

Study on Endoscopic Approach for Sinonasal Inverted Papilloma

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Conflict of Interest: None

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Abstract:

Objectives: The purpose of this study is to evaluate the endoscopic approach for sinonasal inverted papilloma and outcome of the surgical management.

Study design: Retrospective.

Place and duration of study: Dhaka Medical college Hospital and Bangladesh ENT Hospital Ltd. of Bangladesh, from January 2006 to December 2020.

Materials and methods: 189 cases of Inverted papillomas (confirmed by histopathology) presented in last 15 years were managed by Endoscopic Sinus Surgery and the outcome evaluated.

Results: The age of the patients ranged from 41 to 80 years. The mean age was 60 years with Male Female ratio 2.04:1. 165 patients had unilateral disease and 24 patients had bilateral. Hundred & seventy two patients with inverted papilloma resected by the endoscopic approach, 09 patients by nasoendoscopy in combination with modified Caldwell-Luc approach and 8 patients by combined external and nasoendoscopic approach. Follow up revealed recurrence in nine patients.

Conclusion: Findings suggest that endoscopic approach is a safe and effective way of treating sinonasal inverted papilloma. Most lesions were entirely resected through endoscopic approach. Importantly surgical strategies need to be thoughtfully chosen based on tumor stage to achieve maximum removal of the lesion and prevent recurrence.

Key Words:

Inverted papilloma, Endoscopic sinus surgery, Paranasal sinuses.

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Introduction:

Inverted papilloma is a benign neoplasm that originates primarily from the mucosal epithelium of the nasal cavity and the paranasal sinuses comprising less than 4% of sinonasal tumors¹, Sinonasal inverted papilloma occurs mostly in middle aged men. Lesions tend to be bulky, polypoid and characteristically pale pink to gray in color².

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Figure 1: Morphology

Histologically the neoplastic epithelium inverts into the underlying stroma rather than proliferating outward and may invaginate to remodel bone but will not invade it without malignant transformation³.

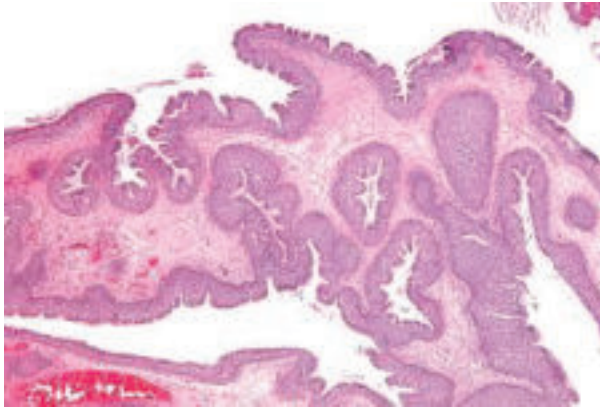


Figure 2: *Microscopic Feature*

The exact etiology of inverted papilloma remains unknown, although a number of etiologies have been proposed including allergy, occupational exposure and chronic inflammation³. A possible viral origin by Human Papilloma Virus (HPV) has repeatedly been reported by several authors, although the frequency of virus particle finding was variable^{4,5}.

Inverted papilloma is renowned for its high local recurrence and malignant transformation potential⁶. The reported average recurrence rate ranges from 4% after radical extranasal excision to 66% after non endoscopic endonasal excision⁷.

A review of literature shows that the overall association with malignancy is nine percent⁸. It may be synchronous or metachronous.

Due to its recurrence potential and aggressiveness, surgery has been the mainstay of treatment and the complete resection of the tumor is the key to successful management of this disease⁹. With the advancement of endoscopic and imaging techniques, endoscopic surgeries have been increasingly employed and are now widely accepted as the preferred treatment of this disease¹⁰.

In this study, we report our experiences in treating patients with sinonasal inverted papilloma and discuss the relationship between patient outcome and surgical techniques performed.

Materials and methods:

A retrospective analysis was performed on the medical records of 189 patients treated for sinonasal inverted papilloma at Dhaka medical college hospital and Bangladesh ENT hospitals, Bangladesh from January 2006 to December 2020.

