

## **COURSE GUIDE**

### **CHS 314 PRIMARY EAR, NOSE AND THROAT CARE**

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Printed 2020

ISBN: 978-978-970-147-6

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## **INTRODUCTION**

Primary Ear, Nose and Throat Care is a first semester course. It is a 3-credit unit course available to all students offering Bachelor of Science (B.Sc.) in Community Health.

Primary Ear, Nose and Throat Care is a special field of community health. The practitioner is primarily a community health officer and must be trained in the same way and work with the same methods as his colleagues who specialise in other areas of community health. Apart from the care of malaria, the second most popularly seen problem in Nigeria in general outpatient cases is ear, nose and throat related cases. It is therefore, important to take this course very seriously.

The main concern of the community health officer is to be able to recognise a health problem in the community, offer a simple solution to the problem and if need be refer the patient problem to another centre where appropriate solution can be obtained.

The purpose underlying the study of Primary Ear, Nose and Throat Care is to develop how diseases of these areas of the body can be recognised and offer simple solution in the community.

## **WHAT YOU WILL LEARN IN THIS COURSE**

The course consists of 7 units and a course guide. This course guide tells you briefly what the course is about, what course materials you will be using and how you can work with these materials. There is also guideline for the amount of time you are likely to spend on each unit of the course in order to complete it successfully. Your tutor-marked assignment will be made available in the assignment file. There will be in addition, tutorial classes that are related to the course. It is advisable for you to attend these tutorial sessions. The course will prepare you for the challenges you will meet in the field of primary ear, nose and throat care in the community.

## **COURSE AIMS**

The aim of Primary Ear, Nose and Throat Care is to provide you with an understanding of the problems that are associated with the ear, nose and throat. It also provides you solutions to these problems in the community.

## **COURSE OBJECTIVES**

To achieve the aims set out, the course has a set of objectives. Each unit has a specific objective which is included at the beginning of the unit. You should read these objectives before you study the unit. You may need to refer to them from time to time to check on your progress. Also you should look at the unit objectives after completion of each unit.

## **WORKING THROUGH THIS COURSE**

To complete this course you are expected to read each study unit, recommended textbooks and other materials which may be provided by the National Open University of Nigeria. Each unit contains self-assessment exercises and you may be required to submit assignment for assessment purposes. At the end of the course there is a final examination. Below, you will find listed all the components of the course. This will help you to know how you should allocate your time to each unit in order to complete the course on time and successfully. You are also expected to attend tutorial sessions.

## **THE COURSE MATERIALS**

The main components of the course are:

- The Course Guide
- Study units
- References/Further Reading
- Assignments File
- Presentation Schedule

## **STUDY UNIT**

The study units in this course are as follows:

Unit1	Anatomy and Physiology of Ear, Nose and Throat
Unit 1	Anatomy and Physiology of Ear, Nose and Throat
Unit 2	Basic Equipment Vital for Diagnosis and Treatment of Ear, Nose and Throat Conditions and Diseases and their Uses
Unit 3	The Recognition and Treatment of the Diseases of the Ear
Unit 4	The Recognition and Treatment of the Diseases of the Nose Paranasal Sinuses
Unit 5	The Recognition and Treatment of the Diseases of the Throat
Unit 6	Prevention of Diseases of the Ear, Nose and Throat
Unit 7	Harmful Practices Associated with Ear, Nose and Throat

## **PRESENTATION SCHEDULE**

Your course materials have important dates for the early and timely completion as well as submission of your TMAs and attending tutorials. You should remember that you are required to submit all your assignments by the stipulated time and date. You should guard against falling behind in your work.

## **ASSESSMENTS**

There are three aspects to the assessment of the course. The first is made up of self-assessment exercises, the second consists of the tutor-marked assignments and the third is the written examination/end of course examination.

In tackling the assignments, you are expected to apply information, knowledge and techniques you gathered during the course. The assignments must be submitted to your facilitator for formal assessment in accordance with the deadlines stated in the presentation schedule and the assignment file. The work you submit to your tutor/facilitator for assessment will count for 30% of your total course work. At the end of the course you will need to sit for a final or end of course examination of about 2 hours. This examination will count for 70% of your total course mark.

## **TUTOR-MARKED ASSIGNMENT**

The TMA is a continuous assessment component of your course. It accounts for 30% of the total score. You will be given 4 TMAs to answer. Three of these must be answered before you are allowed to sit for the end of course examination. The TMAs would be given to you by your facilitator and returned after you have done the assignment. Assignment questions for the units in this course are contained in the assignment file. You will be able to complete your assignment from the information and material contained in your reading, references and study units. However, it is desirable in all degree level of education to demonstrate that you have read and researched more into your references, which will give you a wider view point and may provide you with a deeper understanding of the subject.

Make sure that each assignment reaches your facilitator on or before the deadline given in the presentation schedule and assignment file. If for any reason you cannot complete your work on time, contact your facilitator before the assignment is due to discuss the possibility of an

extension. Extension will not be granted after the due date unless there are exceptional circumstances.

## FINAL EXAMINATION AND GRADING

The end of course examination for this course will be for about 2 hours and it has a value of 70% of the total course work. The examination will consist of questions, which will reflect the type of self-testing, practice exercise and tutor-marked assignment problems you have previously encountered. All areas of the course will be assessed.

Use the time you have between finishing the last unit and sitting for the examination, to revise the whole course. You might find it useful to review your self-test, TMAs and comments on them before the examination. The end of course examination covers information from all parts of the course.

## COURSE MARKING SCHEME

Assignment	Marks
Assignments 1 – 4	Four assignments, best three marks of the four count at 10% each – 30% of course marks.
End of course examination	70% of overall course marks.
Total	100% of course materials.

## FACILITATORS/TUTORS AND TUTORIALS

There are 16 hours of tutorials provided in support of this course. You will be notified of the dates, times and location of these tutorials as well as the name and phone number of your facilitator, as soon as you are allocated a tutorial group.

Your facilitator will mark and comment on our assignments, keep a close watch on your progress and any difficulties you might face and provide assistance to you during the course. You are expected to mail your Tutor-Marked Assignment to your facilitator before the schedule date (at least two working days are required). They will be marked by your tutor and returned to you as soon as possible.

Do not delay to contact your facilitator by telephone or e-mail if you need assistance.

The following might be circumstances in which you would find assistance necessary, hence you would have to contact your facilitator if:

- you do not understand any part of the study or the assigned readings
- you have difficulty with the self-tests
- you have a question or problem with an assignment or with the grading of an assignment.

You should endeavour to attend the tutorials. This is the only chance to have face to face contact with your course facilitator and to ask questions which are answered instantly. You can raise any problem encountered in the course of your study.

To gain much benefit from course tutorials prepare a question list before attending them. You will learn a lot from participating actively in discussions.

## **SUMMARY**

CHS 314 is a course that intends to provide the basic understanding of the diseases of the Ear, Nose and Throat that may be seen in the community. Apart from the endemic malaria in our environment the next commonly seen outpatient clinic cases in our community is Ear, Nose and Throat related diseases and conditions. It is therefore, very important to acquaint yourself with the understanding of this course toward your acquiring the degree of Bachelor of Science (BSc.) in Community Health. The course content will provide you with the relevant anatomy and physiology of ear, nose and throat. Basic equipment vital for diagnosis and treatment of ear, nose and throat diseases will also be presented to you. The course will also provide you with information on how to recognise and offer simple solution for the diseases of the ear, nose and throat and also how to prevent some diseases of ear, nose and throat by knowing the limit of treatment to offer to the patient.

Finally, it will take you through some harmful practices associated with ear, nose and throat. Emphasis is therefore placed on preventive measure through health education. To gain the most from the course you should endeavour to apply the principles you have learnt to the understanding of primary care.

I wish you success in the course and I hope that you will find it both interesting and useful.



**MAIN  
COURSE**

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**MODULE 1**

Unit 1	Anatomy and Physiology of Ear, Nose and Throat
Unit 2	Basic Equipment Vital for Diagnosis and Treatment of Ear, Nose and Throat Conditions and Diseases, and their Uses
Unit 3	The Recognition and Treatment of the Diseases of the Ear
Unit4	The Recognition and Treatment of the Diseases of the Nose Paranasal Sinuses
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Unit 7	Harmful Practices Associated with Ear, Nose and Throat

**UNIT 1 ANATOMY AND PHYSIOLOGY OF EAR, NOSE AND THROAT****CONTENTS**

1.0	Introduction
2.0	Objectives
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3.1	Anatomy and Physiology of the Ear
3.2	Anatomy and Physiology of the Nose and Paranasal Sinuses
3.3	Anatomy and Physiology of the Throat
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Reading

**1.0 INTRODUCTION**

Primary Ear, Nose and Throat Care is a 3-credit unit course available to all students offering Bachelor of Science (BSc) in Community Health. This unit will help you to understand Applied Anatomy and Physiology of the Ear, Nose and Throat.

**2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- explain the anatomy and physiology of the ear, nose and throat as it relates to primary care
- mention some of the physiology of ear, nose and throat

- state parts of the human ear and their functions.

### 3.0 MAIN CONTENT

#### 3.1 Anatomy and Physiology of the Ear

A brief knowledge of the anatomy of an organ is essential to understand the physiology of that organ. The ear is morphologically subdivided into external, middle and inner ears. It is also important to know that the ear start its development during the third to sixth week of the intra uterine life and by the end of the seventh foetal month the ear has been fully formed.

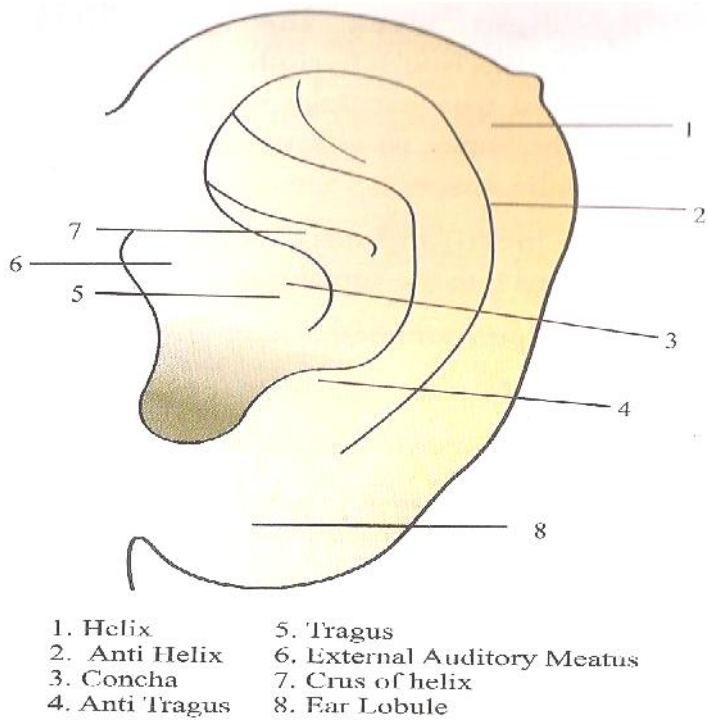
#### Timing of Development of the Ear and Week of Gestation

Development	Pinna	Meatus	Middle Ear	Vestibular Labyrinth and cochlea
Begins	6 <sup>th</sup>	8 <sup>th</sup>	3 <sup>rd</sup>	3 <sup>rd</sup>
Completes	20 <sup>th</sup>	28 <sup>th</sup>	30 <sup>th</sup>	20 <sup>th</sup>

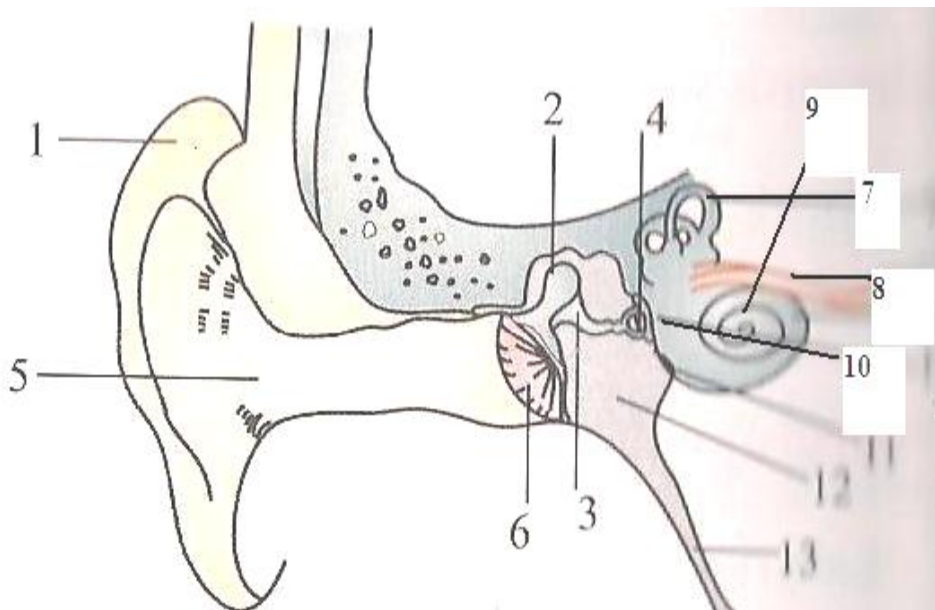
The different malformations associated with external and middle ear depend upon the time the normal development was arrested in the embryonic life.

As it has been said earlier, the ear is divided into three parts:

S/No.	Part of the ear	Components of each part
1	External ear	Pinna, external auditory canal, tympanic membrane
2	Middle ear cleft	Eustachian tube, tympanic cavity and its contents like ossicle muscles, ligaments, mucosal folds, meatus and air cell system.
3.	Inner ear	Cochlea, vestibule and semicircular canal.



**Fig. 1: Auricle/Pinna**



**Fig. 2: Anatomy of the Ear**

Legend:

- |                            |                     |
|----------------------------|---------------------|
| 1. pinna                   | 9. cochlea          |
| 2. malleus                 | 10. oval window     |
| 3. incus                   | 11. round window    |
| 4. stapes                  | 12. promontory      |
| 5. external auditory canal | 13. Eustachian tube |

6. tympanic membrane
7. superior semicircular canal
8. vestibulo-cochlear nerve

### Blood Supply of the External Ear

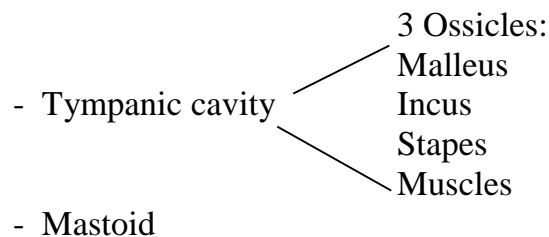
- Auriculo-temporal branch of superficial temporal artery.
- Posterior auricular branch of the external carotid artery.

### Lymphatic Drainage

- Pre auricular Lymph Node Anteriorly
- Post auricular Lymph Node Posteriorly
- Infra auricular Lymph Node Inferiorly

### Middle Ear Cleft

Consist of - Eustacian tube



Eustachian tube: connect the back of the nose to the middle ear.

Tympanic cavity contains the following structures:

- (1) Ossicles are 3 tiny bones which conduct the sound from the ear drum to the oval window.
  - Malleus
  - Incus
  - Stapes
- (2) Muscles: The tensor tympanic and stapedius muscles are attached to the ossicle to regulate their movements.
- (3) Ligaments: Keep the ossicles in their place
- (4) Nerve: Chorda tympani  
Tympanic plexus
- (5) Air: Fill the tympanic cavity and the mastoid.

