Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i3.5153

A STUDY ON CLINICOPATHOLOGICAL PROFILE OF AURAL POLYPS

Dr. Meenu Maria Babu[1], Dr. Santhi T[2], Dr. Shambhu Dev S[3*]

[1]Senior Resident, Department of ENT, Government T.D. Medical College, Alappuzha, Kerala, India.
[2]Professor, Department of ENT, Government T.D. Medical College, Alappuzha, Kerala, India.
[3*]Assistant Professor, Department of ENT, Government T.D. Medical College, Alappuzha, Kerala, India.

***Corresponding Author:** Dr. Shambhu Dev S
*Assistant Professor, Department of ENT, Government T.D. Medical College, Alappuzha, Kerala, India.

ABSTRACT

Background: This study was conducted to investigate the clinicopathological characteristics of aural polyps and identify the various aetiological variables that contribute to their development.

Methods: This observational study involved 72 patients with aural polyps in the out-patient department of otorhinolaryngology at Govt. T.D. Medical College Alappuzha. It was conducted over a period of 18 months, from January 2019 to December 2021. The study was approved by the institutional ethics committee, and participant's written informed consent was obtained.

Results: The mean age of the 72 study participants was 41.04, with a standard deviation of 12.753. The age range of 41 to 50 accounted for the majority of aural polyps. Males dominated the study population. In the group under investigation, otalgia was the most prevalent symptom. Otorrhea and ear block sensation came next. Vertigo was the ear symptom least reported. The majority of aural polyps were discovered in the right ear, came from the external ear, were localized in the anterosuperior quadrant of the canal, and produced < 50% blockage of the external auditory meatus. The majority had smooth surfaces and did not bleed when probed. Inflammatory polyps were the most common histological diagnosis, followed by keratosis, melanocytic naevus, cholesteatoma, and cholesterol granuloma. There is a single instance of hemangiopericytoma in the temporal bone, a giant cell tumor of the temporal bone, and glomus tympanicum. Each of our two cases had a histology report indicating tuberculous granuloma and CG.

Conclusion: Every lesion was subjected to biopsy and pathological analysis. Granulation tissue was the most commonly found histological diagnosis. Histopathology is still a key component in the evaluation of aural polyps. Raising awareness and facilitating early diagnosis will reduce morbidity and death.

Keywords: Aural Polyp, Granulation Tissue, Cholesteatoma, Keratosis Obturans, Inflammatory Polyp.

INTRODUCTION

It is important to remember that a simple aural polyp could indicate a systemic sickness, cancer, or a metastatic lesion from a distant site.[1] It could also be a symptom of otitis external. A proper diagnosis

will change the entire course of treatment. Although radiological imaging is crucial in suspected lesions of aural polyps, histology remains the primary diagnostic tool. Serious diseases may be suspected in cases of ear bleeding, tinnitus, hearing loss, dizziness, and intractable pain, among other symptoms. Aural polyp symptoms such as bleeding upon probing, hard-indurated infiltrating surrounding structures, not limited to the external ear, and ulceroproliferative surfaces should also be taken into consideration as warning indicators when examining a case. These lesions should be subjected to radiological imaging, such as HRCT temporal bone.[2] MRI in the event of vascular, parotid, or suspected intracranial lesions. Therefore, it is evident that aural polyps are not as simple as we think or they appear. There are widespread conditions that manifest as aural polyps. Thus, it is imperative to assess all aural polyps histopathologically, clinically, and, if required, with radiological imaging. The final pillar in the diagnosis of any aural polyp is histopathology. Taking into account the importance of this condition, an observational study was carried out to examine the clinicopathological profile of aural polyps in patients that visited the out-patient department of otorhinolaryngology at Government T.D. Medical College, Alappuzha.

AIMS AND OBJECTIVES

- To study the clinicopathological profile of aural polyps in patients attending Otorhinolaryngology OPD at Government T.D. Medical College, Alappuzha.
- To study the clinico pathological nature of aural polyps.
- To determine different etiological factors causing aural polyps.

MATERIALS & METHODS

This observational study involved 72 patients with aural polyps in the out-patient department of Otorhinolaryngology at Govt. T.D. Medical College, Alappuzha. It was conducted over an 18-month period from January 2019 to December 2021. The study was approved by the institutional ethics committee, and participant's provided written informed consent.

Inclusion Criteria

- Patients presenting in the otorhinolaryngology department with examination finding of aural polyp.

