative MRI in the seven patients did not reveal residual tumour and correlated well with intraoperative findings. At a median follow-up period of 44 months (range 9-72 months) there was no further radiological recurrence. All patients were confirmed on histology to have grade 1 craniopharyngiomas, six showing calcification and four verified as an adamantinomatous subtype. Endocrine Outcomes

At preoperative assessment one patient was recorded as having diabetes insipidus. Four patients of this series were recorded

# as having panhypopituitarism

preoperatively necessitating treatment. In the immediate postoperative phase seven of the eight patients developed diabetes insipidus (87.5%). Six of these patients still had confirmed diabetes insipidus at the first follow-up period (75%). Six (75%) of the eight patients were recorded to have panhypopituitarism during the postoperative period. None of these patients had restoration of their pituitary function.

## Visual Outcomes

Four patients had recorded improvement in visual field deficts (50%). In these patients the visual fields improved either to normal or with minimal residual field deficit. No patients were recorded as having deterioration in their visual fields post-surgery.

Perioperative Cerebrospinal fluid (CSF) Complications

All patients had opening of their subarachnoid space intraoperatively. One patient who had two previous craniotomies and prior radiotherapy had recurrent CSF rhinorrhoea, and required a second endoscopic procedure for dural repair (CSF leak rate 12.5%).

### Conclusions

For selected tumours the endoscopic endonasal transsphenoidal approach for excision of craniopharyngioma can achieve adequate decompression of critical structures with high rates of gross total resection. This endoscopic endonasal approach offers superior visualisation and negates the need for brain retraction in patients with predominantly midline tumours. Our patient series demonstrates the feasibility of this approach with the longest follow-up period published to date.