### Mastoid Process and Ear Cells

The mastoid process is a part of the temporal bone and is situated behind the ear. The mastoid process is not well developed at birth; it develops gradually as the child grows.

The mastoid antrum is the biggest and most constant ear cell in the mastoid process connected anteriorly with the tympanic cavity through the aditus and posteriorly to the other mastoid ear cells.

### **Vascular Supply to the Ear**

Two branches of the external carotid artery, the posterior auricular artery and the superficial temporal artery are the sources of arterial blood supply to the pinna and external auditory canal. The accompanying veins drain into the internal jugular vein by either facial or external jugular veins.

### **Nerve Supply to the Ear**

Auricle is supplied by the auriculo-temporal branch of the trigeminal nerve, greater auricular (C2-C3), lesser occipital (C3) and auricular branch of the vagus nerve (Arnold's nerve).

### **Inner Ear**

The inner ear consists of labyrinth which is bony and membranous.

### **The Bony Part Consists of**

- 3 semicircular canals
- Utricle and sacule
- Cochlear duct.

### **Physiology of the Ear**

The main functions of the ear are for

1	hearing
2	balancing (equilibrium)

### **Hearing**

The auditory functions of the ear consist of conduction of sound waves through the external ear, middle ear and cranial bones with perception of these sounds by cochlear nerve to the brain.

### **Equilibrium Function**

The equilibrium of the body is maintained by co-ordination of three systems:

- (1) Vestibular apparatus
- (2) Proprioceptors; and
- (3) Vision (eye)

Loss of functions of two leads to severe problems with posture and balance.

### 3.2 Anatomy and Physiology of the Nose and Paranasal Sinus

The nose can be divided into the external nose and the nasal cavity.

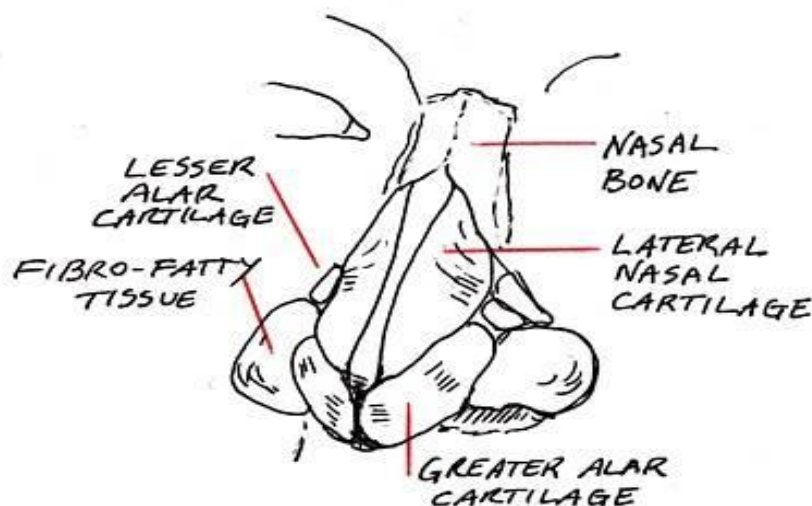
#### External Nose

The external nose is a triangular pyramid projecting from the face with its roof above and the base directed downwards. It has bony and cartilaginous framework. The upper bony part of the dorsum of the nose is called the bridge. The rounded lower borders are called alae nasi. Anterior nares are situated in the base of the nose and face downwards.

They are separated by the columella.

Bony framework is formed by the following bones:

- (1) The nasal bones.
- (2) The nasal processes of the frontal bone.
- (3) The frontal processes of the maxilla.

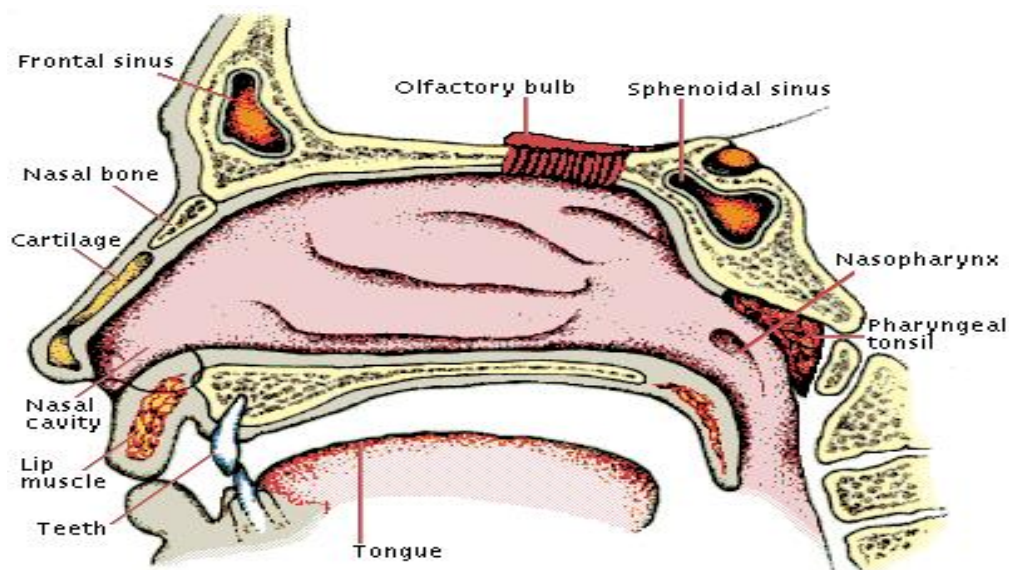


**Fig. 3: Anatomy of the Nose**

Cartilaginous framework is formed by small cartilages and the quadrilateral septal cartilage. Blood supply is by facial and ophthalmic arteries and the veins. Lymphatic drainage passes to the pre-auricular and sub-mandibular lymph nodes.

## Nasal Cavities

The nasal septum divides the nose into 2 nasal cavities. These two nasal cavities lie below the cranial cavity, above the oral cavity and between the orbits.



**Fig. 4: Nasal Cavity**

## Communication

Each nasal cavity communicates with:

- (1) Exterior through the anterior nares
- (2) Nasopharynx through the posterior nares (choana)
- (3) Paranasal sinuses through the ostia
- (4) Middle ear through Eustachian tube

## Parts of the Nasal Cavity

The nasal cavity extends from the anterior nares to the choanae posteriorly, where it becomes continuous with the nasopharynx. Vertically it extends from cribriform plate to the palate. It is narrower anteriorly than posteriorly, broader at the base than superiorly. A median septum divides it into two nasal fossae. Each half thus has a floor, a roof, a lateral wall and medial wall.



The nasal cavity consists of 4 parts:

- (1) Vestibule
- (2) Atrium
- (3) Olfactory region
- (4) Respiratory region

- 1 The vestibule is the anterior and inferior portion of the nasal cavity that is lined by skin in contrast to the rest of the nasal cavity. It bears sebaceous glands and hair follicles. The hairs are called vibrissae.
- 2 Atrium is the part in front of the middle turbinate.
- 3 Olfactory region: The roof of the nasal cavity, the region above the superior turbinate and the adjoining septum. It is lined by the yellow olfactory neuro-epithelium having bipolar sensory cells.
- 4 The respiratory region: The lower  $\frac{2}{3}$  of the nasal cavity is lined by pseudo stratified ciliated columnar epithelium rich in goblet cells. The mucosal here is very vascular and has erectile tissue. It is pink in colour. It is continuous with the mucosa of the sinuses, nasopharynx and Eustachian tubes. The ciliary movement propels the nasal secretions backwards towards the posterior choanae. The sub-epithelial tissue is also loose, very vascular and erectile. There are many mucous and serous glands.

### **Boundaries**

The nasal cavity is bounded by the floor, roof, medial wall and lateral wall. The floor is separated from the roof of the mouth. The roof is separated from the skull. The medial wall known as the septum separates each nasal cavity from another.

- (a) The lateral wall contains 3 turbinates: inferior, middle, and superior turbinates.
- (b) Under the turbinates are passages. The passage under the superior turbinate is called superior meatus and contains the opening into posterior ethmoidal sinuses.

The passage under the middle turbinate is called middle meatus and contains the following:

- Bulla ethmoidalis
- Hiatus semilunaris
- Infundibulum
- Opening of frontal sinus, maxillary sinus, anterior ethmoidal sinuses middle ethmoidal sinuses.

The passage under the inferior turbinate is called inferior meatus and contains the nasolacrimal duct.

- (c) Spheno-ethmoidal recess is above the superior meatus, the sphenoidal sinus is in this recess.

The blood supply to the nose is from 4 arteries, namely:

- (1) Spheno palatine artery
- (2) Greater palatine artery
- (3) Superior labial artery
- (4) Anterior and posterior ethmoidal artery

The nose has a rich blood supply which comes from the branches of the external and internal carotid arteries. The nasal septum is supplied by 4 arteries which anastomose at the antero-inferior part. It is a common site for epistaxis due to trauma or picking the nose. This plexus is also called the Kiesselbach's plexus. The septal branches of all the arteries mentioned above except the posterior ethmoidal artery supply Lytle's area.

### **Nerve supply**

The nose is supplied by sensory nerve, olfactory nerve and autonomic nerve.

- (1) Sensory: The sensations from the nose are through the following branches:
  - Ophthalmic division: anterior ethmoidal nerve.
  - Maxillary division  
Anterior superior dental nerve branches of the spheno-palatine ganglion greater palatine nerve, short palatine nerve and long spheno-palatine nerve.
- (2) Olfactory nerve carries the sense of smell.
- (3) Autonomic nerve supply is for sympathetic function.

Sympathetic supply	Para-Sympathetic supply
Vasoconstriction and hypo secretion	Vasodilatation and hyper secretion

### **Lymphatic Drainage**

Sub-mandibular node drains the external nose and the anterior part of the nose while the upper deep cervical nodes drain the rest of the nasal cavity directly or via the retropharyngeal nodes.

### **Applied Anatomy**

- 1 Dangerous area of the face.  
The lower part of the external nose and the upper lip constitute the dangerous area of the face as infection may spread to the cavernous sinus through the inferior ophthalmic veins.
- 2 Dangerous area of the nose.  
The olfactory area of the nose may infect the meninges along the pia and arachnoid sheaths of the olfactory nerve passing through the cribriform plate of the ethmoid.
- 3 Nasal Infection may spread to the paranasal sinuses, Eustachian tube and the respiratory tract by direct continuity.

### **Paranasal Sinuses**

The paranasal sinuses are air filled spaces in certain bones of the skull and they are in direct communication with the nasal cavity through their openings called ostia. They can be divided into 2 groups:

- (1) Anterior group – frontal, anterior ethmoidal and maxillary air sinuses.
- (2) Posterior group – posterior ethmoidal and sphenoidal air sinuses.

### **Functions of the Nose**

- (1) Respiration: The nose is for breathing. Mouth breathing occurs when the nose is blocked.
- (2) Air conditioning: The air inhaled through the nose is warmed and moistened before it reaches the lungs.
- (3) Protection: Inhaled air is purified in the following ways:
  - (a) Vibrissae filter coarse particles.
  - (b) Cilia remove smaller particles which stick to the mucosa in the nose and are passed backwards into the pharynx by the ciliary's movements. The mucous which reaches the pharynx is swallowed.

- (c) Lysozymes can kill the bacteria.
- (d) Sneezing throws out irritating particles or fumes from the nose.
- (4) Olfaction is an important function of the nose and it has a protective value against approaching dangers.
- (5) Resonance is added to the voice by the nasal cavity.
- (6) Eustachian Tube functioning: The nose permits equalisation of pressure of air between the external atmosphere and the middle ear cavity through the Eustachian tube.
- (7) Drainage: The paranasal sinuses and nasolacrimal duct drain into the nasal cavity.
- (8) Reflexes: Sneezing is a reflex action that has a protective function. When the individual is exposed to irritants, the respiration may be stopped temporarily. Olfactory sense may also reflexly stimulate salivary and gastric secretions.

### **Functions of the Paranasal Sinuses**

The functions of the paranasal sinuses include the following:

- (1) Reduction of the weight of the skull
- (2) Vocal resonance
- (3) Rapid growth of the face due to formation of the sinuses
- (4) Protection of the orbit
- (5) Air conditioning

### **3.3 Anatomy and Physiology of the Throat (Pharynx)**

#### **Anatomy**

The pharynx is a funnel shaped fibro-muscular tube that forms the upper part of the digestive and respiratory tracts. It is lined by mucous membrane. It extends from the base of the skull to the level of the body of the sixth cervical vertebra. From above downwards, the nasal cavity, oral cavity, laryngeal inlet open into the pharynx. The corresponding part of the pharynx is named as

- (1) Nasopharynx: opening into the nasal cavity
- (2) Oro-pharynx: opening into the oral cavity
- (3) Laryngopharynx (hypopharynx)

The lower end of the pharynx is continuous with the oesophagus. This is the narrowest part of the gastro-intestinal tract and it is called cricopharynx which is situated behind the cricoid cartilage.

## Size and Shape

It is about 10-15 cm long in adult; it is shaped like a funnel with the broad end at the top.

## Structure of the Pharynx

The pharynx has 5 layers

- (1) mucous membrane
- (2) Waldeyer's ring in the sub mucosa
- (3) pharyngeal aponeurosis
- (4) muscular coat
- (5) buccopharyngeal fascia

### (1) The mucous membrane

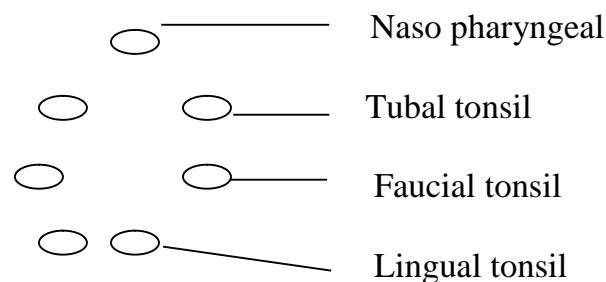
- (a) Ciliated columnar epithelium lines the upper half of the nasopharynx.
- (b) Transitional epithelium lines the lower half of the nasopharynx.
- (c) Stratified squamous epithelium is present in the oropharynx and laryngopharynx.

### (2) Waldeyer's ring in the sub mucosa

This is collection of lymphoid tissue scattered in the pharynx. The lymphoid ring has efferent vessels, but no afferent vessels.

The Waldeyer's ring consists of the following collections of the lymphoid tissue:

- a. Palatine tonsils (The Tonsil)
- b. Nasopharyngeal tonsil (Adenoid)
- c. Tubal tonsils in the fossa of Rosen Muller behind the opening of the Eustachian tube
- d. Lingual tonsils spread on the posterior – third of the tongue.
- e. Lateral pharyngeal bands behinds the posterior faucial pillars
- f. Pharyngeal nodules in the posterior pharyngeal wall



**Fig. 5: Waldeyer's ring**

The lymphoid tissue is small at birth; it increases in size till age 8 – 10 years. Then it gets smaller from 15 years onward.

(3) **Pharyngeal Aponeurosis**

It is an incomplete coat of connecting tissue between the sub mucosal and muscular layers. Pharyngobasilar fascia is the thickest upper part of the aponeurosis.

(4) **Muscular Coat**

There are external layer and internal layer of muscles.

(a) The external layer: The superior, middle and inferior constrictor muscles form the external layer. The muscles overlap one another in a way that the lower part of each muscle forms the upper part of the lower muscle. All the muscles arise from anterior structures, and pass backwards to be inserted into median raphe. The constrictors narrow the pharynx.