Exclusion Criteria

- Previous history of trauma to the ear
- Previous history of ear surgeries
- Patients with severe canal stenosis
- Patients with aural polyps not giving consent

Statistical Methods

Microsoft Excel was used to tabulate the data, while SPSS 20 was used for the statistical analysis. The endoscopic grading of the aural polyp and age were quantitative variables, and their means and standard deviations were used to summarize them. Data was analyzed for frequency and percentage for the following qualitative variables: gender, age subgroups, symptoms such as tinnitus, vertigo, side of lesion, affected quadrant, surface of polyp, bleeding on probing, tenderness, consistency of polyp, other co-morbidities such as diabetes mellitus, hypertension, dyslipidemia, and existing ear pathologies such as chronic otitis media, skull base osteomyelitis, anesthesia, histopathology, and initial diagnosis. The relationship between the ear bleed symptom and the surface of the aural polyps was examined using the chi-square test. If the predicted count in any of the chi-square test cells was less than five, the Fischer's exact test was used. The connection between HP and DM, HP and age, HP and gender, HP and clinical diagnosis, HP and bilaterality, HP and ear bleed, HP and otorrhoea, and HP and otalgia was examined using Fischer's exact test. Any computed probability (p-value) of < 0.05 was deemed significant for all statistical analyses.

RESULTS

Provisional DX						
HP	**Inflammatory polyp**	**Keratosis**	**Cholesteatoma**	**Glomus tympanicum**	**Sebaceous cyst**	**Total**
Inflammatory polyp	25	3	2	0	0	30
Keratosis	4	12	0	0	0	16
Cholesteatoma	1	2	11	0	0	14
Cholesterol granuloma	2	0	0	0	0	2
Tuberculous granuloma	2	0	0	0	0	2
Giant cell tumor (osteoclastoma of temporal bone)	1	0	0	0	0	1
Glomus tympanicum	0	0	0	1	0	1
Nevus	1	2	0	0	0	3
Sebaceous cyst	0	0	0	0	1	1
Hemangiopericytoma of temporal bone	0	0	1	0	0	1
SCC-WD	0	1	0	0	0	1
Total	36	20	14	1	1	72
Table 1: Relationship between Clinical Diagnosis and Histopathological Diagnosis						
Fisher’s exact test p value=0.0001						

The histology report and clinical diagnosis were correlated in 69.5 percent of cases. However, in 30.6% of cases, the circumstances were different. A further diagnosis was revealed during histological analysis. Glomus tympanicum's distinctive symptoms and signs led to a suspicion of a vascular tumor during the clinical examination. A local examination could be used to diagnose sebaceous cysts and melanocytic nevi. Clinical diagnosis was possible for 83.3% of inflammatory polyps, 75% of keratosis, and 78.57% of cholesteatoma. But when it came to clinical assessment, we knew nothing about TB granuloma, CG, GCT, and hemangiopericytoma. According to Fisher's exact test, an association is considered significant when the p-value is <.05. In this case, the p-value is 0.0001. That is to say, a correlation exists between the histological diagnosis and the clinical provisional diagnosis.

	C/L Ear		
HP			**Total**
	Affected	**Not affected**	
Inflammatory polyp	3	27	30
Keratosis	10	6	16
Cholesteatoma	7	7	14
Cholesterol granuloma	0	2	2
Tuberculous granuloma	0	2	2
Giant cell tumor (osteoclastoma of temporal bone)	0	1	1
Glomus tympanicum	0	1	1
Naevus	0	3	3
Sebaceous cyst	0	1	1
Hemangiopericytoma of temporal bone	0	1	1
SCC -WD	0	1	1
Total	**20**	**52**	**72**
Table 2: Association between HP Diagnosis and Bilaterality of Lesions			
Fisher’s exact test p value=0.003			

50% of cholesteatomas affected both ears, whereas 62.5% of keratosis presented bilaterally. Just 10% of inflammatory polyps also affected the ear on the other side.

According to Fisher's exact test, an association is considered significant when the p-value is <.05. In

this case, the p-value is 0.003. That is to say, there is a correlation between the lesion's bilaterality and the histological diagnosis.

