

# Removal of superglue from the external ear using acetone: a case report

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Foreign bodies in ear are a common occurrence and are commonly seen in the practice. But some foreign bodies require special attention. We here describe a unique situation of cyanoacrylate glue or superglue in the external auditory canal which was removed using acetone solution. Acetone solution instilled in the ear canal enabled complete removal of the glue while preserving the anatomy of the ear canal and tympanic membrane.

## Keywords:

superglue, external ear, acetone

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## Introduction

Foreign body in the external auditory canal (EAC) is not of uncommon occurrence. Various types of foreign bodies are encountered in the ear canal, which can be removed by one of the well-known methods. We encountered a special situation wherein the EAC harbored an unusual foreign body, in the form of cyanoacrylate glue. This compound binds with the skin and can damage the underlying skin if removed without care. This case highlights one such situation, wherein superglue got accidentally instilled into the EAC and was removed successfully without any damage to the underlying skin and the tympanic membrane with the help of acetone instillation into the external ear under microscopic control.

## Case report

A 16-year-old male patient presented to the Department of Otorhinolaryngology at our institute with severe pain in the right ear and trismus. There was no history of discharge from the ear or trauma. There was a history of accidental instillation of superglue into the right ear, which had also spilled over his face about 5 days back.

Examination of the affected side revealed a hard substance filling the right EAC (Fig. 1), and was also found over the pinna and the skin over the mandibular region. There was some inflammation of the skin over the mandibular region due to which the patient was having trismus, secondary to the spillage of the glue over the neck and the face. The tympanic membrane could not be visualized due to the glue filling the canal. He was subsequently taken up for the removal of the superglue under local anesthesia. Acetone was instilled into the EAC for about 1 min, and then, the superglue was peeled off the skin gently using Rosen's dissector

and crocodile forceps. Eventually, the mold of glue was removed without injury to the skin of the EAC or the tympanic membrane (Fig. 2). The cyanoacrylate glue was also removed from the skin over the face after application of acetone over the affected area, which subsequently resulted in the resolution of the trismus. The patient was followed for 2 months and was without any sequelae.

## Discussion

Superglue is a cyanoacrylate monomer that is derived from formaldehyde and cyanoacetate. It undergoes rapid polymerization in the presence of basic substances to form a rigid structure. The widespread availability of superglue sometimes poses a hazardous situation, particularly when inserted accidentally into the EAC.

A literature search revealed a few reported cases of superglue as the foreign body in the ear. A case was reported by Wight and Bull [1] of superglue in the EAC, which needed an endaural incision under general anesthesia for removal.

Pollock reported the removal of superglue adherent to the tympanic membrane through the permeal approach under general anesthesia. The most superficial layers of the tympanic membrane were removed, but without creating a perforation [2]. No acetone or any other solvent was used in the above cases, and the superglue was removed in fragments.

White and Broner [3] reported a case in which the organic solvent acetone was used successfully to dissolve polystyrene impacted in the EAC of a child. More recently, Abadir *et al.* [4] presented two patients in whom they were able to removal superglue from the ear canal with the help of pure acetone.

Figure 1



Cynoacrylate glue in the external auditory canal.

Persuad reported a case of accidental instillation of superglue into the ear, which was removed by the instillation of warm peroxide (3%). Peroxide results in debonding of the adhesive from the canal wall, and removal without any damage to the canal wall or the tympanic membrane [5].

The use of other solvents such as toluene, xylene, nitromethane, and methylene chloride have been suggested to dissolve superglue. However, these substances are generally toxic and are irritant to the skin and the mucous membrane. Acetone has a low systemic toxicity. Dermal exposures are well tolerated in the short term, but prolonged exposure may lead to irritant dermatitis. Otoxicity, secondary to pure acetone on the delicate structures of inner ear, is yet unknown.

It is speculated that the incidence of accidental application of superglue in the ear is much higher than the number of cases reported in the literature, due to the fact that the product is easily available and also because it is contained in bottles that are very similar in size and shape to those containing ear drops.

Figure 2



The mold of cynoacrylate removed from the external auditory canal and from over the tympanic membrane.

## Conclusion

In the case reported, we found that pure acetone was a simple and effective way of loosening the superglue from the skin, which thereby resulted in easy removal without any damage to the delicate skin of the EAC and the tympanic membrane. The procedure should, however, be carried out under the microscope by a trained otolaryngologist to avoid any iatrogenic damage.

## Conflicts of interest

None declared.

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