(b) Internal layer: The stylopharyngeus, palatopharyngeus and salpingo-pharyngeus muscles constitute this layer. These muscles shorten the pharynx.

(5) **Buccopharyngeal fascia**

Is a thin layer covering the outer surface of the external muscles.

### **Blood Supply**

The pharynx is supplied by facial artery, given off the tonsillar branch.

There is also twinge from:

Ascending pharyngeal artery

Descending palatine artery

Dorsalis lingua artery

Greater palatine artery

### **Venous Drainage**

The veins form the pharyngeal plexus which drains into the common facial vein and internal jugular vein.

### **Nerve Supply**

The pharynx is supplied by the pharyngeal plexus formed by the ninth, tenth, and eleventh cranial nerves. The fifth cranial nerve supplies innervations to the nasopharynx.

### **Lymphatic Drainage**

The pharynx drains to the deep cervical lymph nodes directly or indirectly through the retropharyngeal and jugulodigastric nodes.

### Applied Anatomy

- (a) Killian's Dehiscence: Is a potential gap between the two part of the inferior constriction muscle, namely the oblique thyropharyngeus and transverse cricopharyngeus. A pharyngeal pouch may develop here due to a prolapse of the mucous membrane in this gap. This may be due to neuromuscular in-coordination between the two parts of the inferior constriction muscle during the pharyngeal phase of deglutition if the cricopharyngeus contracts before the thyropharyngeus.
- (b) Capsule of the tonsil, which is a part of the pharyngeal aponeurosis, form the plane of dissection in tonsillectomy.
- (c) Paratonsillar vein may lead to severe haemorrhage during or after tonsillectomy.
- (d) Referred pain in the ear after tonsillectomy commonly occurs, because the ears as well as the tonsils are supplied by the glossopharyngeal nerve.
- (e) Blood clot in the tonsillar fossa prevents retraction and contraction of the blood vessels. As a result, the bleeding continues like uterine bleeding until the clot is removed.
- (f) Intratonsillar cleft is the usual source of peritonsillar abscess. Recurrent quinsy may render the dissection of the tonsils during tonsillectomy difficult due to adhesion.

### Physiology of the Pharynx

#### (A) Functions of the Tonsils

- Tonsils play an important role in acquiring immunity against infections especially in the first 5 years of life.
- Tonsils along with other lymphoid tissues in the body also form lymphocytes.
- Tonsils also produce antibodies Ig A.
- Tonsils produce barrier to infection spread to the body through the Waldeyer's ring.

#### (B) Functions of the Nasopharynx

- It is a conduit for humidified air to pass from the nasal cavity to the lower respiratory tract.
- Ventilates the middle ear through the Eustachian tube and helps maintain middle ear pressure.
- It acts as a resonating chamber for voice production
- It acts as a drainage channel for mucous secreted by nasal and paranasal sinus mucosa.

**(C) Functions of the Oro-pharynx**

- Conduit for food and air.
- It is involved in the pharyngeal phase of deglutition, prevents food from regurgitating into the nasopharynx.
- Aids in production speech.
- A few taste buds are present at the base of tongue and soft palate.
- The mucous membrane produces secretions which lubricate the pharynx.

**(D) Functions of the Laryngopharynx**

- It is a common passage for both air and food.
- It is a resonance chamber during the production of speech.
- It is also involved in the pharyngeal phase of deglutition.

**4.0 CONCLUSION**

In this unit you have learnt the anatomy and physiology of the ear, nose and throat. You have also been put through the brief embryology of life as it relates to ENT. The body starts forming at the 1<sup>st</sup> day of intrauterine life up to the 20<sup>th</sup> week of gestation. Any disease or harmful event to the mother during pregnancy can affect the formation of the baby.

You should at this stage be able to describe the anatomy of the ear, nose and throat and mention some of the physiology of ear, nose and throat. You should also be able to mention some of the applied anatomy of the ear, nose and throat.

**5.0 SUMMARY**

This unit has focused on the anatomy of the ear, nose and throat. Importance of the embryology has also been mentioned to understand why some congenital anomalies occurred in a baby. The important functions of the ear, nose and throat have also been discussed. The next unit will focus on basic equipment vital for diagnosis and treatment of ear, nose and throat conditions and diseases, and their uses.

**6.0 TUTOR-MARKED ASSIGNMENT**

- i. Describe in your own word the parts of the human ear and their functions.
- ii. What are the important functions of the nose and paranasal sinuses?
- iii. List the components of the Waldeyer's ring.



## 7.0 REFERENCES/FURTHER READING

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3th ed.).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. (4<sup>th</sup> ed.).

## **UNIT 2 BASIC EQUIPMENT VITAL FOR DIAGNOSIS AND TREATMENT OF EAR, NOSE AND THROAT CONDITIONS AND DISEASES, AND THEIR USES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 List of Basic Equipment for Diagnosis and Treatment of the Ear, Nose and Throat
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

It is very important you know the basic tools that are needed in the diagnosis and treatment of ear, nose and throat diseases. This unit will provide a picture view of some of the instruments and describe their uses. As a student of Community Health, you should be able to know how the instruments are used to make diagnosis and if possible how to use them to treat some of the ear, nose and throat conditions.

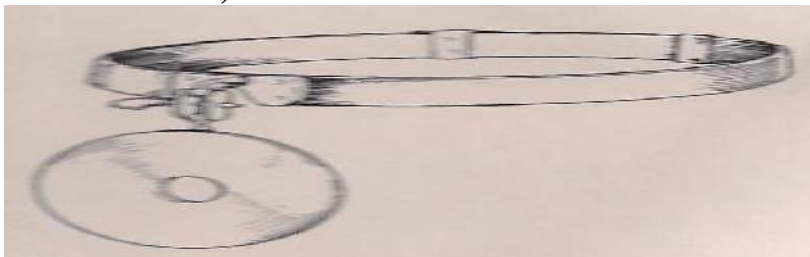
### **2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- mention the basic instruments used in treating ENT diseases
- explain how to use the instruments used in treating ENT diseases

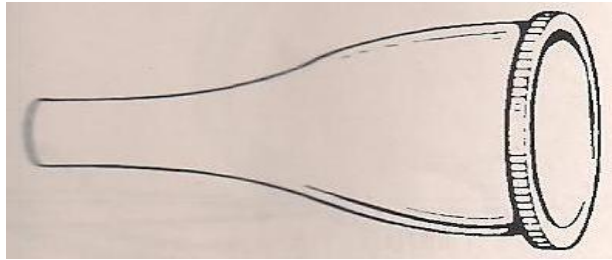
### **3.0 MAIN CONTENT**

#### **3.1 List of Basic Equipment for Diagnosis and Treatment of the Ear, Nose and Throat**



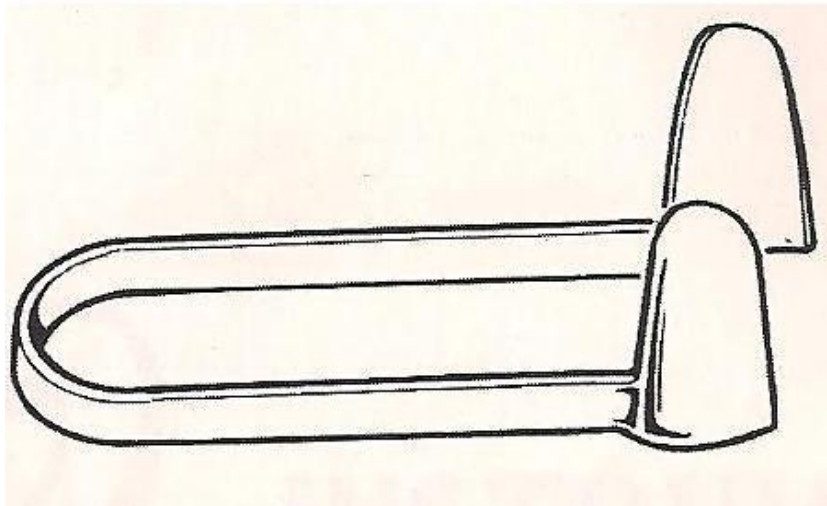
**Fig. 1: Head Mirror with Head Band**

The head mirror is a concave mirror measuring 9 cm in diameter with a central aperture of about 2 cm in diameter. It is used to illuminate and examine ear, nose and throat.



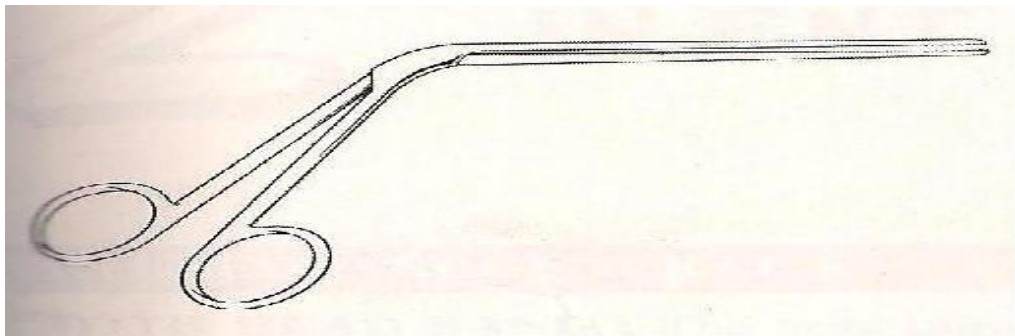
**Fig. 2: Aural Speculum**

Aural speculum is available in sizes one to eight, and used in examination of the ear canal and tympanic membrane. It is also useful for patients with hypertrichosis and to instill medication.



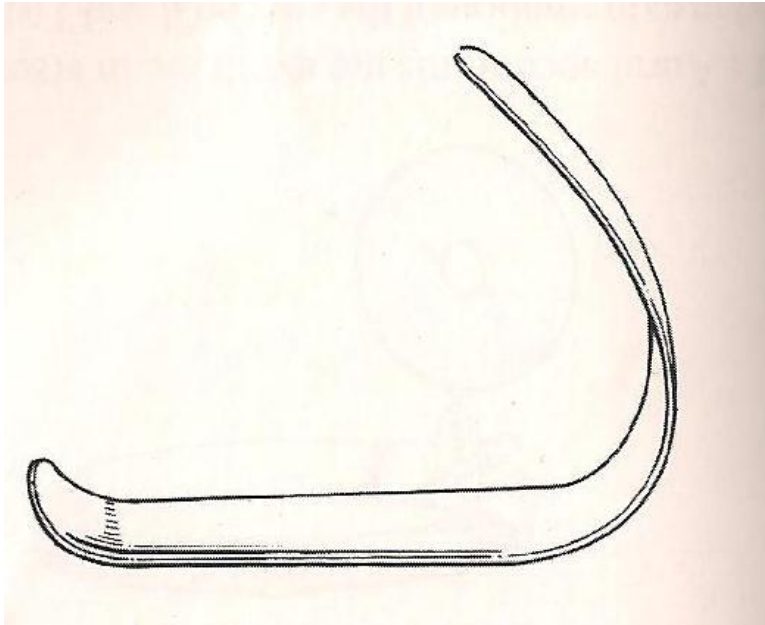
**Fig. 3: Thudicum Nasal Speculum**

The thudicum nasal speculum is available in different sizes. It is used for anterior rhinoscopy.



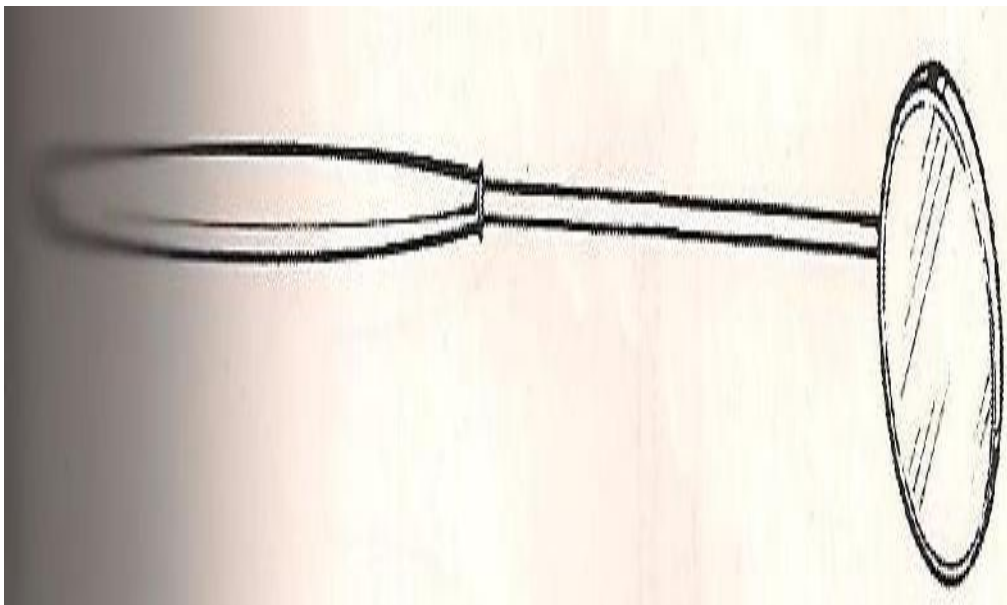
**Fig. 4: Tilley's Nasal Dressing Forceps**

Tilley's nasal dressing forceps is used for anterior nasal packing and foreign body removal.



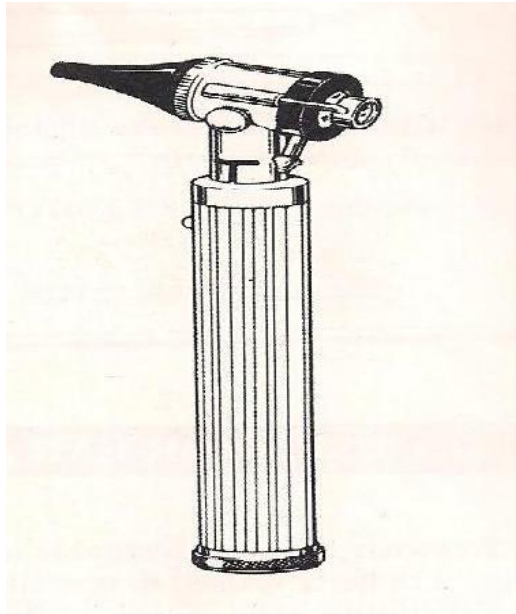
**Fig. 5: Metal Tongue Depressor**

The metal tongue depressor is used to examine the oral cavity and oropharynx. It is also used to depress the tongue.



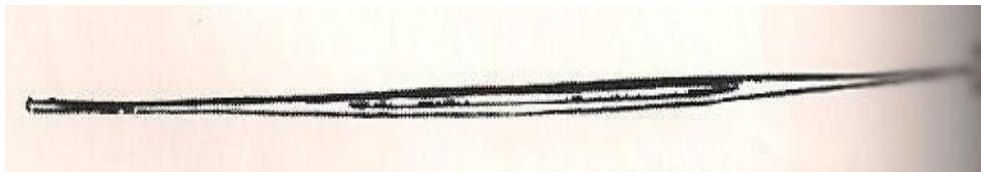
**Fig. 6: Laryngeal Mirror**

The laryngeal mirror is available in different sizes. It is used for indirect laryngoscopy.



