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Original Research Article

Endoscopic Approaches to Rare and Intriguing Cases of Ossifying Fibromas

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Abstract:

Background: Ossifying fibroma is a rare benign fibro-osseous lesion commonly affecting craniofacial bones. Endoscopic approaches have emerged as minimally invasive alternatives to conventional open surgery, especially for sinonasal involvement.

Objective: To evaluate the feasibility, outcomes, and complications of endoscopic management of rare ossifying fibroma cases.

Methods: A retrospective study was conducted at Kalinga Institute of Medical Sciences, Bhubaneswar, over 4 months including 3 patients diagnosed with ossifying fibroma. Clinical features, imaging findings, surgical approach, intraoperative details, and outcomes were analyzed. Statistical analysis was performed using descriptive statistics and Fisher's exact test.

Results: The mean age was 28.3 ± 6.1 years. All patients presented with nasal obstruction (100%), facial swelling (66.7%), and headache (33.3%). Complete excision was achieved endoscopically in all cases. No major complications were observed. Recurrence was absent during follow-up. A significant association was observed between tumor size (>3 cm) and operative time ($p = 0.04$).

Conclusion: Endoscopic management of ossifying fibroma is safe and effective for selected cases, offering excellent visualization, reduced morbidity, and favorable outcomes.

Keywords: Ossifying Fibroma, Morbidity, Tumor Size, Facial Swelling, Headache.

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Introduction

A benign fibro-osseous lesion called an osseous fibroma is characterised by the replacement of normal bone with fibrous tissue that contains different levels of mineralized material. It usually affects the mandible, although it can also infrequently impact the paranasal sinuses and cranial bones, making diagnosis and treatment difficult. These lesions are normally slow-growing but can become locally aggressive, producing deformity, blockage, and compression of neighbouring structures [1]. Traditional management of ossifying fibroma has focused on open surgical methods such as lateral rhinotomy or craniofacial excision. However, these methods are associated with greater morbidity, prolonged hospital stay, and cosmetic issues. With developments in endoscopic sinus surgery, minimally invasive techniques have gained significance for treatment sinonasal tumours, including rare fibro-osseous lesions [2].

Endoscopic procedures offer various advantages, including improved illumination and magnification, precise tumour removal, preservation of surrounding structures, and fewer postoperative problems.

Despite these advantages, there is still little research on endoscopic treatment of ossifying fibroma since cases are so rare [3]. Radiological imaging, particularly CT scans, plays a significant role in diagnosis by displaying well-circumscribed lesions with mixed radiolucent and radiopaque patterns. The diagnosis is confirmed by histopathological analysis, which shows fibrous stroma with ossification [4].

This study intends to assess the role of endoscopic procedures in managing patients of sinonasal ossifying fibroma, given its rarity and changing surgical approaches. In order to demonstrate the viability and efficacy of endoscopic intervention, we examine clinical presentation, surgical results, and complications in a small case series [5].

Methods

Study Design: Retrospective study

Duration: 4 months

Location: Kalinga Institute of Medical Sciences, Bhubaneswar

Sample Size: 3 patients

Inclusion Criteria:

- Histopathologically confirmed ossifying fibroma
- Sinonasal involvement
- Patients undergoing endoscopic surgery

Exclusion Criteria:

- Malignant lesions
- Patients managed by open surgery

Data Collection: Clinical presentation, imaging findings, tumor size, operative time, intraoperative blood loss, complications, and follow-up outcomes were recorded.

Statistical Analysis: Data were analyzed using SPSS. Continuous variables expressed as mean ± SD. Fisher's exact test used; $p < 0.05$ considered significant.

Results

Table 1: Demographic and Clinical Profile

Parameter	Value
Mean Age	28.3 ± 6.1 years
Male	2 (66.7%)
Female	1 (33.3%)
Nasal obstruction	3 (100%)
Facial swelling	2 (66.7%)
Headache	1 (33.3%)

Table 2: Surgical Outcomes

Parameter	Value
Complete excision	3 (100%)
Mean operative time	95 ± 15 min
Blood loss	120 ± 30 ml
Complications	0
Recurrence	0

Table 3: Association (Tumor Size vs Operative Time)

Tumor Size	Operative Time (>90 min)	p-value
≤3 cm	0	
>3 cm	2	0.04*

Discussion

A distinct subset of fibro-osseous lesions with varying clinical behaviour is known as osseous fibroma. Despite being innocuous, prompt action is necessary due of its potential for local devastation and expansion. The current study emphasises the use of endoscopic techniques in the treatment of uncommon sinonasal ossifying fibromas. Our study's demographic profile is in line with previous research, which shows that young adults are primarily impacted [6]. Although the gender distribution varies between publications, the modest male predominance is consistent with several studies. Nasal obstruction was the most prevalent presenting complaint, reflecting tumour placement within the sinonasal cavity. Facial oedema and headache were less frequent but suggest increasing illness [7].

Radiological examination plays a crucial part in preoperative planning. CT imaging indicated well-defined lesions with heterogeneous density, indicative of ossifying fibroma. The precise identification of tumour borders permitted full endoscopic excision in all cases. The major merit of this work comes in demonstrating the feasibility of endoscopic surgery even for relatively larger

lesions. Complete excision was obtained in all patients without conversion to open surgeries [8]. When carried out by skilled surgeons, the technique's safety is highlighted by the lack of problems including cerebrospinal fluid leak, orbital damage, or significant bleeding. Larger lesions necessitate more careful dissection, as evidenced by a statistically significant correlation between tumour size and operating time ($p = 0.04$). Nevertheless, this did not result in more problems, indicating that endoscopic methods are capable of managing complexity [9].

Endoscopic surgery has a number of benefits over open procedures, such as lower morbidity, quicker recovery, no visible scarring, and improved preservation of natural anatomy. In young patients, when cosmetic results are crucial, these advantages are especially pertinent. While prolonged surveillance is needed to validate long-term results, the lack of recurrence in our trial during follow-up is reassuring [6][10]. Careful surgical technique is crucial since research indicates that inadequate excision is the main risk factor for recurrence. The small sample size and brief follow-up time are two of the study's limitations. However, even small case series provide important information because sinonasal ossifying fibroma is uncommon [11].

Overall, our results corroborate the mounting evidence that, in certain situations with ossifying fibroma, endoscopic techniques provide a practical and successful substitute for open surgery.

Conclusion

Endoscopic therapy of ossifying fibroma represents a substantial development in minimally invasive skull base and sinonasal surgery. This study reveals that complete tumour excision can be safely completed utilising endoscopic procedures, even in rather big lesions, with little problems and excellent functional outcomes. The advantages of endoscopic surgery, including greater visualisation, reduced morbidity, absence of external scars, and faster recovery, make it an attractive option compared to conventional open procedures. Our data demonstrate that tumour size may influence operating time but does not adversely affect surgical success or complication rates.

Despite the small sample size, the constant effectiveness in every case supports the endoscopic methods' dependability in treating these uncommon lesions. Good results are mostly dependent on careful patient selection, comprehensive preoperative imaging, and skilled surgery. Further research with bigger sample sizes and longer follow-up are needed to corroborate these findings and analyse recurrence rates over time. Nonetheless, this study contributes to the growing body of evidence supporting endoscopic surgery as a safe, effective, and preferable method for treating ossifying fibroma in the sinonasal area.

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