Treatment Success and Complications after Autoinflation compared to Grommet Surgery

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Introduction

Secretory Otitis Media (SOM) is the most common cause of hearing impairment and surgical intervention under general anaesthesia in children. The objectives of the present study were to evaluate the efficiency, compliance and complication rate of a new autoinflation device compared to grommet surgery.

Materials and Methods

A new autoinflation device, Moniri® (Abigo Medical AB, Askim, Sweden) was developed at the Sahlgrenska University Hospital (Fig. 1). The mask (Fig. 1:1) is used to cover the face and mouth of the child. At inspiration the air enters without any resistance. At expiration by mouth or nose the air is captured within the system inflating the balloon (Fig.1:3) and a modifiedValsalva manoeuvre is performed. The balloon may be inflated also by squeezing the pump (Fig.1:4) to perform a modified Politzer manoeuvre. Three different balloon pressures of 20, 40 and 60 cmH2O are provided.

Forty-four children, aged between one and eight years, with persistent SOM with a bilateral type B or C2 tympanogram for at least three months and history of subjective hearing loss, waiting for grommet surgery were treated with the autoinflation device during four weeks.

Another forty-five children, aged between three and eight years, submitted to grommet surgery were compared to the autoinflation group. Both groups underwent otomicroscopy, tympanometry and audiometry at inclusion. All the exams, with the exception of tympanometry in the grommet group, were repeated at one, six and twelve months. Both groups were followed up during 12 months.

Results

In the autoinflation group after four weeks of treatment, the mean middle-ear pressure improved by 166 daPa. The mean hearing level improved from 22 to 16 dB (p<0.0001) and the number of ears with hearing thresholds of ≥ 20 dB was reduced from 60 (77%) to 16 (22%) (p<0.001). All but one child managed to perform autoinflation with the device. Five patients (11%) were submitted for grommets surgery during the study period. In the grommet group the mean hearing threshold improved from 24 to 15 dB (p=0.0001) and the number of ears with hearing threshold of ≥ 20 dB was reduced from 82 (91%) to 15 (18%) (p<0.001). During the follow-up period a total of 31 (34%) complications were reported related to the grommets (Table 1).

Conclusions

To our knowledge the Moniri ® device is the first method allowing for successful autoinflation, improving both middle ear pressure and hearing in infants from the age of one year with satisfactory compliance and no complications. The new device is as efficient as grommet surgery in restoring hearing at short and long-term follow-up.

Complications

| Recurrence | 12 (13%) | 19 (23%) |
| Complications | 31 (34%) | 0 |
| Pain | 7 (8%) | 0 |
| Otitismedia | 13 (14%) | 0 |
| Tube obstruction | 4 (4%) | 0 |
| Early tube extrusion | 6 (7%) | 0 |
| Persistent perforation | 1 (1%) | 0 |

Table 1: Complication and recurrence rate for Grommets vs. Autoinflation.