

Preventing and treating grommet tube otorrhoea

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Otorrhoea is a common complication after insertion of a grommet tube in a child's ear. Here is how to prevent the discharge or manage it when it happens.

Grommets (or ventilation or tympanostomy tubes) are commonly inserted in children's tympanic membranes for otitis media with effusion or recurrent otitis media. In order for grommet tubes to maintain the function of aerating the middle ear, the lumen of the tube must remain unobstructed.

Otorrhoea is a common complication of grommet tube insertion (Figure 1). It can obstruct or block the tube (Figure 2), which may result in recurrence of disease and affect hearing. There are two peak incidences of otorrhoea: in the early postoperative period and approximately three months after the operation.

Causes of otorrhoea with grommets include:

- entry of water into the middle ear via the grommets
- concomitant upper respiratory tract infection
- reflux from the nasopharynx

- immunological deficiencies
- bacterial biofilm infection of the grommet tube.

If the grommets are in place for recurrent ear infections, the majority of the infections will be prevented by the presence of the ventilation tubes. In a small number of children (10 to 20%) drainage will occur with each upper respiratory tract infection, and in 1% persistent discharge will occur from the moment a ventilation tube is inserted, usually because of a IgG2 deficiency.

Parents are advised to take the child to the GP if the ear is discharging significantly, so that the GP can initiate treatment and prevent hearing loss secondary to the otorrhoea.

Prevention of discharge

Approximately 10 to 20% of children will experience otorrhoea in the immediate postoperative period. The most effective means of reducing the incidence of otorrhoea during this period is by prophylactic instillation of antibiotic-corticosteroid ear drops for 48 to 72 hours postoperatively – preferably non-ototoxic ear drops such as those containing ciprofloxacin-hydrocortisone (Ciproxin HC Ear Drops). Parents should be instructed to pull the pinna of the ear backwards and instill the drops using a pumping action on the tragus several times to overcome the ventilation tube surface tension, enhancing entry of the drops into the middle ear.

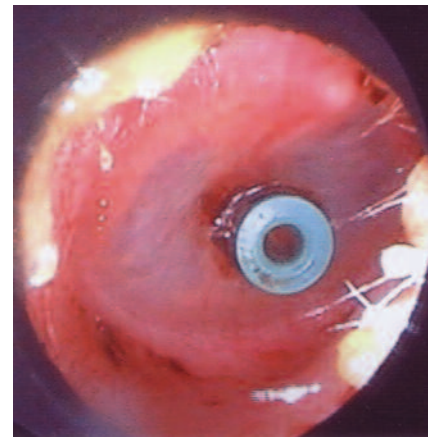


Figure 1. A discharging grommet tube.



Figure 2. A grommet blocked with dried secretions and blood.

Ensuring that water does not enter the ear canal is an effective means of preventing otorrhoea. Exclusion of water from the ear canal can be achieved by the use of:

- moulded ear plugs
- silicone ear putty
- Blu-Tac
- over-the-counter ear plugs.

When swimming, the use of a bathing cap or ear wrap together with one of the above will help prevent otorrhoea in most children with grommets. Parents should ensure that the child avoids doing 'bombies' or deep diving into the pool.

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FIGS 1 AND 2 COURTESY OF PROFESSOR FRANCIS LANNIGAN, PERTH

Procedures for managing discharge

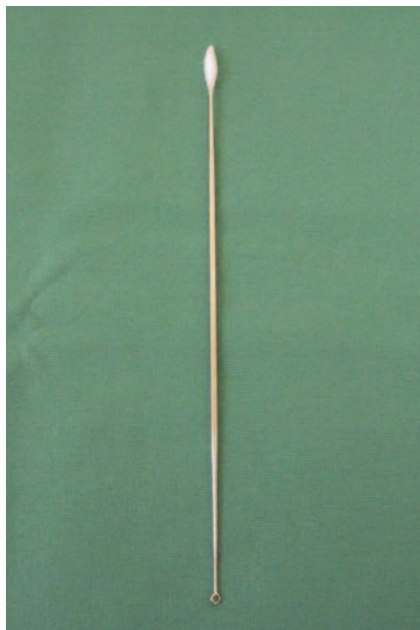
Removal of discharge

Removal of discharge allows visualisation of the grommet to ensure it is *in situ* and not blocked, and to allow local treatment with antibiotic–corticosteroid ear drops. The ear may be cleaned by one or other of the following:

- dry mopping with a broach probe tipped with cotton wool
- irrigation with a 0.5% povidone–iodine solution to wash out the discharge
- suction apparatus.

