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Sinonasal Inverted Papilloma – Presentation and Management

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A B S T R A C T

Background: Inverted papilloma is a true epithelial neoplasm of sinonasal cavity. It has a incidence rate of 0.6 cases/100000 people/year. The characteristic features of inverted papilloma are the presence of associated nasal polyps, its tendency to recur, destructive potential and malignant transformation. ***Objectives***: To review the presentation of sinonasal inverted papilloma and its management and review of literature.***Method:*** A retrospective study consisting of 4 diagnosed cases of inverted papilloma of sinonasal cavity which were treated at our tertiary care centre between the period March 2022 to June 2023. ***Results***: 1 out of 4 cases had bits of malignant tissue (squamous cell carcinoma) in the histopathological examination of the completely excised specimen and was referred to higher centre for radiotherapy. Rest 3 cases were completely cleared off the pathology and on regular follow up and no recurrence reported till date.***Conclusion***: Radical surgery is required for histopathologically proven cases of Inverted papilloma preoperatively, since there is high chance of recurrence if inadequately removed. All histopathologically proven cases of inverted papilloma have to undergo complete surgical clearance of the pathology. The entire specimen has to be sent to histopathological examination again to cross confirm and rule out malignancy. Also the patient should be asked to be on regular follow up to rule out recurrence.
Keywords: Inverted papilloma, sinonasal cavity, recurrence, malignancy.

INTRODUCTION

Inverted papilloma is a true epithelial neoplasm of the nasal cavity and paranasal sinuses characterized by hyperplastic epithelium inverting into the underlying connective tissue [1]. The first description of this entity was made by Ward in 1854 [2]. This lesion originates commonly from the lateral nasal cavity wall or paranasal sinus most commonly maxillary antrum. Appears as a soft, pink or brown, polypoid or nodular growth [3]. The etiology of inverted papilloma is still unknown. The main theory on inverted papilloma etiology proposes that Schneiderian membrane, which forms thesinonasal tract mucosa, originates from the ectodermal invasion of the olfactory placoid, this membrane would then suffer a number of structural changes, causing a greater predisposition for neoplastic differentiation [4, 5]. Other possible causes include allergy, chronic sinusitis, occupational exposure to dusts and aerosols, tobacco, and viral infections [2, 6]. A strong male predilection is noted with greater prevalence in Caucasians [3, 7]. The characteristic features of inverted papilloma are the presence of associated nasal polyps, its tendency to recur, destructive potential, and malignant transformation [8]. Recurrences after conservative surgical excision have occurred in 75% of cases and transformation to malignancy, usually SCC, in 3–24% of cases [3].

Materials and Methods

A retrospective study consisting of 4 diagnosed cases of inverted papilloma of sinonasal cavity which were treated at our tertiary care centre between the period March 2022 to June 2023. All the required patient data were taken from the medical records section. The radiological and pathological images of the selected cases were collected from department of Radiology and Pathology respectively. Before the commencement of the study, written consent was taken from the patients/ patient's attendant.

RESULTS

Case Report - 01

A 48-year old male patient, with complaints of right sided nasal cavity mass since 9 years, on andoff right nasal bleeding since 6 months and right facial pain since 15 days. On anterior rhinoscopy – irregular polypoidal mass seen occupying whole of right nasal cavity, bleeds on manipulation. Eye –Vision andextra ocular movements normal (Figure 1).

CT scan of nose and paranasal sinuses shows enhancing soft tissue density lesion is seen in right maxillary sinus causing its complete opacification with erosion of its walls and extensions into surrounding tissue and inretroantral region. Medially the lesion extends into the middle meatus through osteomeatalunit. There is erosion of right Osteomeatal unit. Lesion is causing erosion of floor of orbit and shows soft tissue extension and into extra orbital compartment on right side. Preoperatively biopsy of the nasal mass was taken and reported to be as inverted papilloma and planned for surgical management (Figure 2 & 3).