HP	**Ear Bleed**		**Total**
	Yes	**No**	
Inflammatory polyp	3	27	30
Keratosis	3	13	16
Cholesteatoma	7	7	14
Cholesterol granuloma	0	2	2
Tuberculous granuloma	0	2	2
Giant cell tumor(osteoclastoma of temporal bone)	0	1	1
Glomus tympanicum	1	0	1
Nevus	0	3	3
Sebaceous cyst	0	1	1
Hemangiopericytoma of temporal bone	1	0	1
SCC-WD	1	0	1
Total	**16**	**56**	**72**
Table 3: Association of Symptoms of Ear Bleeding with Histopathology Report			
Fisher’s exact test p value=0.016			

Glomus tympanicum, hemangiopericytoma, and SCC presented with ear bleed in ENT OPD. The same symptom was observed in 50% of cases of cholesteatoma. The percentage of keratosis cases with blood-stained ear discharge was only 18.7%. However, only 10% of polyps that were inflammatory showed this. According to Fisher's exact test, an association between an ear bleed symptom and a histopathology report was present if the p-value was <.05. Since the p-value in this case was 0.016, the association is considered significant.

	Otalgia		
HP			**Total**
	Yes	**No**	
Inflammatory polyp	27	3	30
Keratosis	15	1	16
Cholesteatoma	2	12	14
Cholesterol granuloma	0	2	2
Tuberculous granuloma	0	2	2
Giant cell tumor (osteoclastoma of temporal bone)	1	0	1
Glomus tympanicum	0	1	1
Naevus	0	3	3
Sebaceous cyst	1	0	1
Hemangiopericytoma of temporal bone	1	0	1
SCC -WD	1	0	1
Total	**48**	**24**	**72**
Table 4: Association between HP Diagnosis and Ear ACHE			
Fisher’s Exact Test P-Value = 0.0001			

90% of inflammatory polyps had otalgia as presenting symptom. The same symptom was observed in 93.75% of cases of keratosis. In 14.2% of cases of cholesteatoma, ear pain was observed. On presentation, CG, MN, and tuberculous granuloma patients did not report experiencing ear pain.
According to Fisher's exact test, an association between an earache symptom and a histopathology report is significant if the p-value is <.05. Since the p-value in this case was 0.0001, the association

was considered to be statistically significant.

	Otorrhea		
HP			**Total**
	Yes	**No**	
Inflammatory polyp	15	15	30
Keratosis	3	13	16
Cholesteatoma	11	3	14
Cholesterol granuloma	0	2	2
Tuberculous granuloma	2	0	2
Giant cell tumor (osteoclastoma of temporal bone)	0	1	1
Glomus tympanicum	0	1	1
Nevus	0	3	3
Sebaceous cyst	0	1	1
Hemangiopericytoma of temporal bone	0	1	1
SCC -WD	0	1	1
Total	**31**	**41**	**72**
Table 5: Association between Ear Discharge and HP Diagnosis			
Fisher's exact test p value=0.003			

Painless otorrhea was the initial symptom in two cases (100%) of tuberculous granuloma. When cholesteatoma patients were first seen, 78.5% of them exhibited otorrhea symptoms. During presentation, only 50% of inflammtory polyps exhibited discharge.

According to Fisher's exact test, a test is considered significant if the p-value is <.05. Since the p-value in this case was 0.003, the correlation between the histology report and the ear discharge symptom was considered significant.

DISCUSSION

The current study showed a left-sided predominance of 38.9% (28 individuals) and a right-sided predominance of 61.1% (44 patients). This is also seen in the comparable study carried out in Nigeria. In 65.9% of the patients, the right ear was more impacted than the left.[3]

Upon reviewing the individuals' medical histories, the majority of them—66.7% or 48 patients-complained of having an earache. Vertigo was the least common symptom, reported by 6 patients (8.3% of all patients). The next most frequent symptom, accounting for 43.1% of cases each, were ear discharge and ear block sensation (31 patients each). Of the study population, 16 individuals (22.2%) reported experiencing ear bleeding. 13.9% (10 individuals) and 12.5% (9 patients) reported having tinnitus and facial deviation, respectively.

Analyzing research on the symptomatology of auditory polyps, comparable results were observed. The majority of patients (n = 30; 73.2%) reported otalgia; 22 (53.7%) had ear obstruction; 17 (41.5%) had tinnitus; and 10 (24.4%) had otorrhoea, according to an eight-year retrospective analysis. In a study carried out in Brazil, Alice Lang Silva et al. revealed a distinct frequency of symptomatology. Of those with ear discharge, 81.4% had bleeding in their ears.

