NEERAJ RAUNIYAR [1]
BIBHU PRADHAN [2]

Department of ENT-HNS
National Medical College and Teaching Hospital, Birgunj, Nepal [1]

Department of ENT-HNS
Ganeshman Singh Memorial Academy of ENT and Head Neck Studies
TU Teaching Hospital , Kathmandu , Nepal [2]

Corresponding Author:
Dr. Neeraj Rauniyar
Lecturer, Department of ENT-HNS
National Medical College and Teaching Hospital, Birgunj, Nepal
Email :neeraj.rauniyar@gmail.com

SURGICAL TREATMENT FOR INVERTED PAPILLOMA OF NASAL CAVITY, ENDOSCOPIC OR OPEN APPROACH: OUR EXPERIENCE

ABSTRACT

Objective:
The main aim of this study is to share our experience in treating sinonasal inverted papillomas, particularly those treated by endoscopic approach.

Materials and methods:
This retrospective study wa sconducted at Ganeshman Singh Memorial Academy of ENT-HNS Studies, Maharajgunj Medical Campus, Institute of Medicine (IOM), Tribhuwan University Teaching Hospital (TUTH) between 18th October 2011 to 17th July 2015. A total of 40 patients were enrolled in the study. All patients underwent contrast enhanced computerized tomography (CT) scan of nose and paranasl sinuses followed by punch biopsy to confirm the diagnosis. All patients underwent medial maxillectomy either endoscopiccally or via lateral rhinotomy approach. Patients were followed up regularly at monthly interval for first 6 month thereafter 3 monthly for the 2 years.

Results:
Among 40 patients 23 were female and 17 were male with female to male radio being 1.4:1. Maximum age was 74 years and minimum age 17 years. The most common symptom was unilateral nasal obstruction with blood mixed nasal discharge in all patients, Right side was involved in 17 (42.%) patients and left was involved in 23 (57.5%) patients. In all cases the tumour arised from lateral nasal wall (100%). Maxillary sinus epicenter was seen in 75% (30 cases) and followed by ethmoid sinus 25% (10 cases). Endoscopic medial maxillectomy performed in most case 26 (65%) whereas external lateral rhinotomy plus medial maxillectomy was done in 14 (35%). Recurrence was seen in 4 cases of open medial maxillectomy and 3 cases of endoscopic medial maxillectomy and all of which was managed with endoscopic ecxision. The overall recurrence rate was 17.5% (endoscopic medial maxillectomy 11.5% and lateral rhinotomy plus medial maxillectomy 28.5%)

Conclusion:
Although (IP) is rare intermediate tumour of nasal cavty, its recurrence is high. Its treatment is always surgical. Endoscopic medial maxillectomy is the surgery of choice for treating majority of inverted papilloma. The lateral rhinotomy with medial maxillectomy is limited to extensive cases.

Key words: Inverted papilloma, Medial maxillectomy, Lateral rhinotomy

INTRODUCTION

Inverted papilloma (IP) is an intermediate tumor that have locally destructive behavior like hemangiopericytoma, meningioma. IP is epithelial neoplasm arising from respiratory epithelium of nose also known as Schneiderian membrane. Inverted papilloma accounts for approximately 0.5% to 4% of all nasal tumors and 70% of sinonasal papilloma according to Jaun. et al.[1] A variety of names have been given by different authorities like Inverting papilloma, Ringertz tumour, Transitional cell papilloma, Malignant papilloma of nose, Endophytic papilloma, Villiform cancer, Benign transitional growth, Ewing's papilloma, papillary sinusitis, Schneiderian papilloma, epithelial papilloma, papillomatosis and so on. This tumour was 1st described by Ward in 1854. Ringertz described its local invasive nature in details in 1938 and named it as inverted papilloma. Its exact aetiology is still unknown. Some proposed hypothesis include viral infection, smoking, allergy, chronic inflammation and occupational exposure to carcinogens. Presence of Human Papilloma Virus (HPV) DNA was shown in many reports but its validation needed in a literature. [2] In 1991 the World Health Organization classified rhinosinusal papillomas into 3 histological types: everted or exophyticpapillomas, cylindrical or oncocytic cell papillomas,and inverted papillomas. Inverted papillomas are the most common within this group. Histologically, IP have endophytic growth, with polypoid changes of the nasal mucosa. The nasal mucosa presents a metaplasia of respiratory epithelium to squamous epithelium. It is characterized by downward growth of epithelium