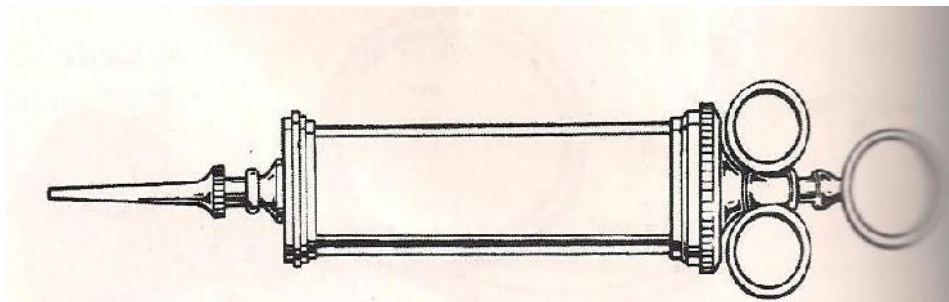
**Fig. 7: Otoscope**

An otoscope provides two times (2X) the magnification and is used for examination of external auditory canal. It is also used to instill medication into the ear.



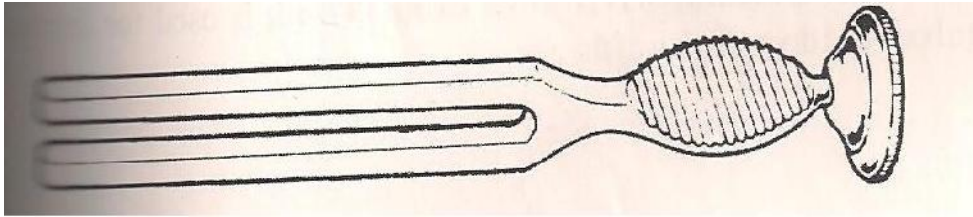
**Fig. 8: Jobson Horne Probe with Ring Curette**

Jobson Horne probe is used for the removal of wax, foreign body and for dry-mopping the ear.



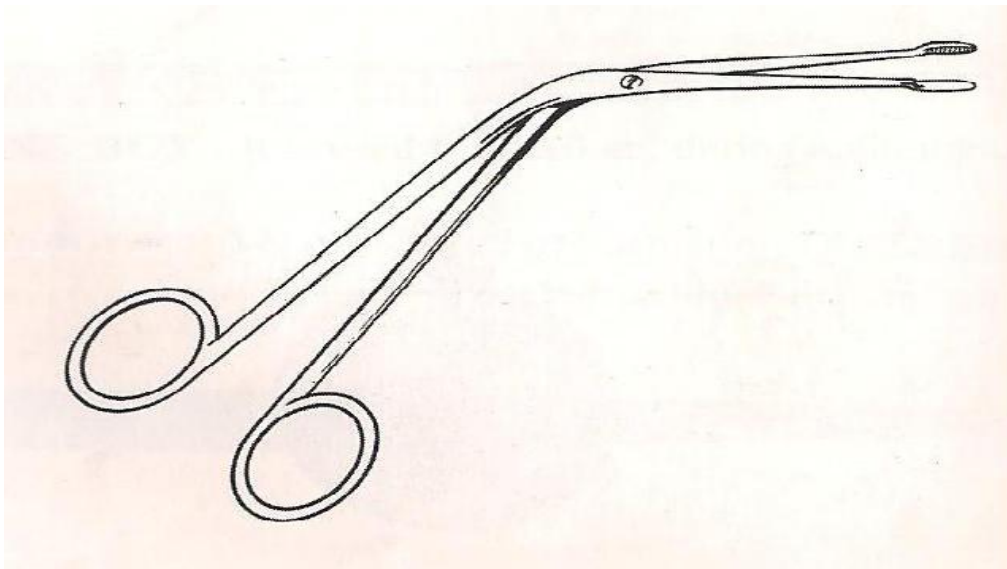
**Fig. 9: Aural Syringe**

An aural syringe is used for syringing to remove impacted wax and certain foreign bodies from external auditory canal (EAC).



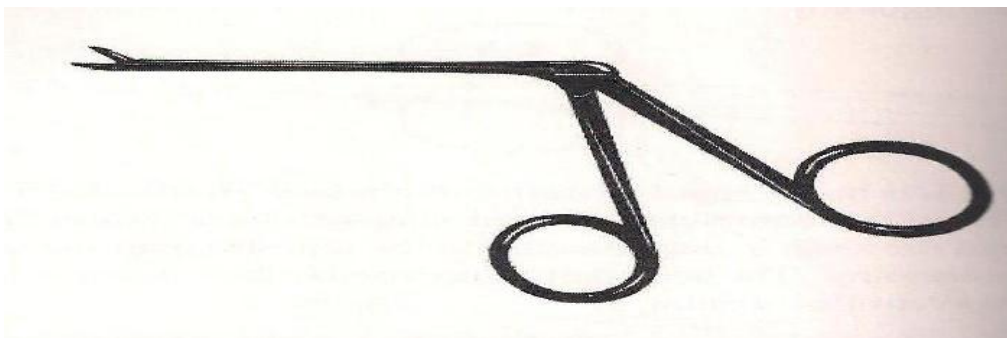
**Fig. 10: Tuning Fork**

They are available in frequencies of 256, 512 and 1024 Hertz, commonly used to test hearing. 128 Hz is used to test vibration sense.



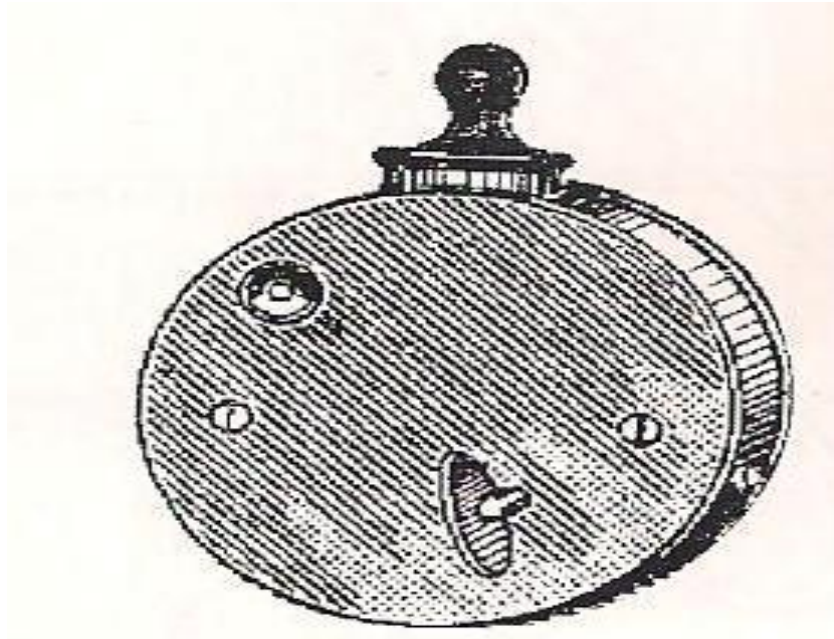
**Fig. 11: Hartmann Aural Forceps**

Hartmann aural forceps is used for aural dressing and removal of foreign body.



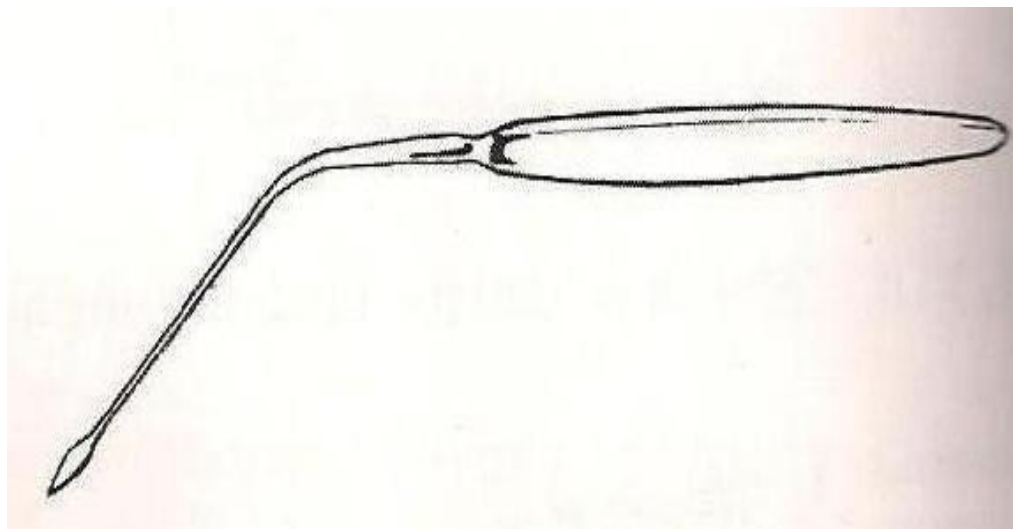
**Fig. 12: Crocodile Forceps**

The crocodile forceps is used to remove foreign body from the ear, nose and throat.



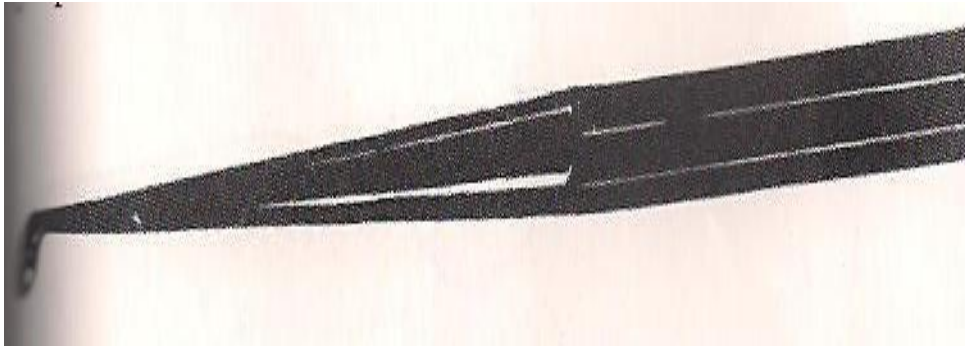
**Fig. 13: Barany's Noise Box**

Barany's noise box is used for masking during audiological testing and also to assess hearing by distraction.



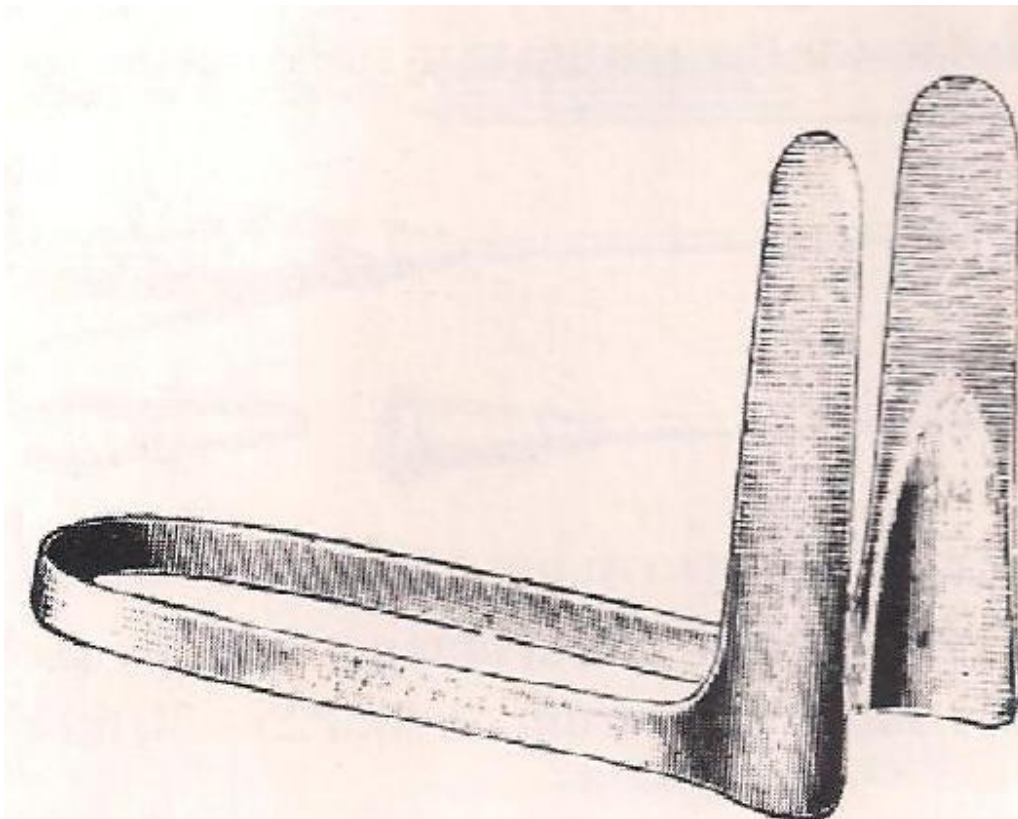
**Fig. 14: Myringotomy Knife**

A bayonet shaped knife, used in OME (otitis media with effusion) for myringotomy.



**Fig. 15: Oval Scoop**

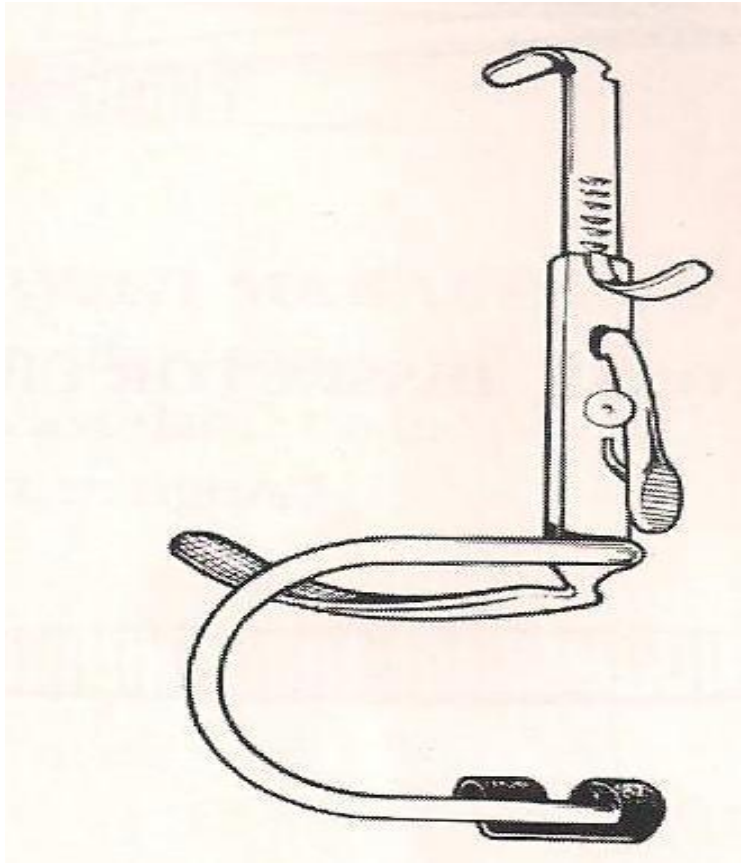
It is used to curette bone and to scoop out wax from EAC.



**Fig. 16: St. Clair Thomson Nasal Speculum (Long-bladed)**

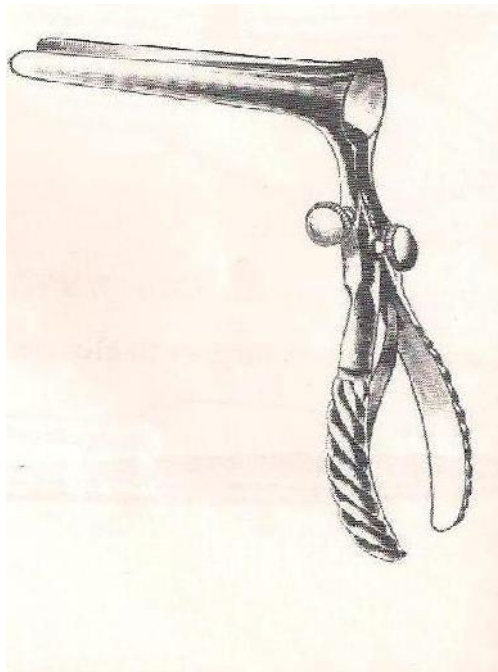
It looks like Thudicum's Speculum, but with longer blades. It can be used for anterior rhinoscopy, septal surgeries and anterior nasal packing.





