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Mahmoud Ali

from ENT Department Mansoura University Hospital

Alaa Abou-Bieh

from ENT Department Mansoura University Hospital

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Recommended Citation

Ali, Mahmoud and Abou-Bieh, Alaa (2008) "EMERGENCY PAEDIATRIC MYRINGOTOMY UNDER LOCAL ANAESTHESIA," *Mansoura Medical Journal*: Vol. 37 : Iss. 1 , Article 11.

Available at: <https://doi.org/10.21608/mjmu.2008.129191>

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EMERGENCY PAEDIATRIC MYRINGOTOMY UNDER LOCAL ANAESTHESIA

By

Mahmoud El-Sayed Ali, FRCS, MD
and Alaa Ali Abou-Bieh MD

From

ENT Department Mansoura University Hospital

ABSTRACT

In an emergency situation, bilateral myringotomy was required for four children from one family with sub acute carbon monoxide poisoning prior to starting hyperbaric oxygen therapy. As the emergency theatre was too busy, the author had to do this procedure for the four children under local anaesthesia. The technique described in this paper include some modifications of previously described techniques. This technique was safe and effective and the instruments used are cheap and easily available in the usual ENT treatment rooms. Subsequently, the author adopted the same technique in elective cases of paediatric and adult myringotomy with/without ventilation tube insertion.

Key words : myringotomy, paediatric, local anaesthesia, EMLA

INTRODUCTION

Paediatric myringotomy (with or without grommet insertion) is a very widely practised ENT procedure and is usually undertaken under general anaesthesia. In elective cases, it can also be performed under local anaesthesia¹. Variable designs have been introduced to obtain an easy, quick and safe myringotomy including using syringe needles^{2,3}. In an acute and unfavourable situation, myringotomy was required for 4 children and had to be done under local anaesthesia. Myringotomy was performed using a syringe needle fitted to the end of a Jobson horn. The technique described in this paper was found to be easy and

carries no significant risk in the hand of the experienced ENT surgeon.

Case History :

Four children from one family were referred to the A/E Department for sub acute carbon monoxide poisoning. The family of 6 people (2 adults and 4 children) was exposed to carbon monoxide gas from a faulty boiler. The 2 adults were in coma and admitted to the ITU. It was close to midnight when an ENT referral was received from the hyperbaric unit for urgent bilateral myringotomy for the 4 children as an essential prerequisite before the children could be submitted for hyperbaric oxygen therapy for carbon monoxide poisoning. However, the emergency theatre was so busy that there was no chance to do bilateral myringotomy for the 4 children under general anaesthesia. The author decided to do myringotomy for the four children under local anaesthesia (LA) in the ENT treatment room.

PATIENTS AND METHOD

The 4 children were fully con-

scious and well oriented. They were 3 sisters at the ages of 5.5, 4.5, 3 years and a male infant of 8 months age.

After having an informed consent, the eldest child (5.5 y old) was lied down on the examination couch and her right ear was examined under the microscope. Gentle ear dewaxing was done and the ear canal and drum examined. The same was done with the other 2 children. The eldest child was requested again to lie on the examination couch and eutectic mixture of local anaesthetics (EMLA) cream (AstraZeneca, containing lidocaine 2.5% and prilocaine 2.5%) was installed in the ear canal for local anaesthesia. A 1 ml plastic syringe with a 21 gauge (green) needle angulated close to its barrel at about 130° (Figure 1a) was used and the cream carefully installed with the needle with the needle tip a few millimetres from the ear drum but not touching the bony canal skin. This was achieved by supporting the end of the needle with the tip of the disposable plastic aural speculum used to visualise the ear canal and drum membrane. A long and thin cotton bud was prepared by wrapping a small piece of

cotton around the tip of an ear probe and then grasped close to the end by a micro crocodile forceps (Figure 1b). The cotton bud was introduced in the ear canal and gently advanced to carry the EMLA cream to fill the deep part of the ear canal and to cover the drum membrane to ensure adequate anaesthesia. The same was done for the other ear. Then the same was done for the other 2 children starting with the middle one (4.5 y old) then the youngest on (3 y old). The EMLA cream was left to work for at least 15 minutes.

Then, the eldest child was asked to lie down on the examination couch and the cream and cotton bud removed by gentle micro suction and a micro crocodile forceps respectively. The remaining cream in the ear canal and over the ear drum was removed by gentle dry mopping using a cotton bud designed as described before. The ear drum was clearly visible and the child showed no signs of discomfort.

Myringotomy was performed with

a fresh 21 gauge needle attached to the same 1 ml syringe as before (Figure 2a). The needle was bent in such a way that the level of the needle bevel was in line with the myringotomy line directed antro-inferiorly. The ear drum was gently touched with the tip of the needle to ensure adequate surface anaesthesia; the drum was carefully incised antro-inferiorly. The procedure was repeated on the other ear and the same was done again for the other 2 children using 2 fresh needles. The 3 children were cooperative and none of them showed signs of discomfort. The drum incision was almost bloodless with sharp and clean edges.

The male baby had the same procedures undertaken but he needed to be held by the nurse and was generally, and as expected, uncooperative. The procedure was however quickly performed during the short periods when he was calm and a clean myringotomy was achieved. The 4 children were taken back to the hyperbaric therapy unit to start treatment.

