

Appendix 4

Swimming and Grommets

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Children with grommets should be allowed to swim

Nearly 40 years after the technique of grommet insertion was reintroduced by Armstrong (1) otolaryngological advice about whether children with grommets should be allowed to swim still varies from total prohibition to total license. The theoretical risk is that water will pass through the grommet and infect the middle ear. But does this happen?

Morgan (2) found that after the ears were submerged in a bath for four minutes in only half the cases was there water on the tympanic membrane. Calculating that water pressure of 12.5-22.5 cm would be needed to push water through a grommet, several authors concluded that contamination of the middle ear was unlikely with normal swimming, hair washing, and bathing but that the risk would be increased with diving (14). They suggested that the eustachian tube had to be functioning before water could pass through the grommet (5), and Myerhoff (6) *et al* confirmed this with animal experiments. Children with glue ear often have impaired function of the eustachian tube, thus making contamination of the middle ear less likely.

If water passes through a grommet does it matter? Over three weeks Smelt and Monkhouse (7) irrigated the middle ear mucosa of guinea pigs with sea water, bath water, swimming pool water, or normal saline (as a control). Only bath water provoked appreciable inflammation.

In the first prospective trial comparing patients fitted with grommets who did and did not go swimming Chapman (8) found that the rate of otorrhoea was lower in those who swam without using ear plugs than in non-swimmers (14% v 18%). Since then six further papers have compared rates of infection between swimmers and non-swimmers and found no significant difference (9,4).

As in Chapman's original study five of these papers reported a lower incidence of otorrhoea in swimmers than non-swimmers. Ear plugs seem to confer no extra benefit, and the muffling of sound and the necessary adult supervision decrease both the fun and the enjoyment of swimming (15). The question of whether bath water increases the risk of ear infection in children with grommets has not been

studied, though high concentrations of bacteria and irritative substances have been shown in bath water (16). Chapman (8) wrote that the advice to forbid swimming in children with grommets "causes distress, delays the acquisition of a life-saving skill and is based on no published evidence". Twelve years and numerous studies later, this statement remains true.

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During myringotomy, also called typanotomy, a tiny incision is made in the eardrum to help drain fluid from the middle ear and to allow for a free exchange of air between the middle and outer ear.

During normal swimming, excluding diving and deep underwater swims, there is seldom enough water pressure to force water through the opening of the grommet.

Medical opinion in the USA is divided on this issue. Your doctor may be interested in reading some of the studies listed above.