into the underlying stroma without invasion of basement membrane.[3] IP commonly originates from the lateral nasal wall or middle meatus often extending to adjacent paranasal sinuses or other nearby structures such as the orbit or skull base according to Wolf SGet al. In a systemic review by Karkoset, al, it is rarely multicentric and bilateral and is often associated with malignancy which varies between<2% to >56% but probably is 9%. Inverted papillomas primarily affect men between the fifth and sixth decade of life. Clinical presentation is not specific. Unilateral nasal obstruction, nasal discharge, epistaxis which is unilateral, unprovoked, usually self-limiting & headache are presenting symptoms.[5] On examination one can find nasal mass usually firm, bulky, pink to red & vascular. Homogeneous soft tissue density, bony sclerosis, calcification, mildly enhancing mass is seen in CT scan. MRI shows excellent soft tissue resolution. Punch biopsy is done for definite diagnosis pre-operatively.

It is now clear that complete subperiosteal removal of the tumor is the mainstay of treatment. The choice of approach depends on the extent of the disease, the skill of the surgeon, and the technology available.[3] The gold standard approach was an open radical procedure in the form of a lateral rhinotomy with medial maxillectomy.[5] and mid facial degloving. But now, with the advancement in endoscopic techniques, it have increasingly been used and are currently the standard of care. Endoscopic medial maxillectomy shows potential advantages like ; improved access to specific nasal areas and shorter hospital stay with acceptable recurrence rates suggest that the endoscopic techniques in experienced hands and for selected, limited lesions may offer a good alternative to open techniques.[6] Incomplete removal is the main cause of recurrence which develops mostly within 2 years of initial surgery. Recurrence of IP occurred in 12% of cases removed endoscopicallys and 17% cases removed via open approach in accord with a recent systemic Moreover, the need for long-term follow-up to establish the efficacy of a surgical approach has been emphasized for its late recurrences in study by BhandaryS et, al.

The aim of this study is to share our experience in treating sinonasal inverted papillomas

METHODS & METERIALS

This study retrospective case review was conducted in Ganeshman Singh Memorial Academy of ENT-HNS Studies, ,Tribhuwan University Teaching Hospital (TUTH) between 18th October 2011 to 17th July 2015. A total of 40 patients were enrolled in the study. A detailed patient's history and examination was recorded with special focus on nose and paranasal sinus. Anterior rhinoscopy, probing and nasal endoscopy was performed in all patients to see extend of tumor and to take deep biopsy and findings were recorded. All patients underwent contrast enhanced computerized tomography (CT) scan of nose and paranasl sinuses except those patients who brought CT from outside. In the CT Scans, enhancement, extend of lesion, bony sclerosis, bony erosion, intracranial and intraorbital extension were noted. Planning of surgical approach either endoscopic or open was done on the basis of CT scan finding. After CT scan, patients underwent biopsy to confirm diagnosis. Depending on the CT finding, the lesion was divided in 2 group; limited size or large size as by Lawson et. al. The limited size means if disease is limited to the region of inferior and middle turbinate or middle meatal region with minimal extension to anterior ethmoid or antrum. Similarly large size means disease extending to supraorbital cells, perilacrimal cells, frontal sinus, sphnoid sinus, cribiform plate or area outside the nose and paranasal sinuses. All patients underwent surgery. Those patients whose papilloma was extensive, were planned for lateral rhinotomy plus medial maxillectomy. Rest of the patients underwent endoscopic medial maxillectomy. In this group, we removed the medial wall of maxilla from inferior turbinate to superiorly upto the superior attachment of lacrimal bone. The naso lacrimal duct was exposed and was opened like in endoscopic dacrocystorhinostomy. The epicenter of the tumour and its extent were noted in operation note. All the excised tissue were sent for histopathological examination. All patients were kept admitted for at least one week post-operatively. All patients received intravenous broad spectrum antibiotics during admission and discharged with oral antibiotics for one more week. For medial maxillectomy via lateral rhinotomy, suture removal done on 6th post-operative day. All patients were also advised to do saline nasal douching for at least 2 weeks to clear all crust and prevent synachie formation. All patients were followed up regularly at monthly interval for first 6 month thereafter 3 monthly for the 2 years. In the

follow-up period, all the patients were examined in details and nasal endoscopic evaluation was done to find out any of recurrence. Biopsy was taken from the suspicious lesions to rule out recurrence.