Information on age, sex, clinical presentation at diagnosis, pre operative endonasal endoscopy and imaging, surgical approaches, postoperative histopathology reports,

postoperative complications and recurrences were analysed. Patients treated with endoscopic and combined endoscopic and external approach with post operative long term follow up were included in this study.

Preoperative evaluation: All patients were assessed preoperatively by history, clinical examination, endonasal endoscopy and radiology to evaluate the morphology, site, size and extension of the disease and to decide the operative technique to be performed.

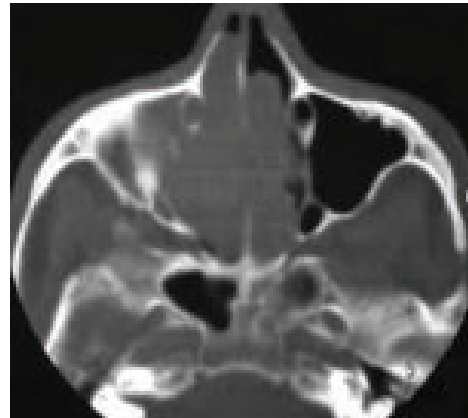


Figure 3: *Pre operative CT Scan*

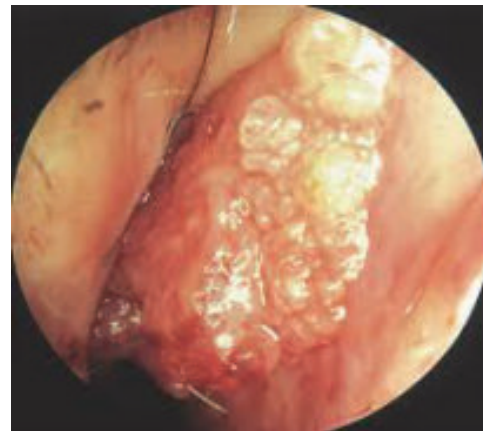


Figure 4: *Endonasal endoscopy*

Surgical Techniques: Endoscopic resection was performed under general anesthesia. The nose was prepared using gauze soaked in solution of 2% lidocaine and 1:100,000 adrenalin. In case of nasal mass – it was excised by microdebrider and then standard FESS technique was performed. Inferior turbinate, Uncinate process, part of middle turbinate and medial orbital wall was excised in cases with involvement of these areas.

Three different types of endoscopic procedures were performed 1. Purely endoscopic 172 cases 2. Combined nasoendoscopy and Caldwell Luc approach in 9 cases and 3. combination of endoscopic and external approach for 8 cases.

All patients were regularly followed up for two years examined endoscopically and radiologically with all suspicious areas being removed and sent for histological analysis.

Results:

The mean age was 59.5 years with a range from 41 to 78 years (Table -1). There were 62 female patients and 127 male.

Table-I

| Age distribution (n=189). | | |
|---------------------------|----------------|-------|
| Age(years) | No. of patient | % |
| 41-50 | 37 | 19.58 |
| 51-60 | 98 | 51.86 |
| 61-70 | 33 | 17.46 |
| 71-80 | 21 | 11.11 |

Table-II

| Clinical presentation (n=189) | |
|-------------------------------|-----|
| Nasal Obstruction | 53% |
| Rhinorrhoea | 37% |
| Headache & Facial Pain | 7% |
| Epistaxis | 3% |

The most frequent symptom was nasal obstruction that was seen in 53% of patients. Other frequent symptoms were rhinorrhea (37%), headache and facial pain (7%) and epistaxis (3%).

Table-III

| Surgical technique (n=184) | | |
|----------------------------|----------------|------|
| Surgical technique | No of Patients | % |
| Endoscopic | 172 | 91 |
| Endoscopic+Caldwell luc | 9 | 4.76 |
| Endoscopic +Extranasal | 8 | 4.23 |

Regarding surgical techniques, endoscopic approach was in 172 (91%) cases, Combined endoscopic and Cald Well lac approach in 9 (4.76%) and combined endoscopic and external approach in 8 (4.23%).