On examining the study population, the majority of patients showed <50% occlusion of the ear canal, 51.4%, or 37 patients. 31.9% (23 patients) showed occlusion of the EAC between 50 and 90%. 12 patients (16.7%) showed occlusion of the ear canal >90%.[4]

The external auditory canal is divided into four quadrants as anterosuperior, anteroinferior, posterosuperior and posteroinferior. Each polyp's location was noted using probing, otoscopy, and otoendoscopy. With n = 26, the anterosuperior quadrant accounted for the majority of lesions (36.1%). 23 patients in the study population had 31.9% of lesions in the anteroinferior quadrant. With n = 13, 18.1% of patients were in the posterosuperior quadrant. Ten patients, or 13.9% of the total, were in the posteroinferior quadrant.

The smooth and uneven surfaces of the research population's aural polyps were visible upon inspection. The majority of patients-43 individuals, or 59.7%-had auditory polyps with flat surfaces. Aural polyps with uneven surfaces were present in 40.3% of individuals.

Every polyp had a probe test to evaluate its location, propensity to bleed, pain, and consistency. An applicator with a cotton tip was used for the probe test. Aural speculum and headlights were used to probe some lesions under direct eyesight. The otoendoscope is used to check deep lesions.

The majority of auditory polyps (n = 56; 77.8%) did not bleed when probed. However, upon probing, 16 patients (22.2%) displayed bleeding tendencies.

Palpation revealed tenderness in 39 patients, or 54.2% of the study group. Of the study population of 33 patients (45.8%), no tenderness could be elicited.

42 individuals, or 58.3% of the total, had ear polyps with a soft consistency. Hard and firm make up 4.2% (3 patients) and 37.5% (27 patients), in that order.

It was discovered that the external and middle ears were the origin of 59.7% and 38.9% of polyps, respectively. One lesion looked to be entering through the EAC roof, but its origin was later determined to be a giant cell tumor of the temporal bone. The majority of participants (70.8%) out of 51 patients did not have any damage to their contralateral ears. Of the study population, 29.2% (21 patients) also had a comparable lesion in their contralateral ear. Bilateral pathology was seen in cholesteatoma (n = 7), keratosis (n = 10), and inflammatory polyps (n = 3).

Of the study population, 17 participants (23.6%) had a diagnosis of chronic otitis media disease. Granulation tissues in the external auditory canal, mastoid, and middle ear structures can be seen in chronic otitis media mucosal type, and they manifest as aural polyps in the external auditory canal. In the event of a mucosal version, there won't be any signs of cholesteatoma or bone erosion. Cholesteatoma can also manifest as an aural polyp and can be classified as an external ear or middle ear cleft cholesteatoma fungating through the tympanic membrane. Squamosal varient exhibits enzymatic bone degradation beneath granulation, with symptoms of foul-smelling, blood-tinged ear discharge and cholesteatoma.[5] According to the current study, chronic otitis media is the cause of 23.52% of inflammatory polyps. Additionally, 12 of the 17 COM cases with cholesteatoma had aural polyps when they first appeared.

A diagnosis of skull base osteomyelitis was made for 3 patients, or 4.2% of the participants. When it comes to malignant otitis externa or skull base osteomyelitis, it is usually seen in diabetics, who have necrotizing external otitis, often caused by Pseudomonas aeruginosa,with uncontrolled infection of the temporal bone region, resulting in symptoms similar to those of otitis externa. Granulation can be seen in the external auditory canal's bone cartilage junction and manifest as aural polyps.[6] We treated three individuals who had skull-base osteomyelitis. Upon histopathological analysis, granulation tissue and inflammatory cells were observed in their aural polyps. Individuals received continuous intravenous broad-spectrum antibiotic therapy guided by culture, as well as regular chemical cauterization of auditory polyps and steroid packing. [7]

Systemic hypertension accounts for 28 subjects (or 38.9%) while dyslipidemia accounts for the other 72 patients that were enrolled in the study. 26 individuals, or 36.1% had diabetes.

In the OPD, 83.3% (n = 60) of the study participants had an aural polyp biopsied while under local anesthesia. A total of 12 patients, or 16.7% of the study group, underwent a single-stage surgery or biopsy while under general anesthesia. Due to technical and procedural issues during LA, children were posted for biopsy under GA. An aural polyp that was submitted for imaging initially revealed significant bleeding on probing and was suspected to be a vascular tumor, was scheduled for a single step treatment under GA, . Aural polyps linked to problems with COM, along with additional suspicious lesions posted underGA .