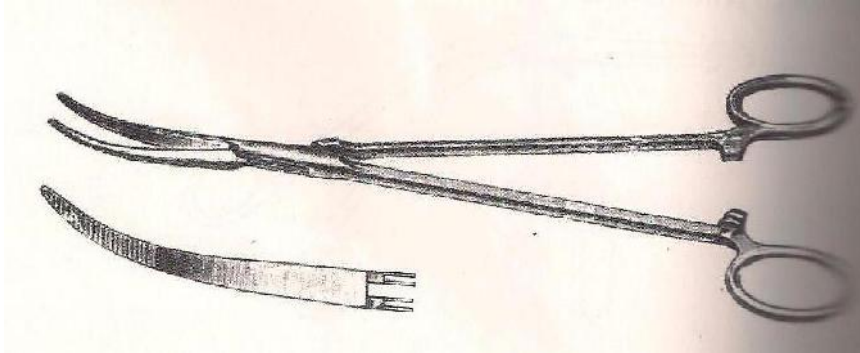
**Fig. 17: Boyle-Davis Mouth Gag with Tongue Blade**

This is used in tonsillectomy, adenoidectomy trans-palatal approaches and surgeries in the oral cavity.



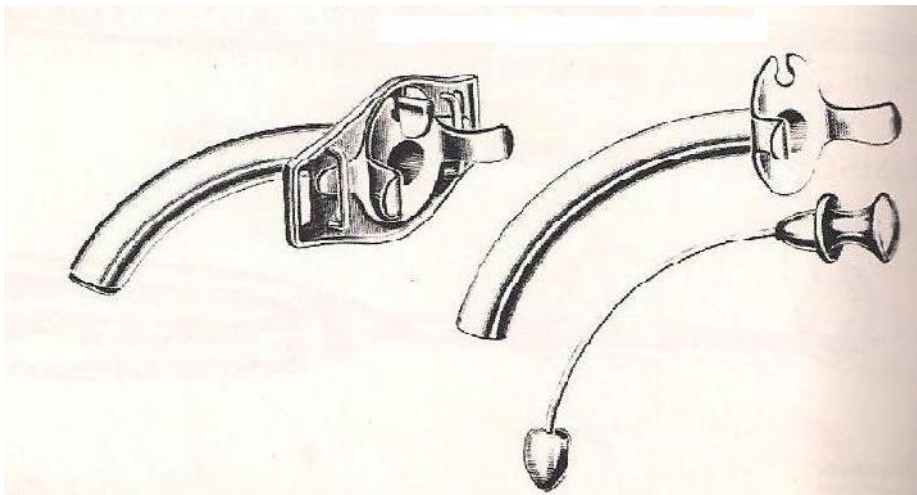
**Fig. 18: Killian's Self Retaining Nasal Speculum**

Killian's self retaining nasal speculum is used in septal surgeries and anterior nasal packing. It is self retaining and both arms of the operator are free.



**Fig. 19: Artery Forceps**

The artery forceps are used as second artery forceps during haemostasis in tonsillectomy.



**Fig. 20: Chevalier Jackson Tracheostomy Tube with Pilot**

Made of metal, Chevalier Jackson Tracheostomy tube has 3 parts: a pilot which helps in introducing the tube; an inner tube which can be removed and cleaned frequently; and an outer tube which is secured with tapes. This outer tube is provided with a locking mechanism which holds the inner tube firmly. The inner tube can only be removed after unlocking it. Speech is not possible. It is used to relieve upper airway obstruction.

#### **4.0 CONCLUSION**

This unit has enabled you to know some of the basic ear, nose and throat instruments necessary for diagnosis and treatment of ear, nose and throat disease conditions as it relates to primary health care.

#### **5.0 SUMMARY**

This unit focuses mainly on some of the basic ear, nose and throat instruments, how they look like, their uses in ear, nose and throat diseases conditions is also highlighted. The next unit will discuss the recognition and treatment of the diseases of the ear, nose and throat.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

List 10 basic instruments used in the ENT clinic.

#### **7.0 REFERENCES/FURTHER READING**

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3th ed.).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. (4<sup>th</sup> ed.).

## **UNIT 3 THE RECOGNITION AND TREATMENT OF THE DISEASES OF THE EAR**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Common Diseases of the Ear and their Treatment
  - 3.1 Recognition and Treatment of the Diseases of the Ear
  - 3.2 Diseases of the Middle Ear
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

To understand treatment of Ear, Nose and Throat (ENT) diseases, you should be able to recognise the symptoms and signs of ENT diseases. This unit will help you to understand the symptoms and signs in ENT, and also to know that problems in the ear can be as a result of the diseases from the nose or throat and vice versa since the three areas are closely related and contiguous with one another. Symptoms are what the patient will complain of while the signs are what you will observe or see in the patient. Treatment is the simple solution or advice you offer the patient to get better from the condition.

### **2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- describe the treatment of the ear, nose and throat diseases as it relates to primary health care
- classify foreign bodies in the ear
- explain with a diagram the anatomy of the ear.

### **3.0 MAIN CONTENT**

#### **3.1 Common Diseases of the Ear and their Treatment Symptoms of Ear Disease**

##### **Ear Pain (Ootalgia)**

The pain may be primarily in the ear or the pain may be referred from other areas like the throat or nose. Pain may be referred to the ear through the 5<sup>th</sup>, 7<sup>th</sup>, 9<sup>th</sup> or 10<sup>th</sup> cranial nerves or the upper two cervical nerves.

It is important to note the character of the pain, the onset, its distribution, severity, periodicity and relieving factors.

##### **Causes of Ear Pain**

Foreign body in the ear, impacted wax, and furuncle (boils) in the ear, Acute Otitis Media, Keratosis obturans are all common causes. Myringitis bullosa and Ramsay Hunt Syndrome are viral lesions which cause severe pain in the ear. Fungal, trauma and tumours are also causes of ear pain.

Common causes of referred pain to the ear are impacted molar tooth, dental caries, and alveolar abscess, infection in the mouth, palate or salivary glands. Tonsillitis, Peritonsillar abscess, post-tonsillectomy pain and malignancy in the oral cavity.

##### **Diagnosis**

Besides the examination of the ear, other structures like nose, paranasal sinuses, oral cavity, and pharynx should be examined.

##### **Investigations**

Beside routine investigations, the following investigations may be required.

- (1) Radiograph of nose and paranasal sinuses
- (2) Radiograph of the cervical spine
- (3) Radiograph of temporo-mandibular joints

##### **Management**

- (1) Specific treatment depends upon the cause.
- (2) General management consists of administering:

- i. Analgesics
- ii. Antibiotics
- iii. Anaesthetic ear drop

## (2) Deafness

The term deafness may imply total hearing loss to a patient, while hearing loss is used for partial reduction in hearing capacity. It can be classified as:

- (a) Conductive deafness
- (b) Sensorineural deafness
- (c) Mixed deafness, that is, there are both conductive and sensorineural problems.

The patient may complain of hearing loss or reduction in hearing which may be on one ear or both ears. There may be other associated ear symptoms like pain, ear discharge, noise in the ear (Tinnitus) and vertigo (feeling of rotatory movement).

It is important to check the ear for any congenital lesions of the external ear, the external auditory canal for impacted wax, foreign body, discharge or debris, pain and infection. The hearing could be assessed by observing the conversation, they tend to speak in a low voice or speak too loudly. The speech discrimination may be good or poor.

A simple clinical test of hearing is using a tuning fork to assess the patient hearing (Rinne test, Weber test). You can also perform Audiometry and Tympanometry test for the patient. Also more sophisticated objective tests like Brain Stem Evoke Response Audiometry and Evoked Otoacoustic emissions can be done especially for children who cannot give response to the subjective tests.

FACTOR	TYPES OF DEAFNESS	
	CONDUCTIVE	SENSORINEURAL
Site of Lesion	External ear and middle ear	Inner ear viii cranial nerve and central connections
Rinne Test	Bone conduction better than air conduction	Air conduction better than bone conduction
Weber Test	Lateralise to the worse ear	Lateralise to the better ear
Audiometry	Bone conduction better than air conduction	Air conduction better than bone conduction
Hearing Loss	Not more than 60dB.	May be more than 60dB.

Speech	Speak in a low voice.	Speak loudly
Speech discrimination	Good	Poor

## Investigation

The following tests can be done to investigate deafness:

- (1) Test of hearing: voice test, watch test, tuning fork test and audiometry.
- (2) V D R L
- (3) Blood sugar, cholesterol, blood pressure.
- (4) Skull x-ray for internal auditory meati. (Towneview)

## Treatment of Deafness

### (A) Conductive

- (1) The majority of patients with conductive hearing loss can be helped. When the cause is treated, the patient gets better.
- (2) Hearing aid is advised for those patients who could not benefit from surgery.

### (B) Sensorineural Deafness

Those with long standing sensorineural hearing loss may be difficult to treat. However, recent onset sensorineural hearing loss may benefit from:

- (1) Specific: if there are any specific diseases like diabetes, syphilis, it should be treated.
- (2) Vasodilators are helpful for patient with Meniere's disease and sudden-onset deafness. They help by increasing the blood flow to the labyrinth.
- (3) Multi-vitamins are often advised. B<sub>1</sub>, B<sub>6</sub>, B<sub>12</sub>, also A, C, E as anti-arterosclerotic.
- (4) Tranquilizers may be given to alleviate the effect of the upset due to deafness and tinnitus in some patients.
- (5) Hearing aid may help to augment the hearing.
- (6) Conversation: One should speak to the deaf person slowly and loudly.
- (7) Auditory training and lip reading may be of help to the patient.

### (3) Otorrhea

Ear discharge due to diseases of the ear, but it may be due to a few other causes outside the ear.

#### (A) Causes in the Ear

- Otomycosis. This is a fungal infection of the external ear.
- Furunculosis. This is a bacterial infection of the external ear.
- Liquid wax may also be present as ear discharge.
- Acute suppurative otitis media. This is infection in the middle ear with perforation of the tympanic membrane, duration less than three weeks.
- Chronic suppurative otitis media. This is a long standing infection in the middle ear with perforation of the tympanic membrane, usually more than eight weeks.
- Suppurative labyrinthitis. This is infection of the inner ear labyrinth which produces discharge.

#### (B) Causes outside the Ear

- Cerebrospinal fluid otorrhoea. Following road traffic accident, cerebrospinal fluid may leak into the ear if there is a perforation at the base of the skull.
- Parotid abscess. The abscess may track down through the external auditory canal.

### Presentation

The discharge may be profuse or scanty, continuous or intermittent, serous or mucoid or mucopurulent, may even be foul smelling or odourless, the discharge may be watery.

### Examination/Investigation

1. Bacteriological examination for culture and sensitivity.
2. Otoscopy (examination of the ear).
3. Test of hearing.

### Treatment: Depends on the cause

- Ear drop
- Systemic antibiotic
- Aural toileting



#### **(4) Tinnitus**

This is noise in the ear. It is very common and annoying symptom. It may be mild and occur only at night; sometimes the tinnitus is continuous and loud and interferes with hearing. Tinnitus is one of the most difficult symptoms to treat.

#### **Tinnitus can be classified as**

- (1) Subjective – audible to patient only.
- (2) Objective – audible to both patient and examiner.

The most common type is subjective. Tinnitus may be low- pitched or high- pitched.

Tinnitus can thus be defined as a ringing sound or noise in the ear or head. It is different from auditory hallucination which is hearing of voices and sentences due to functional disturbances.

#### **Causes of Subjective Tinnitus**

##### **i. Local Causes**

- Cerumen.
- Perforation of tympanic membrane
- Serous otitis media – causes muffling of voice with low pitched tinnitus and intermittent character.
- Otosclerosis – starts with disease, ringing, roaring or whistling sound continuous type, disappears as the disease progresses.
- Presbycusis and acoustic trauma produces high pitch tinnitus, ringing in character.
- Exposure to loud noise.
- Meniere's disease is characterised by low pitched fluctuating tinnitus which becomes louder during attacks.
- Vestibular schwannoma – continuous, high pitched.

In summary, any disease of the ear which can cause deafness may also produce tinnitus.

##### **ii General Causes**

- Drugs like aspirin, quinine, salicylates, streptomycin, dihydrostreptomycin, neomycin, and gentamicin are ototoxic drugs causing high pitched tinnitus.

- Vascular causes like atherosclerosis, hypertension, and etc. cause high pitched tinnitus. In hypertension, tinnitus is fluctuating.
- Anaemia. Low BP causes low intensity tinnitus.

### iii **Functional**

Emotional factors may cause tinnitus but tinnitus itself may lead to anxiety and depression.

### iv **Idiopathic:** No cause for tinnitus detected.

### **Objective Tinnitus**

Causes include palatal myoclonus, myoclonus of stapedius or tensor tympani, vascular abnormalities, glomus jugulare, aneurysms or AV Fistulae, clicking temporo-mandibular joints, intracranial vascular tumours, and live insect in the ear.

### **Investigation**

- (1) Heamogram
- (2) Radiological
- (3) Carotic angiogram

### **Treatment**

- (1) Treatment of the primary cause.
- (2) Routine treatment is the same as for deafness.
- (3) Masking of tinnitus by a tinnitus masking device, alarm clock or radio may be useful in a quiet place.
- (4) Reassurance for difficult cases.
- (5) Surgical treatment has little value. Labyrinthectomy, 8<sup>th</sup> Nerve Section, stellate ganglion block, chorda tympani nerve section, etc have been tried.
- (6) Drugs: Drugs like lidocaine, carbamazepine, clonazepam, etc. have been tried.

### v. **Vertigo**

Vertigo or giddiness is a subjective sensation of imbalance, where the patient feels that either his surroundings are going round him, or he himself is rotating. It may be a mild to severe vertigo accompanied by nausea, vomiting; perspiration, gastric upset and diarrhea due to vagal stimulation. Vertigo differs from fainting spell where patient feels sinking and blackout.

**(A) Cause of Vertigo****(i) Local Causes**

- Wax causes
- Furuncle
- Labyrinthitis
  - Meier's disease
  - Benign paroxysmal positional vertigo (BPPV)
  - Acoustic neurinoma
  - Perilymph fistula
  - Syphilis
  - Vestibular neuronitis
  - Ototoxic drugs
  - Otitis media

**(ii) Trauma to the Inner Ear**

- Head Injury with fracture of temporal bone.
- Surgical trauma: e.g. mastoidectomy or stapedectomy, vestibule may be damaged.
- Acoustic trauma. Very loud sound may occasionally cause vertigo (Tullio phenomenon).

**(iii) Causes outside the Ear**

- Hypertension with atherosclerosis.
- Hypotension.
- Cardiac problems: Arrhythmias, regurgitation.
- Vertebrobasilar artery syndrome occurs in elderly.
- Disseminated sclerosis
- Tumours or abscess in the cerebellum and brain stem.
- Increased intra-cranial tension
- Diabetes
- Anaemia
- Cervical spondylosis.

