

## Original Article

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# Conventional Practice of use of Cotton Bud in External Auditory Canal and it's Complications

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### Abstract:

**Objectives:** To find out the complications arise from use of cotton bud in external auditory canal.

**Methods:** This cross sectional study was carried out from January 2020- December 2020 in Pabna medical college hospital. About 100 patients with complications of cotton bud use were included in this study. Diagnosis was based on the history and otoscopic examination.

**Results:** In this study most of the cases were age group 0-10 years -30%, 10-50-years 30%, 50-60- years 10%, more than 60 years 40%. Common Complications were Infection of external auditory canal 50%, injury to external auditory canal 40% and injury to tympanic membrane 10%.

**Conclusion:** Injudicious use of Cotton bud has injurious effect for external auditory canal and should be avoided.

### Introduction:

Common people do not know the natural self-cleansing ear mechanism, therefore they acquire the habit of using cotton bud to clean the ear<sup>1,2,3</sup>. Due to prolonged use of cotton bud, they become habituated with this act, it

leads to ear injuries including tympanic membrane perforation, otitis externa and cerumen impaction<sup>3-6</sup>. In addition to this, use of ear phones and/or swimming without using ear plugs creates a more negative impact on external auditory canal skin. If the natural defenses are disrupted, the natural flora is replaced by the pathogenic microbes. The most commonly found symptoms of infections are pruritus, earache, hearing loss and discharge<sup>7,8</sup>. Fungal infections mostly cause ear itching, discomfort, discharge and a feeling of presence of something in the auditory tube, while in the bacterial infection pain is acute and moderate to severe<sup>8,9</sup>. Though this topic has been presented in different literature but no organized research was available on this issue. This study was conducted in a tertiary care teaching hospital. The authors conducted this study with the aim to determine the complications and harmful effect with the frequent use of cotton bud, on external ear canal.

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**Anatomy of External Auditory Canal:**

External auditory canal, also called external auditory meatus, or external acoustic meatus, passageway that leads from the outside of the head to the tympanic membrane, or eardrum membrane, of each ear. The canal is nearly 1 inch (2.5 cm) in length and is lined with skin that extends to cover the tympanic membrane. The external auditory canal is a cylindrical canal, comprised of cartilage and bone, and lined by a thin layer of skin that is rich in ceruminous and sebaceous glands. Ceruminous glands are specialized sweat glands located subcutaneously in the outer one third of external auditory canal. These are simple, coiled, tubular glands made up of an inner secretory layer of cells and an outer myoepithelial layer of cells. They are classified as modified apocrine glands, together with sebaceous glands, produce the cerumen, that's the ear wax. Cerumen plays an important role in the protection of the ear canal against physical damage and microbial invasion. Ear wax is made partially of skin cells from the auditory canal. This area contains special skin that is always renewing itself. As dead cells drop off, they are pulled in to produce ear wax.

Cotton bud was defined as a small stick whose edges are covered with cotton wool use for cleaning purpose. External ear canal was defined as the tube of an outer ear. Otitis externa was defined as the infection of an external ear. The infection in this area is characterized by pain, discharge and itching and swelling of external auditory canal skin and sometimes pinna. Cotton buds were developed in 1923 by Leo Gerstenzang.<sup>1</sup> After observing his wife using wads of cotton on toothpicks to clean his baby's ears; he developed a cotton-tipped swab that he considered safer. The product was initially called Q tips Baby Gays (Q for quality) and

Q-tips survive to this day. The first instances of medical concern over the use of cotton buds were in 1972 with reports of tympanic membrane perforation, otitis externa and cerumen impaction.<sup>10</sup>

Cotton bud used traditional method for minimize irritation of external auditory canal in all age groups. During playing one children push cotton bud in external auditory canal of another children causing perforation of tympanic membrane, especially parentless children at home and children at day care centre. Elderly people who have no work, irritate their external auditory canal repeatedly, irritation cause laceration of external auditory canal, haemorrhage and infection. Sometimes wool of cotton bud remains in external auditory canal. Retained wool may pick out manually in case of aged people. In case of children it may require general anaesthesia.

**Traditional things that are used in itchy EAC:**

Many years ago people used Feathers of Hen or duck or birds for itching and irritation of external auditory canal. The end of Feather often broken and stay in to external auditory canal. Some people use key during rest in office or at home for irritation of external auditory canal. Student and pen worker use Head of pen or pencil for irritation of external auditory canal. Children use toy's or ornament for irritation of external auditory canal. Some Children use corns or fruit extract to irritate in other Children's external auditory canal but after invention of cotton bud, Maximum population use cotton bud for irritation of external auditory canal. The main problem of use of cotton bud in external auditory canal is retention of cotton wool in the canal others problem many times create during removal of this cotton wool.