Figure 1: Right Nasal cavity Mass

Figure 2: Soft tissue density lesion in right maxillary sinus causing erosion of its walls (Soft Tissue Window)

Figure 3: Soft tissue density lesion in right maxillary sinus causing erosion of its walls (Bony Window)

Management: Patient underwent **Right subtotal maxillectomy. Intra operatively**: There was inferior turbinate atrophy and septal erosion on the right nasal cavity due to the mass.Mass was seen arising from the rightantero inferior wall of maxillary antrum and involucrum was seen in the anterior wall. Erosion of medial wall, posterolateral wall, floor of orbit and extension to the infratemporal fossa on the right side.Specimen was sent to Histopathological examination which showed inverted papilloma and bits of malignant tissue (squamous cell carcinoma).

Post operative follow up: Patient was sent to radiotherapy post-surgery and no recurrence post radiotherapy.

Case Report - 02

A 45 – years old male patient, presented with complaints of left sided nasal cavity mass since 8 months. On anterior rhinoscopy – irregular polypoidal mass seen occupying whole of left nasal cavity, does not bleed on manipulation. Eye - Vision and extra ocular movements normal (Figure 4) Preoperatively biopsy of the nasal mass was taken and reported to be as inverted papilloma. CT scan of the para – nasal sinuses showed homogenous opacity filling left nasal cavity and the left maxillary sinus.

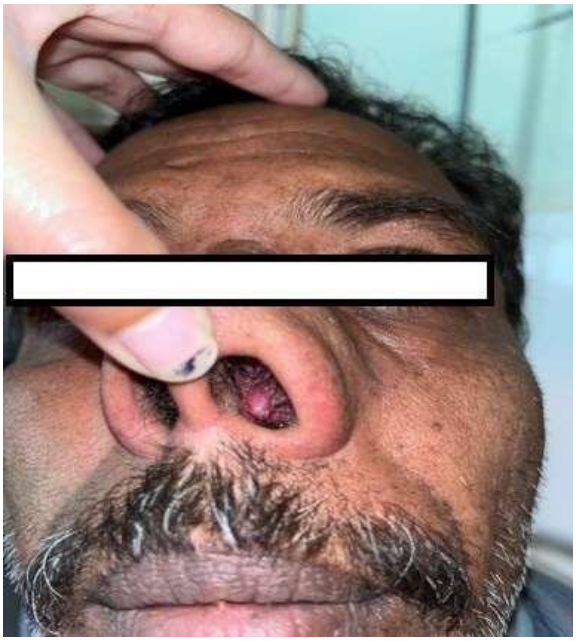

Figure 4: Left Nasal Cavity Mass

Management: Patient underwent **left endoscopic medial maxillectomy and complete clearance. Intra operatively**: There was inferior turbinate atrophy. Mass was seen arising from the left antero inferior wall of maxillary antrum. Erosion of medial wall and part of anterior wall of maxillary sinus seen.

Post operative follow up: Histopathologic examination revealed inverted papilloma with no evidence of dysplasia or surface erosion. Patient is still on regular follow up, no recurrence is seen till date.

Case Report - 03

A 45-yearold male patient, presented with complaints of right sided nasal cavity mass since 2 years. On anterior rhinoscopy – irregular polypoidal mass seen occupying whole of right nasal cavity, bleeds on manipulation. Eye - Vision and extra ocular movements normal (Figure 5). CT nose and paranasal sinus showed erosion of medial wall, floor of orbit, part of lamina papyracea. Septum pushed to opposite side (Figure 6). Preoperatively biopsy was taken which showed inverted papilloma.