RESULTS

Total patient enrolled in this study was 40. Among them 23 were female and 17 were male with female to male radio being 1.4:1. Maximum age was 74 and minimum age was 17 . The most common symptom was unilateral nasal obstruction with blood mixed nasal discharge in all patients. Anosmia was present in 6 patients, external nasal deformity (flaring of al anasi) in two patients, mass hanging in oral cavity in one patient and proptosis in one patient. Right side involvement was seen in 17 (42.%) patients and left side in 23(57.5%). None of them had bilateral involvement. In all cases the tumour arise from lateral nasal wall (100%). Maxillary sinus epicenter was seen in 75% (30 cases) and ethmoid sinus epicenter in 25% (10 cases). None of cases had synchronous malignancy or turned to be malignancy during follow up. Endoscopic medial maxillectomy was performed in 26 cases (65%) where disease was limited. In case of extensive disease lateral rhinotomy plus medial maxillectomy was done in 14 cases (35%). Maximum follow up was 2 years . Patients were followed up monthly for 6 monthly then 3 monthly for 2 yrs. Recurrence was seen in 4 cases operated via apprache open and 3 cases operated endoscopically. Recurrence detected on endoscopic evaluation was seen mainly in maxillary antrum. In case of 3 recurrences operated endoscopically two had recurrence at floor of maxillary sinus and it was detected at 6 month, both of them underwent endoscopic removal of tumour and had no recurrence on further follow up. In remaining one case, recurrence was detected after 1 year on routine follow. The overall recurrence rate was 17.5%, (recurrence rate with endoscopic approach was 11.5% and 28.5% for open approach). No other major complications like orbital fracture or CSF leak were seen in both techniques of surgery.

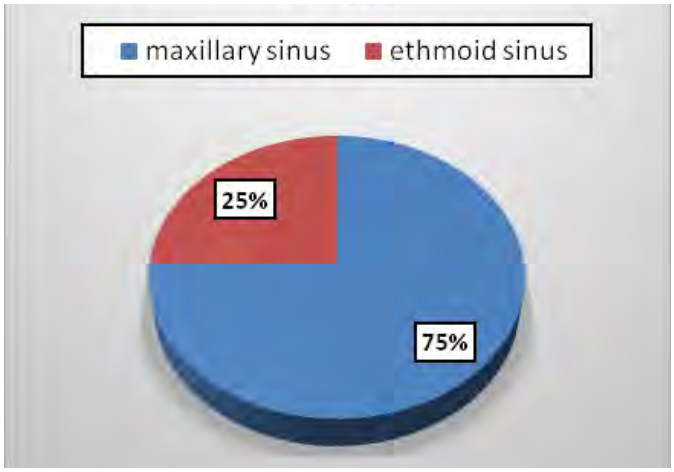

Fig 1. Showing origin or attachment anatomicail localtion of In.

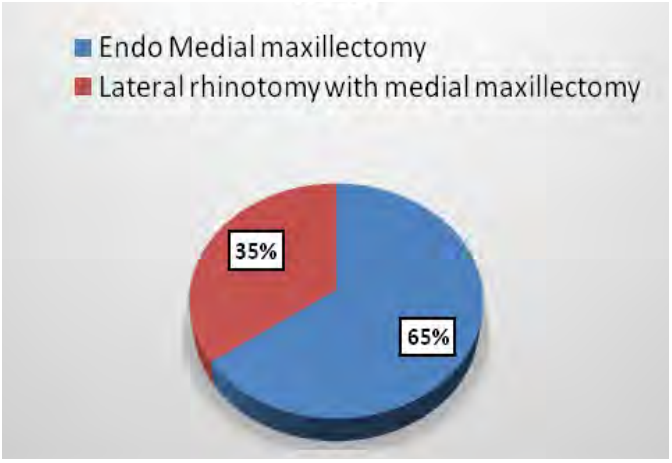

Fig2. Showing ppraaches sutgical techiniques used for sugery.