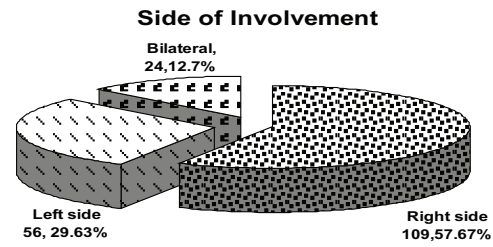


Figure 1: Side of involvement (n=189) There were 109 (57.67%) right sided lesions and 56 (29.63%) left sided lesions with 24 (12.7%) bilateral lesions (Table-4).

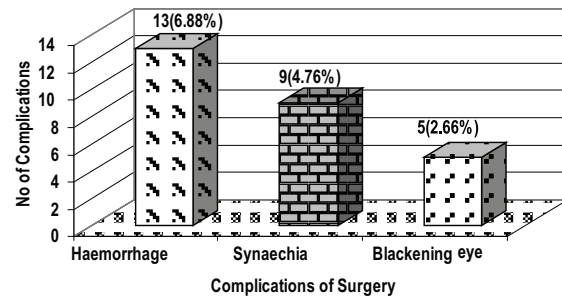


Figure 2: Complications of surgery

27 patients developed complications. They were hemorrhage 13 (6.88%), synechia 9 (4.76%) blackening of eyes 5 (2.65%) (Fig -6).

The mean follow-up for all patients was 31.3 months with a range of 8 to 62 months.

All patients were operated for the first time and no patient had malignancy associated with the disease. The diseased sites included the lateral nasal wall and adjacent sinuses without any orbital or cranial involvement. In two patients the site of attachment was the medial orbital wall, the involved portion was resected. Orbital, intracranial or lacrimal apparatus involvement were not seen. Nine patients with lateral maxillary wall involvement underwent endoscopic medial maxillectomy with the Caldwell Luc approach.

Nine patients (4.76%) had recurrences after initial endoscopic resection which occurred within the first postoperative year. One of them was successfully resected endoscopically and eight required removal via a combined approach

None of the patients had residual disease at the end of this review. No major complications were encountered in any of the patients.

Discussion:

Propensity to recurrence is one characteristic features of inverted papilloma. The majority of recurrence was

detected two years after surgery, ranging from 6 months to 5 years. It was pointed as early as 1980's by Myers et al⁷ that a recurrence might be primarily attributed to the inability of the surgeon to achieve complete resection rather than to the intrinsic characteristic of the tumor itself. Three principal aim of sinonasal tumor excision is firstly to create adequate and sufficient exposure for complete resection, secondly to provide an unobstructed view for post operative surveillance of the cavity, and thirdly minimize cosmetic deformities and functional disabilities, Endoscopic excision achieve all these objectives. Inverted papilloma often demonstrates aggressive local invasion and high recurrence if incompletely resected, as well as a potential for harboring squamous cell carcinoma¹¹. Therefore, it is imperative that these lesions be treated adequately.

Traditionally Inverted papillomas have been treated with en block resection via lateral rhinotomy and medial maxillectomy. There is higher morbidity involving external approaches which includes external scarring, blepharitis, diplopia, dacryocystitis, CSF leakage and facial neuralgia.

With the advent of endoscopic approaches inverted papillomas can effectively be managed with less morbidity and favorable outcomes. Our experience concurs with these published reports. Treatment success depend on exact tumor site ,it's extent defined and removal of all mucosa and underlying bone.

Endoscopic management allows unparallel visualization, avoids external scar and preserves mucocilliary physiology. Angled visualization facilitate complete tumor resection even in unfavorable site. The use of microdebrider combined with endoscopic excision help to remove underlying bone so that microscopic inverted papilloma can be thoroughly removed.

The reported recurrence rate of inverted papilloma after endoscopic resection is comparable or even lower to that of standard technique of lateral rhinotomy and medial maxillectomy¹². Post operatively endoscopic management also facilitate regular examination in out patient setting for post operative surveillance.

Conclusion:

Overall our findings are in agreement with other reports supporting endoscopic surgery is a viable treatment for sinonasal inverted papilloma and reinforcing the view that surgical approach and surgeon's skill greatly influence patients outcome.

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