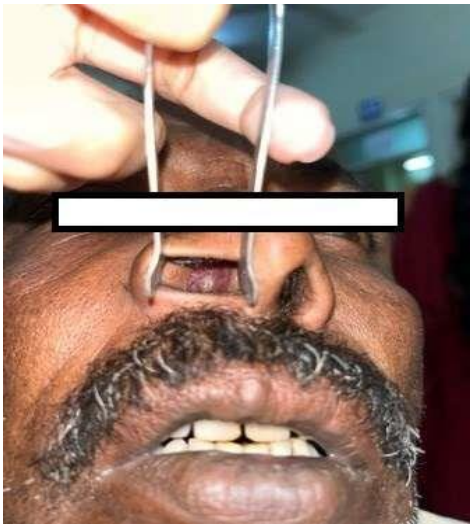

Figure 5: Right Nasal Cavity Mass

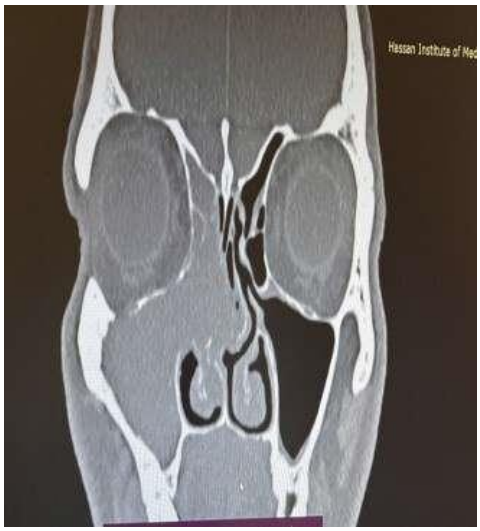

Figure 6: Right maxillary sinus Opacification with erosion of medial wall, floor of orbit, part of lamina papyracea

Management: Patient underwent **right endoscopic medial maxillectomy and complete clearance. Intra operatively**, Mass was seen arising from the right antero inferior wall of maxillary antrum. Erosion of medial wall, postero lateral wall, floor of orbit and extension to the infratemporal fossa on the right side.

Post operativefollow up: Histopathologic examination revealed inverted papilloma with no evidence of dysplasia or surface erosion. Patient is still on regular follow up, no recurrence is seen till date.

Case Report – 04

A 45 – year old female patient, presented with chief complaints of right sided nasal cavity mass since 2 years. On anterior rhinoscopy – smooth polypoidal mass seen occupying whole of right nasal cavity, does not bleed on manipulation. Eye –Vision and extra ocular movements normal (Figure 7). CT scan of the paranasal sinuses showed

homogenous opacities filling right nasal cavity and the right maxillary sinus. Preoperative biopsy taken from nasal mass which revealed inverted papilloma.

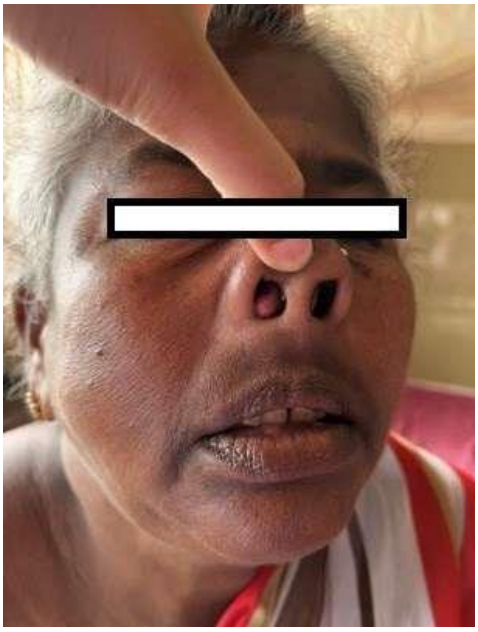

Figure 7: Right Nasal Cavity

Management: Patient underwent **right endoscopic medial maxillectomy and complete clearance**. Post operative follow up, Histopathologic examination revealed inverted papilloma with no evidence of dysplasia. Patient is still on regular follow up, no recurrence is seen till date.