**(i) Ophthalmic causes**

- Diplopia
- Refractory errors
- Glaucoma

## Treatment

Detailed history about the patient should be taken and proper examination of the ear, nose and throat. Also, a general examination of the body should be carried out. The patient should be investigated along the area of the possible cause; treatment is directed to the cause.

### 3.1 Recognition and Treatment of the Diseases of the Ear

#### (A) Congenital Conditions of the Ear

- (1) Anotia – Complete absence of pinna.
- (2) Microtia – Small rudimentary pinna.
- (3) Synotia – Auricle are joined beneath the mandible.
- (4) Bat ear – Abnormal protrusions of the pinna.
- (5) Accessory Auricle – Single or multiple flesh or cartilage attachments may present anterior to the pinna like a tag.
- (6) Pre-auricular Sinus – A hole in the anterior aspect of the auricle may sometimes get infected causing painful swelling which may rupture and discharge.

#### Treatment

Plastic surgical reconstruction is usually recommended for most of the congenital abnormalities of the ear.

#### (B) Diseases of the Pinna

- Haematoma Auris: This is collection of blood, forming swelling in the subperichondria. The blood collects in between the perichondrium and the cartilage usually following trauma to the ear.

#### Treatment

If seen early – under strict aseptic precautions, aspiration of blood with a wide bore needle is necessary.

- (1) If seen late, incision and drainage is done, following this a firm pressure bandage and dressing is applied for 5 – 6 days to prevent recurrence.
- (2) Keloid: form as a result of excessive scar tissue during healing after an injury.
- (3) Perichondritis: following trauma or infection or burns.
- (4) Systemic antibiotics, broad spectrum to cover for pseudomonas.

**(C) Diseases of External Auditory Canal****(1) Meatal Stenosis**

Meatal stenosis could be due to trauma, burns, corrosive, chronic infection or may even be congenital. Associated middle ear abnormalities are often present.

**Treatment**

Surgical dilatation and rubber tube or supra-tulle pack may help. Meatoplasty may be recommended.

**(2) Cerumen (Wax)**

Skin lining the cartilaginous part of the external auditory canal contains two types of glands.

(a) Sebaceous gland and (b) Ceruminous glands. Cerumen is a mixture of the secretory products of sebaceous and ceruminous glands from the lining of the skin of the external auditory canal. Colour of cerumen varies from amber to black; it may be dry or wet. These secretions mix with epithelial debris to form wax and gradually move laterally to be expelled by epithelial migration and due to movement of the Temporomandibular joint during mastication. So it is not necessary to clean the ear with cotton buds. The ear cleanses itself by this mechanism.

**Treatment**

Removal of wax by

**(i) Instrumentation**

A ring probe (Jobson Horne Probe) wax hook, forceps or suction can be used.

**(ii) Syringing**

Syringing is done to remove thick discharge, foreign body from the ear, debris from the ear, or impacted wax. Prior to removal of impacted wax, a wax softener is instilled into the ear to soften the wax. Usually wax oil or olive oil can be used to soften the wax. The oil is dropped into the affected ear; 4 – 6 drops three times a day for about 3 – 5 days depending on the hardness of the wax. Usually a large metallic syringe is used. The procedure is well explained to the patient. The patient is placed in sitting position. If the patient is a child, he should be held

firmly by the mother with the legs of the child held between the legs of the mother and hands held down with one hand of the mother. The head is turned to one side, and a kidney tray is held below the ear to receive returning water. The patient is draped with a towel to prevent the soaking of clothes. Normal saline or sterile water at body temperature should be used as an irrigating solution. Higher or lower temperature produces caloric stimulation and giddiness.

Before syringing the ear, the auditory canal is straightened out by pulling it backwards, upwards and laterally in adults and backwards and laterally in children. The syringing water stream should be directed towards the postero-superior aspect of the canal. Direct syringing along the canal further impacts the wax and may cause perforation of the tympanic membrane.

### **Contra Indications**

- (a) Perforated tympanic membrane
- (b) Vertigo
- (c) Hygroscopic (vegetative) foreign bodies should not be syringed, as they may swell and get impacted. Seeds like beans or maize may even begin to germinate.

### **Complications of Syringing**

- (a) Tympanic membrane perforation
  - (b) Trauma to the external auditory canal
  - (c) Burns if the liquid for syringing is hot
  - (d) Giddiness, vertigo, if hot or cold is used
  - (e) Fainting spell
  - (f) Infection: use of unsterilised water may cause otitis externa. Analgesics are prescribed if there is pain.
- (iii) Wax removal under general anaesthesia  
If the pain is very severe, or if the patient is uncooperative, wax is removed under general anaesthesia.

### **(3) Keratosis Obturans**

This is a painful condition caused by the presence of a desquamated squamous epithelial mass mixed with cerumen deep in the auditory canal. It gradually causes bone erosion.

## **Treatment**

Complete removal of the mass under general anaesthesia after initial softening of the mass.

### **(4) Foreign Bodies**

The presence of foreign bodies in the ear is a common problem. Examples include toy, stone, insect, bead, and eraser, anything small can be inserted into the ear.

## **Classification**

Foreign bodies can be classified into:

- (1) Living foreign bodies. Examples include insects, maggots and other small live matter.
- (2) Non-living foreign bodies. This can be further classified into vegetable and non-vegetable. Examples of vegetable foreign bodies include: grains, leaves, peas, seeds, etc, while non-vegetable foreign bodies include stone, pin, button, eraser, bead, etc.

## **Treatment**

In children, removal of foreign body is done under general anaesthesia.

- (a) Insects should be killed by instilling spirit, alcohol, salt water, or oil into the ear and then removed with forceps.
- (b) Vegetable foreign bodies: If they are small they can be removed by foreign body hook or forceps (crocodile forceps). Because they are hygroscopic in nature, syringing with water is not advisable.
- (c) Non-vegetable foreign bodies can be removed with crocodile forceps or a hook under direct vision, or if loose by syringing.
- (d) In difficult cases, where the foreign body is deep enough in the canal, end-aural incision or post auricular incision under general anaesthesia may be necessary. \*(Do not use alcohol or spirit if there is perforation because it is ototoxic). \*Antibiotics control the infection and oedema. This may be helpful while removing the foreign body.

## **Complications**

- (1) Injury to the tympanic membrane, ossicles and even labyrinth by a sharp foreign body or instrumentation is possible.

- (2) Otitis externa may develop.
- (3) Otitis media may follow.
- (4) Lodgment of foreign body in the middle ear may occur.

### **(5) Infections of the External Auditory Canal**

Some infections include:

- Otitis Externa
- Furuncle (Boil)

#### **Treatment**

- Analgesics and antipyretics should be given to relieve pain and fever.
- Antibiotics are also given.
- Dressing of the purulent discharge is also necessary.

### **(6) Otomycosis**

Is a fungal infection of the external auditory canal producing severe itching of the ear, hard of hearing and occasional pain in the ear. Examination of the ear shows greyish debris, wet blotting paper-like debris in aspergillus niger, a black mass of mycelia with black heads in the spore forming stage. Microscopy of the debris in 10% Potassium Hydroxide (KOH) cultured in Sabourand's agar media confirms the diagnosis.

#### **Treatment**

- (1) Thorough local cleaning of debris is very important.
- (2) Local antifungal ear drops like Clotrimazole, 2% Salicylic acid in alcohol or 10% boric acid in alcohol can be used.
- (3) Application of Gentian Violet locally may be used.
- (4) Patient advised to keep ear dry. Water must not get into the ear.

## **3.2 Diseases of the Middle Ear**

Infection of the middle ear can be as a result of infection in the nasal cavity through the Eustachian tube. A patient with persistent nasal infection can have a spread to the middle ear.



**Middle ear infection can be acute, sub-acute or chronic**

Acute infection: Less than 3 weeks duration.

Sub-acute infection: 3 – 8 weeks duration

Chronic infection: More than 8 weeks duration.

**Some Important Aetiology**

- (1) Recurrent upper respiratory tract infection
- (2) Nasal allergy
- (3) Adenoid, nasopharyngeal tumour
- (4) Cleft palate
- (5) Poor socio-economic status

**1. Otitis Media**

Otitis media is an inflammation of the middle ear cleft. It could be suppurative or non-suppurative. When it is suppurative it means there is a discharge from the middle ear through a perforated tympanic membrane, whilst in non-suppurative the tympanic membrane is intact. It could be acute, sub-acute or chronic.

The acute suppurative otitis media (ASOM) occurs more commonly in children because infection from the nose and nasopharynx spread easily to the middle ear through the Eustacian tube, which is short, wider and straighter. ASOM may also be seen in children suffering from measles, mumps and chickenpox or through an already perforated tympanic membrane from contamination from external auditory canal.

**Clinical presentation**

The following are clinical symptoms and signs:

- Ear ache
- Fever
- Mild hearing defect
- Ear discharge

That are associated nasal catarrh and upper respiratory tract infection.

Examination at otoscopy shows that the tympanic membrane is ruptured and ear is filled with pus.

## Treatment

### (1) Treat the Primary Cause

Acute tonsillitis, acute rhinosinusitis, upper respiratory tract infection and allergy should be treated promptly.

### (2) Treat the Acute Suppurative Otitis Media

- (i) **Systemic:** Systemic antibiotics, broad spectrum antibiotic should be used for at least 5 – 10 days. Amoxicillin, Cotrimoxazole, Erythromycin are the drugs of choice. The dose and route of administration depends upon age and the severity of the infection.
- (ii) **Decongestants**  
Systemic and local decongestants are helpful. Nasal decongestants reduce congestion and facilitate drainage.
- (iii) **Antipyretic and Analgesic:** For relief of symptoms of pains and fever.
- (iv) **Aural toilet:** The purulent discharge should be cleaned and local antibiotics should be used in the form of ear drops.

**Surgical:** For non suppurative otitis media

### Indications for Myringotomy

- (1) Severe pain with bulging of tympanic membrane (imminent rupture)
- (2) Resistance to antibiotics
- (3) Impending complications

**Surgical:** For suppurative otitis media, if adenoid enlargement are predisposing, then adenoidectomy may help.

### Chronic Suppurative Otitis media (CSOM)

It is common in childhood and adolescence, but can affect all ages. It is a major cause of deafness in developing countries. It is common among economically weak people and it is associated with unhygienic habits.

## **Aetiology**

Chronic suppurative otitis media may follow an acute otitis media that fails to heal, upper respiratory tract infection or obstruction of the nasopharynx, nose and throat as in the case of adenoid, sinusitis and tonsillitis patient with low immune resistance, patient with viral infections and patient with large perforated tympanic membrane following traumatic condition.

CSOM could be dangerous when it presents with cholesteatoma affecting the attico-antral part of the middle ear. Cholesteatoma is a bag like structure containing squamous epithelium and debris resting on a fibrous tissue stroma, usually in the attic, antrum, middle ear and mastoid with a property of eroding bone.

## **Symptoms**

- 1 Aural discharge; which is usually profuse mucopurulent.
- 2 Deafness; usually conductive deafness of varying degree.
- 3 Ear ache is not very common; patient with ear ache should arouse complication.
- 4 Tinnitus
- 5 Giddiness may be present
- 6 Swelling in mastoid region.

## **On examination of the ear**

The discharge is mucopurulent, after cleaning; the perforation (central) of the tympanic membrane is seen. Middle ear mucosa will be seen as red, velvet and oedematous. A polyp may protrude through the perforation into the external auditory canal.

## **Investigations**

- (1) Audiometry – confirms conductive deafness.
- (2) X-ray mastoids: Mastoid air cells will be cloudy or sclerosed.
- (3) Culture and sensitivity of the ear discharge.
- (4) X-ray of the sinuses.
- (5) Blood test. A full blood count may show raised white blood cell values.
- (6) Urine analysis.

## **Treatment**

Treatment of chronic suppurative otitis media is best done by an otorhinolaryngologist.

The following treatments can be done if the facilities are available.

- 1 Aural toilet: Thorough cleaning of the ear is essentially done by dry-mopping with cotton buds.
- 2 Antibiotic ear drop sensitive to the offending organism obtained from ear swab could be applied to a sterile gauze strip and pack the ear. This is done daily for a week till the ear is dry. Chloramphenicol, gentamicin drops in combination with hydrocortisone may be used. Systemic antibiotics according to culture and sensitivity are also given. Systemic antihistamines are also used.
- 3 Treatment of the primary source of infection: This includes treatment of allergic rhinitis, sinusitis, adenoidectomy and tonsillectomy.
- 4 If discharge persists: Cortical mastoidectomy with tympanoplasty is done with good result.

### **Inactive Disease (Dry Ears)**

In these patients there is no active ear discharge, the main problem is deafness. Myringoplasty is the treatment of choice.

### **Complications of Otitis Media**

It is important to know the complications that can arise as a result of otitis media. Once this is noticed the patient is advised to see an otorhinolaryngologist for prompt attention. The complication can be divided into

- 1 Extra-cranial complications
- 2 Intra-cranial complications

### **Extra-Cranial Complications**

- 1 Acute mastoiditis
- 2 Chronic mastoiditis
- 3 Labyrinthitis
- 4 Petrositis
- 5 Facial nerve paralysis
- 6 Subperiosteal and parapharyngeal abscess
- 7 Sensorineural deafness
- 8 Aural polyps and granulation formation

### **Intra-Cranial Complication**

- 1 Meningitis
- 2 Extradural abscess
- 3 Subdural abscess
- 4 Lateral sinus thrombosis
- 5 Temporal lobe abscess
- 6 Cerebellar abscess
- 7 Otitis hydrocephalus

### **Miscellaneous Diseases of the Ear**

#### **(1) Traumatic**

- Traumatic perforation of the tympanic membrane (from slapping, foreign body, head injury)
- Haemotympanum
- Ossicular discontinuity
- Otitis barotraumas

**Treatment:** conservative treatment if surgery fails.

#### **(2) Chronic Non-Suppurative Otitis Media**

- Eustachian Catarrh
- Serous otitis media
- Adhesive otitis media
- Tympano sclerosis

Treatment is directed to the cause

#### **(3) Specific Suppurative Otitis Media**

- Tuberculous otitis media
- Syphilitic otitis media

**Treatment:** tympanoplasty or mastoidectomy may be performed after controlling the infection.

**(4) Tumours:** Tumours could be benign or malignant. Treatment depends on the nature and extent.

## 4.0 CONCLUSION

You should at this stage be able to recognise some of the diseases of the ear. You should also be able to proffer some simple solutions to some of them and know your limits as they may apply.

## 5.0 SUMMARY

This unit has focused on the recognition and treatment of some ear diseases. The need to your limit in offering solution is also highlighted. The next unit discusses recognition and treatment of diseases from the Nose and Paranasal Sinuses.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. Explain two diseases of the external auditory canal.
2. Explain the anatomy of the ear fully, with an annotated diagram.
3. What are the causes of rhinitis? How will you treat patient with rhinitis?

## 7.0 REFERENCES/FURTHER READING

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3<sup>rd</sup> ed.).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. (4<sup>th</sup> ed.).

## **UNIT 4 THE RECOGNITION AND TREATMENT OF THE DISEASES OF THE NOSE AND PARANASAL SINUSES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Common Diseases of the Nose, Paranasal Sinuses and their Treatment
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

To understand treatment of nose and paranasal sinuses diseases, you should be able to recognise the symptoms and sign ear, nose and throat diseases.