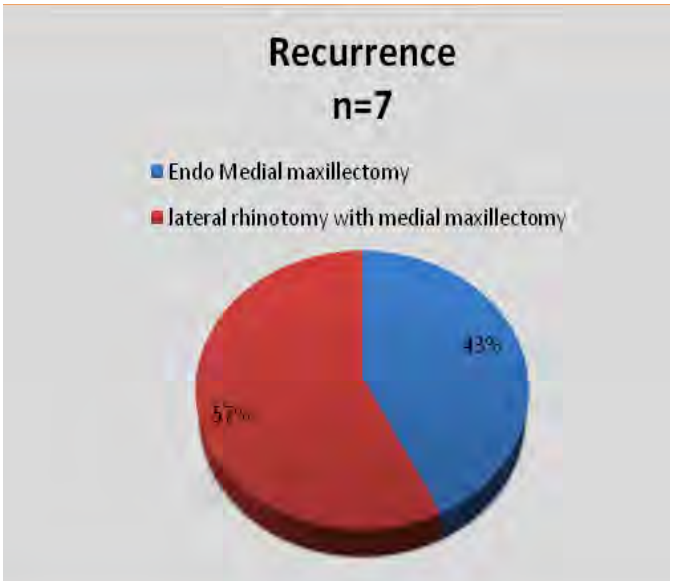

Fig3. Showing recurrance rate in according to sutglcal rechnigu apprach

DISCUSSION

Inverted papilloma (IP) is an intermediate tumour of nasal cavity as it has locally destructive behavior. It also has high rate of recurrence and chances

of malignancy transformation. That's why it needs aggressive management to prevent its recurrence and to reduce chances of malignancy. It is a rare tumour of nasal cavity with varied aetiology and affect all age group but mostly commonly in 5th- 7th decade of life. The rarity of the IP is seems to be due to long clinical course, the coexistence with nasal polyps, which are not routinely sent for histological examination and ultimately the fact that most data come from tertiary referral centres. In this study the mean age of presentation was 58 years and it ranging from 17 year to 74 year. So most are in 6-7th decade of life and is consistent with other studies by Buchwald et al, Karkos et, al and Juan et, al. Most common presenting symptom was unilateral nasal obstruction which is consistent with other studies. Other symptoms in descending order were blood mixed nasal discharge, anosmia, external nasal deformity. Mass hanging in oropharynx and proptosis are rare presenting symptoms and they indicates the tumour has extended to adjacent structure like orbit and nasopharynx or oropharynx. This showed that the sensitivity of symptoms is poor, that's why it difficult to distinguish inverted papilloma from benign mass of nasal cavity and delays diagnosis in many cases. In almost all cases as in our study had unilateral symptoms and sign which should alert for tumour pathology. Almost all tumour arised from lateral nasal wall mostly from medial wall of maxillary sinus and from ethmoidal sinuses. This finding is in accordance with other study by Juan et, al, Buchwald et al, Bhandary et, al, Karkoset, al. According to Bhandary et, al, most common site of origin was ethmoid which is contradictory to ours.