A retrospective analysis of 40 cases of aural polyps revealed similar results. Of the patients treated, 15 (36.6%) underwent surgical excision under general anesthesia, whereas 26 (63.4%) underwent the procedure under local anesthesia.

When the histology results from the current study were evaluated, the most often found findings were inflammatory cells and granulation tissue, indicating a clinical diagnosis of inflammatory polyp in

31.7% of the study group. Remarkably, we have one case each of squamous cell carcinoma in external ear, hemangiopericytoma of the temporal bone, and giant cell tumor of the temporal bone (1.4% of the study population). With 22.2% (16 patients) of the research population reporting keratosis obturans (KO), it was the second most common histopathological report. Then, 19.4% of instances (14 patients) involve cholesteatoma. Both tuberculous and lipid granulomas account for 2.8% of the research population. In the current investigation, there was one case (1.4%) of glomus tympanicum and one case (1.4%) of sebaceous cyst. In the study, 3 cases (4.2%) of melanocytic nevus were reported.

Analyzing related research would yield comparable results. Fifty cases of auditory polyps were studied by Neeru Agarwal et al. Inflammatory polyps accounted for the majority of lesions (20 individuals), followed by cholestatomas (12 patients), persistent non-specific inflammations (7 patients), and abscesses (1 patient). Based on histopathological investigation, the most common malignant lesions were found to be squamous cell carcinoma (7 patients), followed by embryonal rhabdomyosarcoma (1 patient). In terms of benign lesions, the most common diagnoses were carcinoid tumor (1 patient) and nevus (1 patient).

The predominant histological diagnosis in the present investigation was inflammatory polyps. 90% of the patients (27 subjects) initially complained of ear pain, followed by ear discharge (15 subjects) and 50% of inflammatory polyps.

As we have often stated, not every case will warrant a clinical diagnosis. In every incidence of aural polyp, a biopsy and histological investigation are required. Of the 50 lesions in the current investigation, 69.4% of cases had an accurate clinical diagnosis. However, a histological investigation of 22 lesions, or 30.6% of the cases, indicated the presence of alternative aetiopathology for aural polyps, including benign and malignant tumors. Appropriate diagnosis of aetiopathology is necessary for accurate case management. A modest aural polyp can have a profound impact on a patient's life. Therefore, we should treat aural polyps as soon as possible to prevent morbidity and death.

Speaking of the histological characteristics of aural polyps, granulation and inflammatory cells are present in inflammatory polyps. This could be the result of a fungal infection, otitis externa, repetitive trauma, or persistent ear canal irritation. COM patients may exhibit inflammatory polyps. Aural polyps can also be a sign of uncommon illnesses such as neoplasms or forgotten foreign bodies.[8]

Large plugs of desquamated keratin accumulating in the ear canal are known as KO, according to Piepergerdes et al.[9] Its aetiology and pathology are typically idiopathic. An ear canal widening due to circumferential bone involvement is a hallmark of keratosis obturans. Another characteristic of this illness is bilaterality. The majority of sufferers had earache symptoms at first. In the external auditory canal, KO manifests as hard, tender lumps. Histopathology showed hyperplasia of the underlying epithelium in conjunction with keratin debris. Characteristics of long-term inflammation seen in the subcutaneous tissue.

During the course of our investigation, we came across three naevus cases. In pinna, naevi, or moles, are far more prevalent; in EAC, they are uncommon or barely noticeable. They are regarded as a melanocytic system related anomaly. Clinically manifest as little, brownish or blackish swellings. Our two examples were unintentionally discovered during a standard wax removal process. Aural polyps were observed in a patient who had a naevus across the concha that extended to the external auditory canal. Clinical diagnosis of this lesion is possible, but before reassuring patients, it is important to confirm that the aural polyp is benign. Why? Well, since malignant melanoma is a frequent ear pathology that might occasionally go untreated. We conducted a biopsy under LA, and the results showed that we had a melanocytic nevus.

A benign tumor made up of nests of melanocytic cells seen in the dermis, epidermis, and, in rare cases, subcutaneous tissue is known as a melanocytic nevus (MN). According to the location of melanocytic cell clusters, nevi are subcategorized histologically into junctional nevus in the epidermis, intradermal nevus in the dermis, and compound nevus in both areas.[10] . They don't require treatment unless they exhibit cancerous changes. Therefore, every nevus needs to be monitored closely.