This unit will help you to understand the symptoms and signs in ear, nose and throat and also to identify that problem in the nose and paranasal sinuses can be as a result of the diseases of ear or nose and vice versa, since the three areas are closely related and contiguous with one another. Symptom is what the patient will complain of, while the sign is what you will observe or see in the patient. Treatment is the simple solution or advice. You offer the patient to get better from the condition.

### **2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- identify nose and paranasal sinuses diseases as it relates to the primary health care
- classify the symptoms of ear, nose and throat diseases
- treat some of nose and paranasal sinuses diseases.

### **3.1 Recognition of Diseases of Nose and Paranasal Sinuses and their Treatment**

The nasal and paranasal sinus disease can give rise to any of the following symptoms:

- nasal discharge
- nasal itching
- nasal obstruction
- epistaxis
- excessive sneezing
- facial pain and headache
- loss of smell
- snoring
- post nasal drip
- swelling in the nose
- nasal speech
- mouth breathing

To properly make a correct diagnosis, an accurate history from the patient should be taken to know the origin, duration and severity of the symptom. It is equally important to know whether the symptom is unilateral or bilateral, and to know the precipitating or relieving factors.

Other organ: The nasal symptoms may affect the ear or entire respiratory system. Personal and family history must be taken.

#### **Examination of the Nose**

One has to examine:

- (1) external nose
- (2) nasal cavities
- (3) choana and nasopharynx
- (4) paranasal sinuses

The nose and paranasal sinuses is inspected and palpated for any abnormalities.

#### **Diseases of the External Nose**

The problem with nose could be:

- a. Congenital problems
- b. Trauma
- c. Inflammatory Diseases
- d. Epistaxis



- e. Tumour
- f. Foreign body

### **(1) Congenital Problems**

Examples of congenital nasal problems are: septal deviation, congenital atresia, encephalocele, nasal dermoids cyst, bifid nose, nasal glioma, congenital choanal atresia. A child with any of these diseases presents early in the form of nasal obstruction and discharge or mouth breathing. Treatment is usually surgical.

### **(2) Trauma**

Trauma to the mid-face can result in trauma to the nose. This can lead to crooked nose deformity, fracture of the nasal bone and the septum, fracture of the middle third of the face and may involve the surrounding structures like the orbit and mouth. The patient may present with a mild facial injury to a severe facial injury with loss of consciousness; there may be associated damage to the eye, leakage of cerebrospinal fluid from the nose, epistaxis and fracture of the nasal bone, maxilla and mandible.

### **Treatment**

Treatment of diseases of the nose largely depends on the extent of the injury and state of the patient. If the injury is mild, investigations like x-ray of the sinuses, nasal bone or even skull x-ray can be ordered for to rule out any fracture. Patient is given analgesic, antibiotic and nasal decongestant.

In a severe facial fracture or trauma the patient is admitted and stabilised. The patient is resuscitated to make sure that the airway is patent, breathing is maintained and circulation is also maintained. Assessment of consciousness with the vital signs is regularly checked. Necessary investigations will include radiological, haematological and biochemical tests.

Management of the patient may involve other disciplines like the maxillofacial surgeon, ophthalmologist and general surgeon.

Adequate analgesic, antibiotic, tetanus toxoid, IVF and fluid loss must be replaced. Surgical correction may be necessary to reduce the fracture and suture any deep laceration and to stop the bleeding.

### (3) Inflammatory Disease of the Nose

Rhinitis and rhinosinusitis are the commonest nasal problems seen in everyday practice by the otorhinolaryngologist.

#### Causes of Rhinitis

- (1) Infective: Bacterial  
Viral (common cold, coryza) fungal
- (2) Allergic: Seasonal Perennial
- (3) Hyperplastic: Mucosal rhinitis Turbinate hypertrophy Nasal Polyposis
- (4) Chronic Atrophic rhinitis non-specific: rhinitis caseosa
- (5) Rhinitis medicamentosa
- (6) Vasomotor rhinitis
- (7) Rhinitis (metabolic, endocrine and psychological)
  - Hypothyroidism
  - Pregnancy
  - Alcohol ingestion
  - Anger
  - Honeymoon rhinitis
- (8) Structural abnormalities
  - Septal deviation
  - Adenoid hypertrophy
  - Choanal atresia

#### Clinical Features

Most patients with rhinitis present with constitutional symptoms; feeling of tickling sensation, irritation nasal discharge which may be watery, mucoid or mucopurulent, there may also be associated nasal obstruction and mouth breathing. Examinations reveal nasal discharge, engorged inferior turbinate, nasal obstruction, nasal mucosal changes, and structural abnormalities like septal deviation.

#### Investigations

- (1) Blood -full blood count and especially the Eosinophils to exclude allergy
- (2) VDRL test to rule out syphilis
- (3) Nasal smear for cytology
- (4) X-ray paranasal sinuses

## Treatment

- Isolation may be necessary in cases of viral rhinitis
- Absolute bed rest help quick recovery
- Warm water bath and steam inhalation with tincture benzoic or mentor are helpful
- Adequate fluid intake should be encouraged
- Analgesic and antipyretic to control constitutional symptoms.
- Antihistamine should be given
- Nasal decongestant drops may be helpful, given for few days (5 – 7 days) to prevent rhinitis medicamentosa if used for prolonged period
- Antibiotics have no role except when there is secondary infection

## Sinusitis

Sinusitis is the inflammation of the mucosa of the paranasal sinuses. It may involve one sinus or multiple sinuses. If the inflammation involves all the sinuses, it is called pansinusitis. The maxillary sinus is the most frequently infected paranasal sinus.

## Aetiology

Mechanical obstruction to the ostia of the sinuses: Any disease or obstruction to the natural ostia of the paranasal sinuses can obstruct the flow of secretions from the paranasal sinuses to the nasal cavity. This occurs in

- (a) Anatomical variation
  - Deviated nasal septum
  - Choncha bullosa and paradoxical middle turbinate.
  - Haller cells
  - Lateralised uncinate process.
- (b) Viral rhinitis
- (c) Allergic
- (d) Nasal polyps
- (e) Choanal atresia
- (f) Hypertrophied turbinate
- (g) Nasal tumours.

Nasal infection can spread to the paranasal sinuses by contiguity; it can also spread through submucosal lymphatics. Infection may be viral or bacterial and most of the time the infection may be from the nasal

cavity. Other sources of infection may be from dental caries, road traffic injuries (RTI) with facial fracture.

- (i) Failure of normal clearance of mucous secretion from the sinus  
e.g.
  - Immotile cilia syndrome
  - Cystic fibrosis.
- (ii) Patient with Immuno Deficiency
  - Ig A deficiency
  - Lymphomas
  - Leukaemia
  - HIV/AIDS

### **Types of Sinusitis**

Acute maxillary sinusitis

Acute frontal sinusitis

Acute ethmoid sinusitis

Acute sphenoid sinusitis

### **Symptoms of Sinusitis**

- Facial pain
- Purulent nasal discharge
- Post nasal drip
- Disorders of smell
- Headache

### **Signs**

- Nasal turbinate engorgement
- Swelling of the upper eyelid
- Tenderness over the anterior wall of the wall over the individual sinus.

### **Diagnosis**

X-ray paranasal sinuses: There are six views

- Occipito frontal view
- Occipito mental view
- Lateral sinus view
- Post nasal space view
- Lateral oblique view
- Submento vertical view.

The 1<sup>st</sup> three views are commonly requested for to show the sinuses. The post-nasal space view is specifically reserved for the diseases in the post nasal region e.g. adenoids and nasopharyngeal carcinoma.

### **Complications**

- Chronicity of the sinusitis may result
- Orbital cellulitis
- Osteomyelitis of the sinus bone
- Meningitis, extradural or brain abscess

### **Treatment**

#### **Principles**

- (1) Control of infection
- (2) Re-establishment of drainage
- (3) Control of symptom
- (4) Refer the patient if symptoms persist to the otolaryngologist

## **4. Epistaxis**

### **Definition**

Bleeding from the nose due to any cause, which could be local or systemic. It may be through the anterior nares or posterior nares. The bleeding can be from the nose, nasopharynx, paranasal sinuses or anterior cranial fossa. It is a surgical emergency. The blood supply of the nose has been outlined in the unit on anatomy of the nose.

Most of the bleeding from the nose starts from the Lytle's area; this is an area in the anteroinferior nasal septum.

### **Causes of Epistaxis**

#### **(A) Local**

##### **(1) Traumatic**

- Nose picking
- Nasal fractures
- Surgical trauma
- Chemical trauma e.g. arsenic
- Traumatic septal perforation
- Forceful blowing of the nose and sneezing

- (2) **Foreign body**
  - Neglected foreign body in the nose
  - Maggots
- (3) **Inflammation**
  - Acute non-specific rhinosinusitis
  - Acute specific – Nasal diphtheria
  - Chronic rhinosinusitis
- (4) **Neoplasm**
  - Benign growths
  - Bleeding polyps of the septum
  - Angiofibroma
  - Inverted papilloma
  - Malignant growths of nose
  - Paranasal sinus and nasopharynx

**(B) Systemic**

- (1) **Congenital**
  - Haemophilia and other disorders of coagulation.
- (2) **Infective**
  - Acute exanthematous fevers: such as measles, varicella and influenza
  - Typhoid
  - Pertusis
  - Infectious mononucleosis
- (3) **Disorders of blood and blood vessels.**
  - Purpuras
  - Leukaemia
  - Haemophilias
  - Aplastic and pernicious anaemia
  - Vitamin K deficiency
  - Disseminated intravascular coagulation.
- (4) **Systemic diseases**
  - Hypertension.
  - Cirrhosis of the liver
  - Chronic nephritis
- (5) **Drugs**
  - Anticoagulants
  - Aspirin
  - Phenytoin
- (6) **Miscellaneous**
  - Pregnancy
  - Puberty

**(C) Idiopathic: No Known Cause Management**

Epistaxis is a surgical emergency

**Treatment Consists of**

- (1) Assessment of the general condition of the patient and resuscitation if necessary
- (2) Local measures to stop the bleeding
- (3) Treatment of the specific cause of the bleeding

To assess the patient, will involve the determination of the amount of blood loss, if the patient has lost a lot before coming for treatment that will require replacement of blood. It is better to refer the patient to a bigger hospital. The full blood count will be done, and resuscitative measures will be initiated. These include fluid replacement, blood transfusion and oxygen masks, etc. A complete examination of the patient to identify other co-existing diseases should be done. Other investigative measures will include x-ray nose and para-nasal sinuses, CT scan, etc.

**Local measure to stop the bleeding:** if the bleeding is mild and spontaneous, step to control bleeding include temporary pressure over the alae by pinching the nose while the patient sits upright and open the mouth to breath and been instructed to spit any secretion that may come to the back of the nose into a receiver, usually a small bowl is given. Ice cubes is put inside gauze and placed over the bridge of the nose in an attempt to constrict the bleeding vessels. These two simple methods are done for 10 minutes. Usually mild bleeds will stop after this procedure. For more persistent bleeds, nasal packing will be done at a bigger hospital where necessary ENT instruments are available. Other methods to control the bleeding are cauterizing with chemical (silver nitrate) electric or cryo-cautery. Ligation of arteries can be done either by open surgical means or endoscopy angiography or submucosal resection of the septum. Treatment is incomplete unless the primary cause is identified and measures taken to eliminate it, otherwise, the problem may re-occur.

**(5) TUMOURS**

Neoplasms of nose and paranasal sinuses are not very common. For the nose, most of the tumours are 50% benign and 50% malignant. While in the paranasal sinuses the tumours are mostly malignant.

## Epidemiology

It is more predominant in males and elderly patients.  
Predisposing factors are:

- Wood, nickel-refining processes.
- Industrial fumes, leather tanning.
- Cigarette smoking and alcohol consumption.

## Location

Maxillary sinus	70%
Ethmoid sinus	20%
Sphenoid	3%
Frontal	1%

## Types

- (A) Benign
- Papillomas
  - Osteomas
  - Fibrous dysplasia
  - Neurogenic tumours
- (B) Malignant lesion
- Squamous cell carcinoma
  - Adenoid cystic carcinoma
  - Mucoepidermoid carcinoma
  - Adenocarcinoma
  - Hemangiopericytoma
  - Melanoma
  - Lymphoma
  - Metastatic tumours
  - Sinonasal undifferentiated carcinoma

## Symptoms and Signs

- Oral symptoms: 25 – 35% of patients may present with pain, trismus, alveolar ridge fullness, erosion
- Nasal finding: 50% of patients may present with nasal obstruction, Epistaxis, rhinorrhea
- Ocular findings. 25% of patients may present with Epiphora, diplopia proptosis
- Facial sign: Paresthesias, asymmetry
- Constitutional symptom: Weight loss, weakness fatigue, fever



## Investigation

Radiological investigation, x-ray and CT scan may reveal bony erosion and extent of the tumour and spread to the surrounding structure.

## Treatment

Treatment is done by a specialist otorhinolaryngologist and is mainly surgical, to take biopsy to confirm diagnosis or total clearance and the malignant cases are sent for radiotherapy and chemotherapy.

### (6) Foreign Body in the Nose

Any object, living or non-living, organic or inorganic, exogenous or endogenous that is not in its natural location is a foreign body.

Apart from the ears, nasal cavities are another common site for lodgment of foreign bodies by children. Anything small can be put inside the nose by children and mentally retarded adults.

## Classification

### Organic/ Vegetable

Examples include

Cotton  
Paper pieces  
Seeds  
Wool  
Maggots  
Insects  
Food

### Inorganic/ Non Vegetable

Examples include

Metallic object  
Stone  
Chalk  
Rubber  
Bead  
Crayon  
Sweet wrapper  
Buttons

## Clinical Features

This depends on the type and duration of the foreign body. The foreign body may be forgotten by the patient and it starts causing infection, nasal discharge and granulations.

The characteristic symptom of foreign body in the nose is unilateral, purulent, foul smelling nasal discharge in a child. Other symptoms are epistaxis (bleeding from the nose) pain, nasal obstruction, and sneezing.

## **Diagnosis**

A good history may and may not give a clue to the diagnosis; anterior rhinoscopy may reveal the foreign body hidden behind discharge and granulations. Radiography detects only radio-opaque foreign bodies.

## **Treatment**

In cooperative patients, or the child held properly to prevent the movement of his head, the foreign bodies can be removed through the anterior nares using a wax hook or Eustachian catheter which is inserted behind the foreign body and the foreign body is dragged forward along the floor and is pulled out. Also crocodile forceps can be used to grab foreign body like cotton wool and paper.

In uncooperative patients and mostly in children it is safer to remove the foreign body under general anaesthesia with a cuffed endotracheal tube and a pharyngeal pack to avoid inhalation of the secretions. The technique of removal remains essentially the same.

## **Complications**

- (1) The foreign body may be inhaled
- (2) The foreign body may be swallowed
- (3) Epistaxis
- (4) Infection and sinusitis
- (5) Granulation tissue formation
- (6) Rhinolith may form over an old foreign body

## **4.0 CONCLUSION**

You should at this stage be able to recognise some of the diseases of nose and paranasal sinuses. You should also be able to proffer some simple solutions to some of them and know your limits as they may apply.

## **5.0 SUMMARY**

This unit has focused on the recognition and treatment of some ear, nose and throat diseases, particularly as relate to the nose and Paranasal sinuses. The need to your limit in offering solution is also highlighted. The next unit discusses recognition and treatment of diseases from the throat.

## 6.0 TUTOR-MARKED ASSIGNMENT

1. List the symptoms of nose and paranasal sinuses disease.
2. How will you control epistaxis?
3. What are the causes of epistaxis?
2. vi. What are the causes of rhinitis? How will you treat patient with rhinitis?