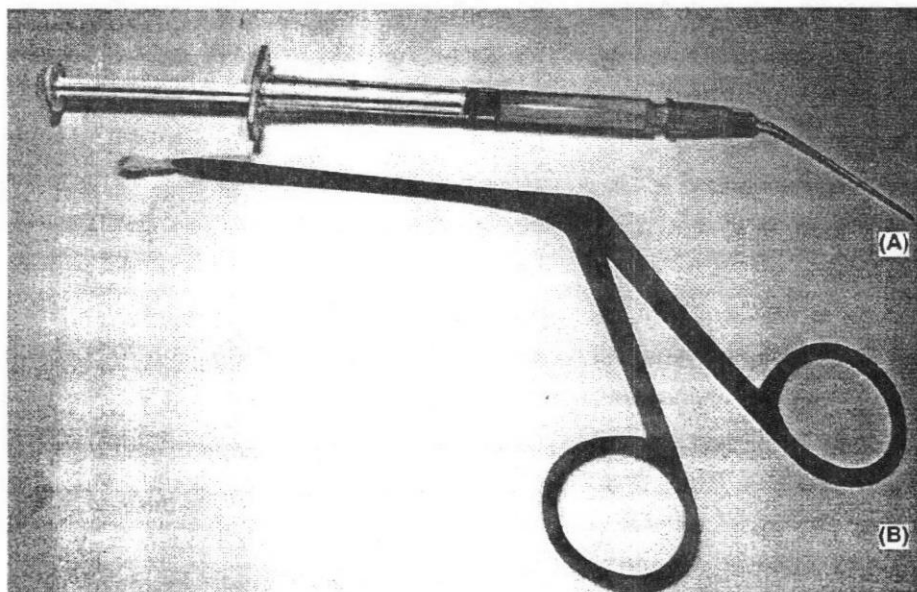


Figure 1. (A) : The 21 gauge (green) needle attached to 1 ml syringe used for installation of the local anaesthetic (EMLA) cream in the ear canal and then incision of the ear drum (myringotomy). (B): The micro crocodile forceps with a soft cotton wool bud at the end used to mobilize the installed EMLA cream deeply in the ear canal and ensure adequate application of the local anaesthetic cream to the ear drum.

DISCUSSION

It is an uncommon situation to have 4 children who need the same procedure. However, this was an advantage from some aspects. Starting with the eldest child and letting the other 2 watch the steps of the surgical procedure was encouraging and assuring for them. Fragmentation of the procedure to brief stages, starting with simple dewaxing before installing the local anaesthetic, was another as-

suring factor for the 3 children. Each child had 3 settings on the examination couch: dewaxing, local anaesthetic application and then drum incision; each was performed on the two ears.

The total time spent with each child doing these fragmented procedures may be longer than what would have been spent under GA. However, the total time spent with the 4 children

was shorter than the time that would have been spent under GA given the time spent in preoperative preparation and postoperative recovery in addition to the operative time.

The use of the injection needle for myringotomy has been reported before². The needle has many advantages over the standard myringotomy knife. The thin shaft of the needle offers better visualisation of the ear canal and drum. The small sharp end, used as a micro knife, allows an easy, clean edged and controlled incision of the ear drum. It is also safer compared with the incision produced by the myringotomy knife where the drum is incised by the knife tip penetration (puncture) that can sometimes result in a lacerated edges due to tearing of the inner circular fibrous layer of the ear drum membrane. In addition, simple needle myringotomy eliminates the risk of injury of the medial wall of the middle ear which can occur if the knife penetrated the ear drum deeply. Furthermore, the use of disposable syringe needles was also advocated to avoid the risk of transmission of blood born viruses³.

The achievement of satisfactory LA is essential for painless and safe myringotomy. Simple installation of the anaesthetic cream carries the risk of air trapping in the deep part of the ear canal with inadequate contact of the cream with the surface of the drum. This results in skin canal but not ear drum anaesthesia. It is technically difficult to install the cream directly on the ear drum due to the inherent fear to induce drum injury by the needle tip. Even with the use of specially designed syringes with blunt ended installation metallic tips, deep delivery of anaesthetic cream on the drum membrane can be difficult, especially in children. After installing the cream safely close to the ear drum, a small cotton bud was used to mobilize the cream further in the ear canal to achieve direct contact with the ear drum. Furthermore, by gentle manipulation of the cotton bud like a piston with a micro crocodile forceps, trapped air can be removed from the deep part of the ear canal. Leaving the cotton bud already soaked with the anaesthetic cream, to rest on the ear drum also facilitated satisfactory drum anaesthesia. Summerfield et al¹ recommended the avoidance of

using suction and the cream is allowed for penetration time of greater than two hours. In our cases, suction of the EMLA cream was performed followed by myringotomy after 15-30 minutes and none of the 4 children showed any signs of discomfort.

This procedure can't be done without a cooperative patient whether a child or an adult. However, the gentle approach, fragmentation of the operative procedure into short steps, starting with the elder child who is more likely to cooperate in addition to the operative skill and use of the least traumatic approaches, all these factors are essential to perform a safe and successful surgical procedure in such an emergency. The use of simple instrument which are easily available in an ordinary ENT treatment room is beneficial and cost effective in the management of similar emer-

gency as well as elective situations. The simplicity and effectiveness of this approach encouraged the author to adopt the same practice in elective paediatric and adult myringotomy and ventilation tube insertion.

REFERENCES

- 1- **Summerfield MJ, White PS. (1992)** : Ventilation tube insertion using topical anaesthesia in children. *J Laryngol Otol*;106:427-428.
- 2- **Bloom J. (1985)** : Myringotomy with a syringe needle. *Laryngoscope*; 95:614
- 3- **Thorp MA. (1998)** : Needle myringotomy: a useful technique with the increased prevalence of the human immunodeficiency virus. *J Laryngol Otol*; 112:865-866.