DISCUSSION

Inverted papilloma (synonym: Ringertz tumor, trasitional cell papilloma, fungiform papilloma, cylindrical cell papilloma, schneiderian cell papilloma, epithelial papilloma, soft papilloma and sinonasal – typepapilloma) can be defined as a group of benign neoplasm arising from the sinonasal (Schneiderian) mucosa and is composed of squamous or columnar epithelial proliferation with associated mucous cells [9]. Collectively, Schneiderian papillomas represent<5% sinonasal tract tumors [10].

Theectodermally derived lining of the sinonasal tract, termed as theschneiderian membrane, may give rise to three morphologically distinct benignpapillomas (Schneiderianpapillomas).

1. Inverted
2. Oncocytic(cylindrical or columnar)
3. Fungiform (exophytic, septal) [10].

Inverted papillomas occur along the lateral nasal wall (middle turbinate or ethmoid recesses), with secondary extension into the paranasal sinuses. They may originate in paranasal sinus with/without involving nasal cavity [10]. Radiological studies are commonly used to evaluate inverted papilloma with CT scan and magnetic resonance imaging (MRI) scan being the most common. Bony changes including bowing of the bones located near the mass are common CT findings [10].

Krouse *et al*., has proposed a staging system [11].

T1 - Tumor totally confined to the nasal cavity, without extension into the sinuses. The tumor can be localized to one wall or region of the nasal cavity, or can be bulky and extensive within the nasal cavity, but must not extend into the sinuses or into any extranasal compartment. There must be no concurrent malignancy.

T2 - Tumor involving theostiomeatalcomplex, and ethmoid sinuses, and/or the medial portion of the maxillary sinus, with or without involvement of the nasal cavity. There must be no concurrent malignancy.

T3 - Tumor involving the lateral, inferior, superior, anterior, or posterior walls of the maxillary sinus, the sphenoid sinus, and/or the frontal sinus, with or without involvement of the medial portion of the maxillary sinus, the ethmoid sinuses, or the nasal cavity. There must be no concurrent malignancy.

T4 - All tumors with any extranasal/extrasinus extension to involve adjacent, contiguous structures such as the orbit, the intracranial compartment, or the pterygomaxillary space. All tumors associated with malignancy.

The treatment of invertedpapilloma is essentially surgical. Medial maxillectomy through lateral Rhinotomy was previously established as the gold standard for treatment of inverted papilloma, this technique was associated with potential aesthetic complications, endoscopic techniques have revolutionized the treatment with its clear advantage over open technique in terms of less hospital stay, improved post op pain and cosmetically with the absence of facial incision and minimal facial swelling [11]. However, an exclusively endoscopic approach may be contraindicated in the event of

1. Massive involvement of the mucosa of the frontal sinus and/ or of a supraorbital cell;
2. Transorbital extension,
3. Concomitant presence of a malignancy that involves critical areas;
4. Presence of significant scarring and anatomic distortion from previous surgery [12].

"Recurrence" actually represents residual disease in most cases, so that basic problem facing the clinician is to determine adequate treatment [10]. Open approaches such as the lateral rhinotomy and midfacial degloving procedures allow increased tumor visualization and more complete resection including maxillectomy, which minimizes the recurrence rates [10]. It is mandatory to resect not only the tumor but also to remove the mucoperiosteum in areas from which the tumor originates using the drill [10]. Intraoperatively histologic control by frozen section is strongly recommended [10].

CONCLUSION

Inverted papilloma is a rare condition of sino-nasal cavity. Radical surgery is required for histopathologically proven cases of Inverted papilloma preoperatively, since there is high chance of recurrence if inadequately removed. All histopathologically proven cases of inverted papilloma have to undergo complete surgical clearance of the pathology. The entire specimen has to be sent to histopathological examination again to cross confirm and rule out malignancy. The patient should be asked to be on regular follow to rule out recurrence.

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