## 7.0 REFERENCES/FURTHER READING

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3<sup>rd</sup> ed.).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. (4<sup>th</sup> ed.).

## **UNIT 5 THE RECOGNITION AND TREATMENT OF THE DISEASES OF THE THROAT**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Common Diseases of the Throat and their Treatment
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

To understand treatment of throat diseases you should be able to refresh your knowledge on recognition of the symptoms and signs of ear, nose and throat diseases. This unit will help you to understand the symptoms and signs of throat diseases and also to know that problem in the throat can be as a result of the diseases from the ear or nose and vice versa, since the three areas are closely related and contiguous with one another.

### **2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- explain types and symptoms of sinusitis
- state the treatment of the throat diseases as it relates to the primary health care.

### **3.0 MAIN CONTENT**

#### **3.1 Common Diseases of the Throat and their Treatment**

Diseases in the throat can present with the following symptoms:

- Sore throat
- Dysphagia (difficulty in swallowing)
- Odynophagia (painful swallowing)
- Throat irritation
- Cough
- Post nasal discharge
- Rawness or foreign body sensation in the throat
- Feeling of lump in the throat

- Change in voice (hoarseness)
- Otolgia
- Mass in the neck
- Bleeding

A good history is necessary to know the duration and severity of the symptom. The throat has to be examined, the dentition, the oral cavity and the oropharynx. The lateral and posterior walls of the oropharynx are to be examined for evidence of infection. Examination of the neck for enlarged and possibly tender lymph nodes in the neck should not be forgotten. If any of the above symptoms persist after initial conservative treatment it is better to refer the patient.

### **3.3 Recognition of Diseases of the Throat and their Treatment**

These are example of the diseases of the throat:

- (1) Infection
- (2) Foreign body
- (3) Tumours

#### **Infection**

- (a) Tonsillitis

This is one of the most common throat infections encountered in everyday practice. This is inflammation of the tonsils.

#### **Aetiology**

Age: It can affect any age but more frequent in young children up to 15 years of age.

Sex: Both male and female are equally affected.

#### **Predisposing Factor**

Patients with recurrent upper respiratory tract infection, post-nasal discharge due to sinusitis, measles infection and those with low body immunity are predisposed to having throat diseases. Other predisposing factors include: ingestion of cold drinks, polluted and crowded ill-ventilated environment, imbedded foreign body, dust and hazy weather. The causative organism: usually bacterial. However, it may be viral.

## Presentation

- Raw sensation in the throat
- Pain in the throat (sore-throat)
- Painful swallowing (Odynophagia)
- Difficulty in swallowing (Dysphagia)
- Voice may be thick and muffled
- Neck nodes may be enlarged and painful
- Ear ache (referred otalgia)
- Constitutional symptoms like malaise, fever and headache

## Sign

The tonsils are congested and swollen. There are thick secretions and there is foul breath (halitosis). Also, the neck nodes are enlarged and tender.

## Treatment

- Antibiotics: Tonsillitis responds to most of antibiotics.
- Analgesia is given to reduce pain and pyrexia.
- Warm saline gargle and hot drinks.
- Lozenges with local anaesthetic action may be comforting.

## Complications

- Quinsy: tonsillar or peritonsillar abscess may occur in adult
- Laryngeal Oedema may occur in children
- Parapharyngeal or retropharyngeal abscess may develop occasionally
- Acute otitis media is a frequent complication
- Septicaemia: This is rare
- Septic focus: It may aggravate rheumatism, subacute endocarditis

**Note:** All cases of suspected complication should be referred to the otorhinolaryngologist for proper evaluation and management.

**Adenoids:** The hypertrophy of the adenoid is physiological; but when the hypertrophied nasopharyngeal tonsil starts producing symptoms, the condition is referred to as adenoids. The normal involution of the adenoid starts from the age of 10 to 20 years.

### **Aetiology**

- (1) Age: Usually between the age of 3 years and 7 years. It may present earlier
- (2) Infection: May be bacterial or viral
- (3) Predisposing factors: Similar to tonsillitis

### **Presentation**

- Nasal obstruction leads to mouth breathing, snoring, and drooling of saliva from the mouth and difficulty in eating particularly in infants.
- Eustachian tube obstruction may occur which leads to middle ear diseases like serious otitis media, acute otitis media (AOM), and these results in deafness or otorrhoea.
- Purulent nasal discharge due to rhinitis and sinusitis.
- Throat recurrent upper respiratory tract infection is frequent. The patient may have post-nasal drip, tonsillitis and cough.
- Neck nodes may enlarge and painful.
- Bronchial asthma and bronchitis if present may be aggravated.

### **Diagnosis**

Lateral view of the nasopharynx on x-ray soft tissue shadow may reveal the adenoids causing obstruction to the ear column.

### **Treatment**

- Antibiotics are very useful for acute inflammation.
- Decongestants may be useful to re-establish breathing.
- General improvement of health and hygiene.

If the problem did not resolve the patient is referred to the otolaryngologist for review and better management. Adenoidectomy is usually done for patients with persistent or recurrent problems.

### **Foreign Bodies**

Sharp small foreign bodies like fish bone may pierce the tonsils; or get stuck in the valleculae or pyriform fossae. They cause pain and pricking sensation while swallowing. They may also produce dysphagia. The patient may be able to point to the side of the neck in which the foreign body is located or point to the centre of the throat; the foreign body may be in the oesophagus or may have passed down.

## **Treatment**

Tonsillar foreign body is removed by a nasal dressing forceps. The foreign body that is embedded in the tonsil, tonsillectomy may be required by the otolaryngologist.

Laryngopharyngeal foreign bodies are removed by direct laryngoscopy. At times the foreign body may have passed down to the stomach, but it may continue to give a foreign body sensation up to 24 – 48 hours. The patient may be managed with

- Analgesic
- Antibiotic
- Warm saline gargle

If the foreign body sensation persists for more than 48 hours endoscopy is indicated which can be carried out by an otolaryngologist.

## **Tumours in the Throat**

Tumours in the throat may occur in all the different parts of the pharynx, namely, the nasopharynx, the oropharynx and the laryngopharynx. The tumour could be benign or malignant.

### **Benign**

- Fibroma
- Papilloma
- Mixed salivary tumours
- Lipomas
- Haemangiomas

These tumours may occur in any part of the throat, may produce symptoms. Treatment is excision by an otorhinolaryngologist.

### **Malignant**

- Squamous cell carcinoma.
- Lympho-epitheliomas
- Sarcoma.
- Adenocarcinomas

Any suspected malignant lesion in the throat should be referred to an otorhinolaryngologist for proper management.



#### **4.0 CONCLUSION**

You should at this stage be able to recognise some of the diseases of the throat. You should also be able to proffer some simple solutions to some them and know your limit as they may apply.

#### **5.0 SUMMARY**

This unit has focused on the recognition and treatment of some of the throat diseases. The need to refer to an otorhinolaryngologist for proper management of difficult cases is also highlighted. You have therefore concluded the recognition and treatment of some ENT diseases as it relates to primary health care. The next unit discusses how to reduce the complications arising from various ear, nose and throat diseases.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. List the symptoms of throat problems.
2. What is tonsillitis and how will you treat a patient with tonsillitis?
3. List 5 benign tumours that may arise the throat.

#### **7.0 REFERENCES/FURTHER READING**

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3<sup>rd</sup> ed. ).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*.(4<sup>th</sup> ed.).

## **UNIT 6 PREVENTION OF DISEASES OF THE EAR, NOSE AND THROAT**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Prevention of some ENT Diseases
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References /Further Reading

### **1.0 INTRODUCTION**

This unit will provide you with knowledge on how to reduce complications arising from the diseases of the ear, nose and throat. As a Community Health Officer, you must know your limit in providing solutions to some of the ENT diseases to avoid causing more harm to the patient and refer those in need of referral immediately. Please note that the role of regular health talk to the community cannot be overemphasised.

### **2.0 OBJECTIVES**

By the end of this unit, you will be able to:

- treat complications arising from diseases of the ear, nose and throat
- state some examples of harmful practices associated with ENT.

### **3.0 MAIN CONTENT**

#### **3.1 Prevention of some ENT Diseases**

It is important to know the limit of treatment to offer to the patient and as soon as possible to refer the patient to doctors who can help better. Ear, nose and throat are three different orifices in the body and diseases in these areas can give rise to complication if not properly managed. It is therefore important to emphasise more on preventive measure, which is cheaper and better than curative. Health education is very important to the people of the community.

Children should be kept away from small objects, toys, etc. The habit of cleaning the ears should be discouraged, the ear naturally cleanses itself. Much harm is done than good in an attempt to clean the ear of wax. The usual cotton bud may be lodged into the ear; the eardrum may be perforated accidentally.

Any form of trauma to the ear, nose and throat should be avoided. A perforated tympanic membrane may be difficult to treat. People should avoid exposure to loud noise, it can cause deafness. People working in a noisy environment such as sawmill, pepper grinders, iron benders and factories with heavy noisy machines should use ear muffs to protect the ear.

- Avoid misuse of voice; especially teachers, musicians, politicians and preachers
- Avoid alcohol
- Avoid cigarette smoking
- Avoid smoke, dust and irritating chemical.

Finally, any diseases that do not respond to initial conservative treatment should be referred to a specialist.

#### **4.0 CONCLUSION**

In this unit, you have learned how to prevent occurrence of some diseases of the ear, nose and throat. This can be achieved through health education, public enlightenment and awareness. At the end of this unit, you should be able to mention few examples of harmful practices associated with ENT.

#### **5.0 SUMMARY**

This unit has focused on how complications from the ENT diseases can be prevented by prompt referral.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Name four causes of trauma to the ear.
2. How would you prevent complications arising from ENT diseases?

## 7.0 REFERENCES/FURTHER READING

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3<sup>rd</sup> ed.) .

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. ( 4<sup>th</sup> ed.).

## **UNIT 7 HARMFUL PRACTICES ASSOCIATED WITH EAR, NOSE AND THROAT**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Harmful Practices: Uvulectomy
  - 3.2 Harmful Practices: Cotton Bud Cleaning
  - 3.3 Harmful Practices: Breast Feeding while Lying Down
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

### **1.0 INTRODUCTION**

There are certain cultural practices that are harmful, which are associated with ENT. Some are done out of ignorance with good intentions, others are done for traditional reasons, habit and simple way of life, but they pose a danger to health and life. Discouraging these habits will go a long way in improving the quality of life. You must be of assistance to the community in this regard.

### **2.0 OBJECTIVES**

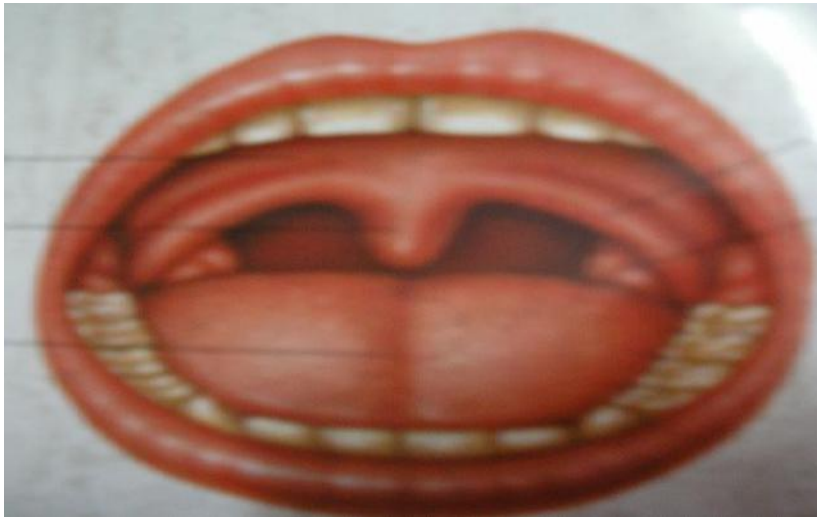
- By the end of this unit, you will be able to:
- explain why some practices are harmful to ENT
- list some of the ways to discourage the community from such practices that are harmful to them.

### **3.0 MAIN CONTENT**

#### **3.1 Harmful Practices: Uvulectomy (Traditional Uvulectomy)**



This is a cultural practice that poses danger to health and life. Awareness and enlightenment is needed to safeguard the innocent members of the society.

Uvulectomy is partial or total removal of palatine uvula (central projection in the upper part of the mouth when the mouth is open).



**Fig. 1: The Palatine Uvula**

In practice since AD 324 – 1453 by Greek physicians. It is common in Nigeria, other African countries (Sudan, Ethiopia, Cameroon, etc.) and Middle East (Israel, Lebanon and Yemen).

Instruments Used for Uvulectomy	
	
<b>Wooden Depressor</b>	<b>Tongue Clubbed or Sickle knife</b>

**Fig. 2: Instruments Used for Uvulectomy**

**Indications**

Depends on cultural belief: Some of the reasons why uvulectomy is done by the traditional barbers include:

- Persistent sore throat
- Elongated uvula
- Irritable cough

- To prevent throat problems
- To improve appetite
- To reduce airway infection
- To cure diarrhea, vomiting, lump in the throat



**Fig. 3: How Some Instruments used for Uvulectomy are Held**

### **Dangers and Risks**

The following are the dangers and risks following local uvulectomy:

- Haemorrhage
- Shock
- Cellulitis
- Peri-tonsillar abscess
- Tongue laceration
- Trismus
- Tetanus
- Nasal speech and nasal regurgitation
- Hepatitis
- HIV and AIDS
- Neck swelling
- Lower respiratory tract infection
- Death can result from the procedure

Traditional uvulectomy is therefore an unnecessary procedure that carries along with it many risks and dangers.

### **3.2 Harmful Practices: Cotton Bud**

Another practice is the use of cotton bud in the cleaning of the ear of new born baby. This is unnecessary and should be discouraged. The ear canal of a new born baby is small and the size of the cotton bud is big, it can cause trauma to the ear and pushing of ear wax further inward. Naturally the ear cleanses itself, thus the use of cotton bud should be discouraged.

### **3.3 Harmful Practices: Breast Feeding while Lying Down**

Another harmful practice associated with ear, nose and throat is the breast feeding of baby while the mother is lying down. Some of the breast milk can go to the back of the nose and because the nose is connected to the ear through the Eustachian tube. The breast milk finds its way to the ear and this can lead to ear infection and discharge. A baby should be breastfed in sitting position and propped up on the mother's chest to allow the baby to belch so that the breast milk settles down before lying the baby down. This will reduce otitis media in children.

Other harmful practices are slapping, nose-picking, inhaling nasal snuff, etc

## **4.0 CONCLUSION**

In this unit, you have learned few examples of harmful practices associated with ear, nose and throat. You have been able to know that some of them could be dangerous. At the end of this unit, you should be able to mention few examples of harmful practices associated with ENT.

## **5.0 SUMMARY**

This unit has focused on how harmful practices associated with ENT can be discouraged.

## **6.0 TUTOR-MARKED ASSIGNMENT**

1. List three practices that are harmful to ENT practice and how they can be discouraged.
2. What are the complications of uvulectomy?



## 7.0 REFERENCES/FURTHER READING

Bhargava, K. B. & Shah, T. M. (1990). *A Short Textbook of ENT Diseases for Students and Practitioners*.

Ramalingam, K. K., Sreeramamurthy, B. & Ramalingam, Ravi (2007). *A Short Practice of Otorhinolaryngology*. (3<sup>rd</sup> ed.).

Roger F. Gray & John Grove (n.d.). *A Synopsis of Otolaryngology*. (4<sup>th</sup> ed.).