Dry mopping

The broach probe should be well padded with cotton wool to avoid trauma to the ear canal or tympanic membrane by the sharp end of the probe (Figure 3), and also to transmit sensation of resistance when the tympanic membrane is reached. When dry mopping the canal, grasp the auricle, elevating it up and back. Rest the fingers of your hand



FIGS 3 AND 4 COURTESY OF DR BEN PANIZZA, BRISBANE

Figure 3. A broach probe tipped with cotton wool, useful for dry mopping the ear canal.

against the patient’s face to prevent damage to the ear drum should the patient move (Figure 4).

Irrigation

To obtain a 0.5% povidone–iodine solution to wash out the discharge, dilute 5 mL (one teaspoon) of 10% solution (Betadine, Microshield PVP, Minidine, Viodine) with 100 mL of boiled water.

The preferred method of irrigating the ear canal to remove discharge and debris is to use a 10 or 20 mL disposable plastic syringe with the cut-off end of a scalp vein needle giving set firmly attached to provide a soft tip. If 1.5 cm of the soft tubing is used, it will curve so that it abuts the ear canal and does not direct the flow of solution directly at the tympanic membrane (Figure 5).

Suction

Suctioning can be performed using a metal suction tube, but the preferred method would be to place a 1 cm length of soft silastic tubing over the metal suction

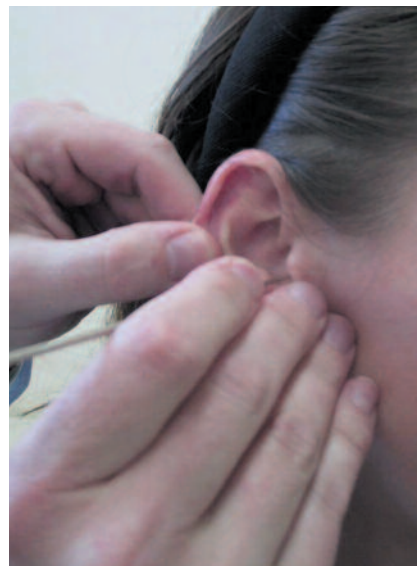


Figure 4. When dry mopping the canal, grasp the auricle, elevating it up and back. Rest the fingers of your hand against the patient’s face to prevent damage to the ear drum should the patient move.

tube to prevent any possible damage to the ear canal.

Use of eardrops

Management with topical antibiotic–corticosteroid combination ear drops helps to resolve the otorrhoea and reduce the risk of secondary otitis externa.

Non-ototoxic fluoroquinolone drops, such as Ciproxin HC Ear Drops, have become the treatment of choice for the cases where there is potential entry of the drops into the middle and inner ear. Ear drops commonly used in the past, such as Sofradex, are equally as effective but are potentially ototoxic.

The treatment regimen should be three drops twice a day for three to five days.

Clioquinol–flumethasone pivalate (Locacorten-Vioform Ear Drops) can be used where a fungal or mixed fungal–bacterial infection is suspected.

Before instilling the ear drops, ensure that the discharge has been cleaned out (as described above). If you have irrigated the ear, use a tissue spear to dry any remaining solution in the ear canal.

