

Cyanoacrylate (superglue): An unusual aural foreign body in an infant

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ABSTRACT: Cyanoacrylate (Superglue) is an excellent bonding agent; which can result in unwanted complications when it comes into contact at an undesirable location in the body. Superglue in the ear as a foreign body is an uncommon presentation. We present a case of a 3 month old baby whose Aunt playfully introduced an unquantified amount of Cyanoacrylate (superglue) into her left external auditory canal (EAC). The superglue was successfully removed with acetone without damage to the external auditory canal and tympanic membrane.

Key words: Cyanoacrylate, unusual, aural, foreign body, infant

INTRODUCTION

Cyanoacrylate (Superglue) is an excellent bonding agent; however it could result in unwanted complications when it comes into contact at an undesirable location in the body.¹ The original Cyanoacrylate were discovered in 1942 in search for materials to make clear plastic gun sights during world war II, when a team of scientists headed by Harry Coover Jr stumbled upon a formulation that stuck to everything that it came in contact with.² In 1951 Cyanoacrylate were rediscovered by Eastman Kodak researchers Harry Coover Jr and Fred Joyner, who recognized their true commercial potential. Super glue is an adhesive used to bond plastic, wood or metal. Unfortunately this sometimes involves human skin too. The main ingredient contained in superglue which is cyanoacrylate gives it its fast-acting instant bonding properties at room temperature. The main hardener for cyanoacrylate is water. Hence, when this glue comes into contact with a mucosal surface such as human skin, the molecules of the glue will form tight chains between the surfaces being bonded within just seconds. The fumes from Cyanoacrylate are vaporized form of the Cyanoacrylate monomer that irritates sensitive membranes in the eyes, nose and throat. They are immediately polymerized by moisture in the membranes and become inert. These risks can be minimized by using Cyanoacrylate in a well ventilated area. It can cause flu-like symptoms with repeated exposure.³ It may also act as a skin irritant and may cause an allergic skin reaction. On rare occasions, inhalation may trigger asthma.

Case Report

We present MF a 3 month old female infant that was verbally referred to ENT department from a General hospital with a history of instillation of superglue into the left ear 8 hours prior to

presentation. The incident was said to have occurred at home when a 10 year old Aunt playfully instilled an unquantified amount of super glue used by a member of the household into the left ear of the patient. Following the incident the parent instilled some quantity of palm kernel oil into the affected ear. Subsequently the child was noticed to be crying excessively whenever the affected ear is touched. No history of fever and vomiting. Pregnancy and delivery was said to be uneventful. Patient has had only OPV vaccine on national immunization. Developmental milestone was said to be normal.

General examination shows a healthy looking infant in no obvious distress, afebrile (Temperature. 37.2⁰ c), not pale, anicteric, acyanosed and not dehydrated. Examination of Cardiovascular and respiratory system were essentially normal. Otological findings revealed normal right ear, and otoscopy of the left ear showed a bluish substance, fully occupied and adhered to the EAC, hard in consistence on probing, with oily discharge over it. Tympanic membrane was completely obscured and could not be visualized. A diagnosis of foreign body in the left ear (Super glue) was made. **Fig. 1.** The plan was to remove the foreign body. The left EAC was mopped carefully to remove the oily material over the super glue. Delon salon formula (Acetone, Aqua and glycerin) was instilled into the affected ear. The Delon saloon formula is a nail polish remover that was bought from a nearby cosmetic store. We waited for about 10 minutes before an attempt was made to remove the foreign body. And the glue was slowly peeled off in-toto from the EAC using the blunt end of Jobson Horne probe. Few drops of 1% lidocaine hydro chloride were instilled into the canal for the purpose of local anesthesia. **Fig.2** There was no reaction or irritation to the ear. The procedure lasted for about 45

minutes. Repeat examination revealed an intact tympanic membrane. There were no bruises of canal. **Fig. 3.** Patient was placed on oral antibiotics and wick dressing of the affected ear was done with Oto med ear drop. Patient was observed for 24 hours and was discharged home after removal of the ear dressing. Subsequent follow up visit showed a healthy canal wall, as well as healthy and intact tympanic membrane.

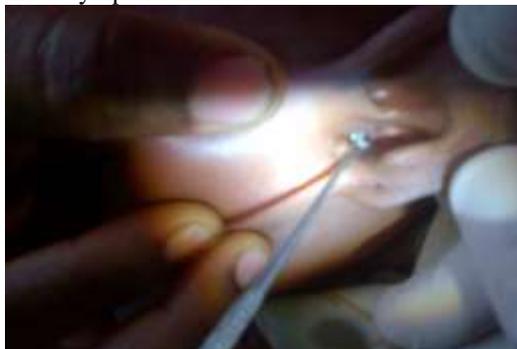


Fig. 1. Showing foreign body (cyanoacrylate) in the left EAC



Fig. 2. Showing Foreign Body (cyanoacrylate) that was removed from left the EAC



Fig. 3. Showing the left EAC after removal of Foreign Body (cyanoacrylate)

DISCUSSION

Cyanoacrylates (super glue) are a family of strong fast-acting adhesives with industrial, medical, and household uses.² Superglue in the ear as a foreign body is an uncommon presentation. The ability of superglue preparations to bond instantly to skin as well as inanimate objects presents a special problem when instilled into the external ear canal.⁴ In the case that we reported, the patient is an infant of 3 months old unlike other cases reported in literature that were adults.^{1,5} There is needed to take adequate precaution in removing such a substance that has gotten adherent to the EAC without damage to the canal and tympanic membrane. Also the substance was introduced into the child's ear by her Aunty (iatrogenic) unlike in other reports where it was also introduced accidentally or intentionally.^{1,5,6} The lesson to learn from this is that dangerous substance/objects that can present as foreign body should not be kept within the reach of children. Acetone is a colorless, volatile, flammable liquid, commonly found in nail polish remover, is a widely available solvent capable of softening cured cyanoacrylate.⁷ It mixes with most organic solvents and completely with water. It is low in toxicity as it is a natural product of body's metabolism, hence the low adverse effect on health. Other solvents that can be used include nitromethane, dimethylsulfoxide, methylene chloride, and Gamma - Butyrolactone.^{8,9} Other possible therapeutic measures mentioned in literature are the use of hydrogen peroxide, vegetable oil and hot water. Possible complications that can arise from removal include bleeding, perforation or even total avulsion of the ear drum. The patient could also develop otitis externa or media and may require future reconstructive surgery.¹ A proper informed consent before removal has been advocated.

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