The treatment for IP is always surgical. We performed endoscopic medial maxillectomy in 65% cases and latertal rhinotomy plus medialmaxillectomy in 35% cases. Traditionally open procedures like lateral rhinotomy plus medial maxillectomy, ethmoidectomy, Caldwell Luc operation were performed depending upon the extent of lesion. But after development of endonasal endoscopic approaches in nasal surgery, much work has been done in this field. Endoscopic approach are minimally invasive surgery, provide good exposure of field of vision, minimal post-operative issues, better outcomes in terms of recurrence and morbidity(Terzakis, et, al), and fewer post-operative complications like mucocele or dacrocystitis (Buchwald et, al). It has few disadvantages like need of eye-hand co-ordination which need a steep learning curve, can't be performed for extensive disease. So in these conditions we can use lateral rhinotomy approaches which can be tailored in extensive disease not suitable for endoscopic surgery. It has advantage of possibility of wide excision. But meanwhile it create some undesired problems like huge cavity, crusting, bad odor, sense of fullness (Terzakis et, al). So we performed both endoscopic and lateral rhinotomy & medial maxillectomy depending upon the extent of pathology pre-operatively. In both methods of surgery outcome were satisfactory as achieved by Juan et, al and Buchwald et, al. In our case the recurrence rate in endoscopic and lateral rhinotomy were 11.5% (3/26) and 28.5% (4/14) respectively. Similarly in study by Juan et, al showed that recurrence rate were 14% and 67% with endoscopic and lateral rhinotomy respectively. Similarly this figure are 0% and 50% in study by Buchwald et, al. All our recurrences were treated successfully by endoscopic excision. And similar result was achieved by Juan et, al & Buchwald et, al. We didn't encounter any case of synchronous or metachronous malignancy.

CONCLUSION

Although IP is rare intermediate tumour of nasal cavty, its recurrence post surgery is high. Its treatment is always surgical. With our findings, we can comment that endoscopic medial maxillectomy can be regarded as surgery of choice for treating majority of inverted papilloma. The lateral rhinotomy plus medial maxillectomy is limited to cases with massive involvement of sinuses.Close patient monitoring is needed to detect and treat tumour recurrence at an early stage since time of recurrence cannot be predicted. Long term follow up is required to determine the time of recurrence, relation with malignant transformation, to compare efficacy of different surgical modalities.

REFERENCES

1. Juan P. Díaz Molina, José L. LlorentePendas, Juan P. Rodrigo Tapia: Inverted sinonasalpapillomas. Review of 61 cases. Acta Otorrinolaringol Esp. 2009;60(6):402-408
2. Christian Buchwald, Marai-BenedicteFranzmann, MirkoTos. SinonasalPapillomas: A report of 82 cases in Copenhagen country, including a longitudinal epidemiological and clinical study. Laryngoscope. 1995;105:72-79
3. FilippoCarta, Jean-Philippe Blancal, Benjamin Verillaud, Hugo Tran, Elisabeth Sauvaget,Romain Kania, Philippe Herman: Surgical management of inverted papilloma: Approaching a new standard for surgery.Wiley Online Library.;2012:1002:1415-20.
4. Bhandary S, Singh RK, Shrestha S, Sinha AK, Badhu BP, Karki : Sinonasal inverted papilloma in eastern part of Nepal. Kathmandu University Medical Journal. 2006; 4:431-435
5. GeorgiosTerzakis, StamatiaVlachou, DionysiosKyrmiazakis, Emmanuel Helidonis: Manegement of sinonasal papilloma. Rhinology. 2002: 40: 28-33
6. Karkos, P.D.,Fyrmpas, G, Carrie, S.C, & Swift, A.C: Endoscopic versus open surgical interventions for inverted nasal papilloma: a systematic review. Clinical Otolaryngology. 2006; 31: 499–503
7. Hyams, V.J: papillomas of nasal cavity and paranasal sinuses: A clinic-pathological study of 315 cases. Ann OtolRhinolLaryngol. 1971; 80:192-206
8. Wolf SG, Schlosser RJ, Bolger WE, LanzaDC.Endoscopic and endoscope -assisted resections of inverted sinonasalpapillomas. Otolaryngol Head Neck Surg 2004; 131(3): 174-79.
11 Weissler M.C., Montgomery W.W., Turner P.A. et al. (1986) Inverted papilloma. Ann. Otol. Rhinol. Laryngol. 95, 215–221
12 Myers E.N., Fernau J.L., Johnson J.T. et al. (1990) Management of inverted papilloma. Laryngoscope 100, 481–49
13 Lawson W., Ho B.T., Shaari C.M. et al. (1995) Inverted papilloma: a report of 112 cases. Laryngoscope 105, 282–289