In the current investigation, we had one case of sebaceous cysts. A 46-year-old woman arrived with a three-day-long, intense left sided earache. Upon examination, a smooth, fluctuating tender mass at the concha was found over the cartilaginous portion of the EAC. Antibiotic ear packing and oral antibiotics were used after needle aspiration. Following up, there was a noticeable hard swelling and a punctum that moved with the skin. A sebaceous cyst diagnosis was made clinically. Histopathology confirmed this.

Sebaceous cysts are benign skin lesions that frequently result from a sebaceous gland's duct being obstructed. Additional reasons could be a sebaceous duct developmental abnormality or a traumatic surface epithelium implantation beneath the skin. For sebaceous cysts, surgery is the only available treatment, and its objective is to remove the cyst entirely to stop it from returning.[11]

Four situations from our current analysis deserve particular attention in this discussion. They are glomus tympanicum, squamous cell carcinoma of the external ear, osteoclastoma, also known as GCT (Giant Cell Tumor) of the temporal bone, and hemangiopericytoma of the temporal bone.

CONCLUSION

Any age range and any gender type can develop aural polyps. The mean age of the 72 study participants was 41.04, with a standard deviation of 12.753. The age range of 41 to 50 accounted for the majority of aural polyps. Males dominated the study population. In the group under investigation, otalgia was the most prevalent symptom. Otorrhea and an ear block sensation came next. The least common symptom was dizziness. The right ear contained the majority of the aural polyps, which originated in the external ear. Most of the polyps were located in the anterosuperior region of the canal and caused < 50% blockage of the EAM. The majority had smooth surfaces, were sensitive, soft, and consistent, and showed no bleeding when probed. The majority of the time, the C/L ear is unaffected. Inflammatory polyps were the most common histological diagnosis, followed by keratosis, melanocytic nevus, cholesteatoma, and cholesterol granuloma. One each of hemangiopericytoma of the temporal bone, giant cell tumor of the temporal bone, and sebaceous cyst. Each of our two cases had a histology report indicating tuberculous granuloma and CG. Histopathology is still a key component in the evaluation of aural polyps. Raising awareness and facilitating early diagnosis will reduce morbidity and death.

REFERENCES

1. Lollar KW, Parker CA, Liess BD, Wieberg J. Metastatic esophageal adenocarcinoma presenting as an external auditory canal mass. Otolaryngol - HeadNeck Surg 2010; 142(2):298–9.
2. Kalra VK. Aural polyp is not always due to chronic otitis media (COM): preoperative computed tomographic scan is good pointer for sinister lesions. Indian J Otolaryngol Head Neck Surg 2018; 70(4):505-9.
3. Olajide GT, Erinomo OO, Olajide TA, Agboola MS, Adegbiji WA. Clinicopathological profile of aural polypoidal masses: a retrospective study of 41 cases. Glob J Otolaryngo 2019; 20(3).
4. Garcia A, Ridge SE, Garcia JM, Cohen M, Lee DJ. New perspectives in office- based otoendoscopy and endoscopic ear surgery. Oper Tech Otolaryngol - Head Neck Surg 2021; 32(2):68-78.
5. Watkinson J, Clarke R. Scott-Brown's otorhinolaryngology head and neck surgery. 8th edn. CRC Press 2018.
6. Khan M, Quadri SQ, Kazmi A, Kwatra V, Ramachandran A, Gustin A, et al. A comprehensive review of skull base osteomyelitis: diagnostic and therapeutic challenges among various presentations. Asian J Neurosurg 2018; 13(4):959.
7. Williams SR, Brightwell AP. Management of the inflammatory aural polyp. 1989; 103(11):1040–2.
8. Park SY, Jung YH, Oh JH. Clinical characteristics of keratosis obturans and external auditory canal cholesteatoma. Otolaryngol - Head Neck Surg (United States) 2015; 152(2):326-30.
9. Lim HJ, Kim YT, Choo OS, Park K, Park HY, Choung YH. Clinical and histological

characteristics of melanocytic nevus in external auditory canals and auricles. Eur Arch Oto-Rhino-Laryngology 2013; 270(12):3035-42.
10. Chen B, Lu H, Ren C, Hu X, Qi H, Gao Z. Excision of sebaceous cyst by intraoral approach. 2017; 49(49):10-2.
11. Appannan VR, Daud MKM. Case Report Glomus tympanicum. Malay Fam Physician. 2018; 13(1):45-8.