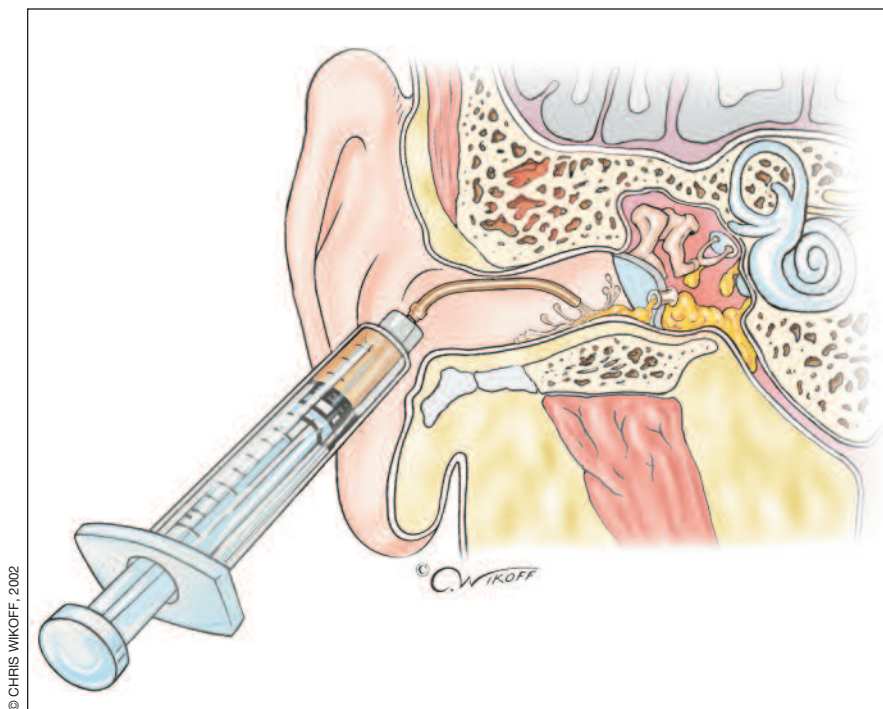
Retraction of the pinna superiorly and posteriorly will straighten the external auditory canal and allow insertion of the ear drops. The pumping of the tragus, as mentioned earlier, will allow the drops to enter the middle ear. If the child can be positioned so that his or her ear canal remains upright following administration of the drops, there will be less run-off of the drops.

Use of oral antibiotics

Oral antibiotics should be added to the antibiotic drop regimen if the otorrhoea accompanies an upper respiratory tract infection with purulent rhinitis, and middle ear pathogens such as *Haemophilus influenzae* or *Streptococcus pneumoniae* are suspected.

Use of otowicks

Constant discharge may cause irritation of the ear canal and a secondary external



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Figure 5. Diagram showing irrigation of the ear canal to clean out discharge and debris. Allow the tubing to curve so that it does not direct the flow of solution directly at the tympanic membrane.

otitis with severe tenderness and swelling of the outer ear canal.

Insertion of an otowick (straighten the ear canal and use a fine alligator forceps) and addition of aqueous ear drops to expand the otowick will provide pain relief and a central lumen to allow the drops to enter the canal and debris and discharge to leave it. The otowick should be changed every second day.

When to refer

Admission to hospital for ear irrigations, suction under the microscope or intravenous antibiotics may be necessary in cases of:

- severe otorrhoea
- lack of co-operation from the patient
- parental noncompliance.

Referral to a specialist is also indicated in cases when persistent tube infections may cause the development of grommet polyps (or granulation tissue

around the tube site). These may bleed and obstruct the tube or the external ear canal.

Polyps may be managed with antibiotic–corticosteroid ear drops; if this is not successful, further surgical management may be necessary. Rarely, persistent otorrhoea may be associated with a subclass immunoglobulin deficiency.

Conclusion

Otorrhoea is a common complication associated with the insertion of grommet tubes. Prevention includes the prophylactic use of ear drops in the immediate postoperative period and excluding water from the ear canal while the grommets are *in situ*. Management of otorrhoea involves the removal of the discharge, use of non-ototoxic ear drops and, where indicated, use of otowicks. Occasionally, oral antibiotics will need to be given in addition to the ear drops. **MT**