**Materials and methods:**

All cases of complications arising from cotton bud use in EAC was included in study, from January 2020 to December 2020 (1 year)

Pabna medical college hospital OPD (ENT Outpatient department). Data collection was based on the history taking by pre-structured questionnaire and Otoscopy. Information regarding cotton bud use along with site of infection (left or right EAC), recent history of respiratory tract infection, trauma to ear canal, ear surgery and symptoms like pain, bleeding, itching, fever, hearing loss, pus and whistling in ear were collected. Statistical analysis was conducted using Statistical Package for Social Sciences (SPSS). Descriptive statistics was explored using median and interquartile range for age of the patients whereas frequency and percentages were calculated for categorical variables. Mann Whitney U test and chi-square test was applied for P-value

#### **Type of Study:**

This was a hospital-based cross sectional study

#### **Study population:**

100 cases of patients of all ages were included in this series.

#### **History :**

History was taken from patients or parents of children who were unable to give history.

#### **Otoscapic Finding:**

Injury to tympanic membrane or Injury to EAC (external auditory canal), laceration of EAC (external auditory canal), hemorrhage in the EAC or injury in middle ear.

**Table I:**  
*Age Distribution*

Age	% . of Distribution
<10 years	30%
10- 30 years	30%
30- 50 years	10%
> 50 years	30%

**Table II:**  
*Complications*

Name of complication	% . of Distribution
Laceration of EAC	40%
Infection of EAC	50%
Injury to tympanic membrane (Laceration/Perforation)	10%

#### **Discussion:**

Ear wax is a mixture of ceruminous gland secretions, squames of epithelium, dust and other foreign debris.' It is expelled by epithelial migration from the tympanic membrane, aided by movements of the temporomandibular joint. <sup>11</sup> This process renders the ear 'self-cleaning'. Unwise efforts with a cotton bud can produce wax plug impaction, with resultant discomfort, deafness and vertigo, <sup>12</sup> injury to the external auditory canal or perforation of the tympanic membrane. <sup>13,14</sup> The study was carried out to determine the pattern of complication of cotton bud use in pabna region. As it is hospital based, it may not entirely reflect the true prevalence in this region, but because of the large number of patients over a long period of study involved, it provides a rough indicator which can serve as baseline upon which future study can be built. Burden of complication is not shared equally around the world. Men and women in the developing world suffer far more from the complication than those a developed world due to non-availability of and inaccessibility to health services and social and cultural prejudices and practices. A comprehensive assessment of socio-cultural, socio-demographic and structural barriers to using cotton bud to produce complication and to getting treatment and information is vital for effective and site specific prevention programs, and ultimately reducing the incidence of

complication. Irritation of external auditory canal is common for all age group people specially allergy skin, impaction of wax or otitis externa causes irritation of external auditory canal even chronic otitis media often cause irritation of external auditory canal. Age affect the rate of complication more common in children and aged people more than 60 years. Adult are often seen with cotton wool or broken match sticks which have been used to clean or scratch the ear canal<sup>15</sup>.

Syringing is safe and is often successful but may failed with tightly impacted cotton wool<sup>16</sup>. In this Study 50 patients came with failure by syringing by health workers, among them nineteen patients were referred to ENT department, and required general anesthesia for removal foreign body from external auditory canal<sup>15</sup>. In this Study, so all the cases were dealt with general anesthesia. Firmly impacted foreign body medial to the isthmus particularly when failed attempt of removal causes trauma and swelling of external auditory canal skin may require surgical removal. A post auricular approach and widening of the canal by bone drilling is require<sup>15,17</sup>

Prior unsuccessful attempt of removal of foreign body may cause pain and local injury and the children becomes unhappy and noncooperative<sup>2</sup>. In this study such case are 80%, canal wall laceration are 48% cases, where attempt of removal in other health care professionals were failed<sup>18</sup>. In this study laceration of canal wall was seen in 30% cases. Perforation of tympanic membrane and even ossicular chain dislocation or fracture may occur when multiple attempts for removal were done or used multiple instruments to do it, were associate with such severe complications<sup>19</sup>.

In this study perforation of tympanic membrane was 10%. It is reported that most

of the individuals were not aware of the risks associated with cotton bud use in EAC, awareness regarding unnecessary usage of cotton bud is much effective to prevent otomycosis. Another study on hazards of ear buds revealed that people use cotton buds to remove ear wax or to absorb fluid discharging from ear canal, they are not aware of numerous pathologies leading to infection and inflammatory changes. Even this may be so severe that condition mimics Malignant Otitis Externa. Moreover awareness should be created among general population that it can also cause deafness<sup>3,20</sup>. These findings are also supported by this study as well.

#### **Conclusion:**

Awareness need to be created about the hazards of ear cleaning practices by cotton buds and its association with the ear infections. Microbiological conformities of Otitis Externa would increase the reliability involvement specific pathogen induced by using cotton buds. To minimize complications of cotton bud use, patient with retained cotton wool would referred to an otolaryngologist be considered by emergency department doctors if more than one attempt has been made or more than instrument has been used an attempt removal.

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