

Difficult button battery ear foreign body removal: the magnetic solution

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Abstract

Background: Removing a button battery from the ear can be a tricky and challenging procedure.

Method and Results: We describe the innovative use of a magnetic telescopic rod to successfully remove a button battery from the ear canal of a nine-year-old boy.

Conclusion: We propose that this equipment should be available in ENT clinics and operating theatres to be used for removing foreign bodies made from ferrous materials.

Key words: Ambulatory Surgical Procedures; Otolgic Surgical Procedures; Ear, Middle; Emergency Medicine

Introduction

Ear foreign bodies are a common complaint in paediatric patients attending the ENT casualty clinic. It is well known that a button or disc battery can cause severe tissue injury if left in situ via battery leakage and the production of chlorine gas and alkaline sodium hydroxide.^{1–4} Therefore, urgent removal of such foreign bodies is essential. Even when the patient is under general anaesthesia, removal of these foreign bodies can be extremely difficult, resulting in trauma to the ear canal. In such situations, identifying the correct tool and using it in the correct way are key to success.^{5,6}

In 1986, Landry and Edmonson reported the use of a magnetised screwdriver to successfully remove a button battery from the ear of a paediatric patient.⁷ Since then, no similar case shave been reported.

Methods and Results

A nine-year-old boy presented to our ENT casualty clinic after inserting a small watch battery into his right ear the previous day. Upon examination, the battery was found to be impacted in the right external auditory canal in a vertical position. The skin of the ear canal was mildly inflamed and oedematous, with no discharge; the ear drum could not be visualised. The contralateral ear was normal. An attempt to remove the foreign body in the clinic was unsuccessful.

The patient underwent immediate examination under general anaesthesia. Several instruments were used in an attempt to remove the impacted watch battery. However, attempts at removal using a wax hook and Jobson Horne probe resulted in the battery simply rotating on its axis. Microsuction using different tip sizes also failed to remove the battery. In addition, a urology stone basket normally used for retrieving renal stones was tried unsuccessfully.

Finally, a magnetic telescopic rod used by the theatre staff to retrieve dropped surgical suture needles was tried. This

small magnetic rod, with an approximate diameter of 5 mm, fitted comfortably in the child's ear canal (Figures 1 and 2). The watch battery became attached to the magnetic rod and was then easily removed from the ear. There was minimal trauma to the skin of the right ear canal, with no evidence of battery leakage or chemical trauma. The ear drum appeared intact.

A seven-day course of Sofradex® (framycetin, gramicidin and dexamethasone) ear drops was prescribed for the child. He made an uncomplicated recovery.

Ethical standards

The authors assert that all procedures used in this treatment comply with the ethical standards of the UK, Scunthorpe General Hospital guidelines on human experimentation and the Helsinki Declaration of 1975, as revised in 2008.

Discussion

Button battery removal from the ear can be tricky and challenging. Hence, it is necessary to be innovative by adapting



FIG. 1
The magnetic telescopic rod (fully retracted).

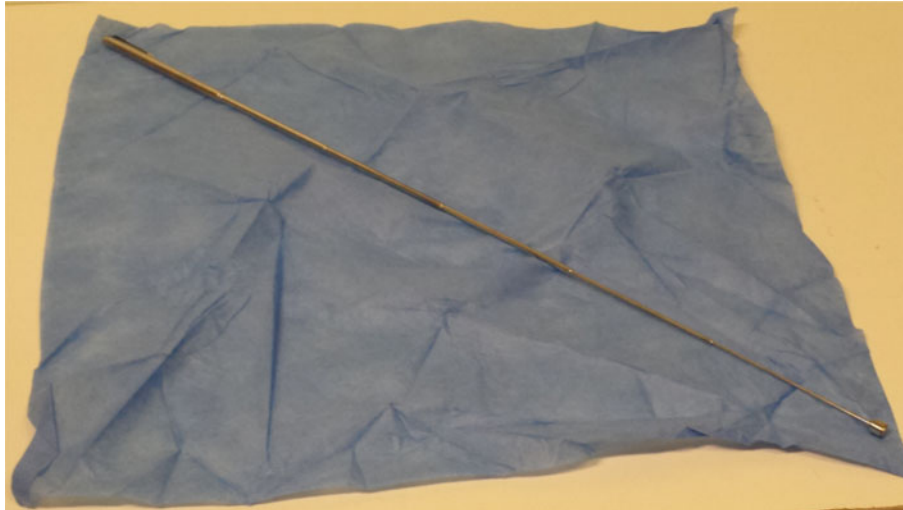


FIG. 2

The magnetic telescopic rod (fully extended).

different instruments to suit the individual case, as described here. Similar magnetic rods are widely available at a very low cost (approximately £0.99 in the UK). While it is reasonable to assume that the use of magnetic equipment should require a non-magnetic speculum, disposable plastic or non-metal aural specula are widely available in most National Health Service ENT out-patient clinics. Therefore, this issue should not limit the use of a magnetic rod.

Strong magnets can be damaging to magnetic storage media of electronic devices such as computer hard drives or floppy disks. Although the magnetic rod is of relatively low strength, this equipment should be kept away from electronic devices of any kind.⁸

Conclusion

Considering its low cost and general availability, we propose that the magnetic telescopic rod should be available in ENT clinics and operating theatres to be used for the removal of aural ferrous foreign bodies.

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