Abstract

Objectives: Our hypothesis was that the rates of persistent tympanic membrane (TM) perforation following pressure equalization (PE) tube removal were not higher with topical phenol application. 1) Determine perforation rates using topical phenol. 2) Compare perforation rates using infiltration of lidocaine with epinephrine vs. topical phenol application.

Methods: This was a retrospective review of all patients undergoing insertion of Silverstein tube and microwick for dexamethasone placement. The myringotomy was placed at the same location for all patients, which was 115º from the umbo in the posterior-superior quadrant. All patients included in this study underwent administration of dexamethasone 10 mg/ml drops daily for 6 weeks for evidence of perforation or surgical repair. Fisher’s exact test was used for statistical analysis.

Results: A total of 98 Patients were identified as undergoing placement of Silverstein tube and microwick placement. Of these, 32 used lidocaine infiltration for local anesthesia and 66 had topical phenol applied for local anesthesia. The results for three month follow-up after completion of therapy indicated that in the lidocaine group 31.3% had persistent perforations, 62.5% had a healed TM, and 6.2% still had a tube in place. The results for the phenol group indicated that 14.0% had a perforation, 48.5% had a healed TM, while 30.3% had a PE tube in place. After excluding the retained PE tubes and comparing the perforation rates of lidocaine to phenol, the results were similar with a rate of 66.7% and 68.7%, respectively (p-value of 0.81). The results of one year follow-up demonstrated in the lidocaine group a perforation rate of 20.0%, healed TM rate of 76.7%, and retained PE tube rate of 3.3%. The results of phenol demonstrated a perforation rate of 8.0%, healed TM rate of 78.0, and retained PE tube of 15.2%. There was no significant difference between lidocaine and phenol after excluding retained PE tubes with a rate of 20.7% versus 6.0% respectively (p-value of 0.16). These results favored the phenol group for a healed TM.

Conclusions: Topical phenol appears to be a safe method of local anesthesia for PE tube insertion without significant increased risk of persistent perforation. Phenol also offers a cost-effective, less painful, and less time-consuming option in an outpatient setting.

Introduction

Myringotomy with insertion of pressure equalization (PE) tube is one of the most common procedures performed by otolaryngologists today. Most of these are completed under general anesthesia, such as in the pediatric population. However, when performed on adults this is typically performed under local anesthesia. The use of local anesthesia has dated back many years. In 1884, Zaufel began using 10% cocaine in alcohol. This technique was abandoned due to severe vertigo.6 The use of Bonain’s liquid was reported in 1898, which consisted of cocaine, phenol, and methyl preparation. This technique had been isolated effect on the TM, but with reports of external otitis and possible hearing difficulties of the TM.

For years PE tube insertion has been the subject of study with respect to tympanic membrane (TM) perforation rates as a complication. Previously asked questions included studying various tube type, tube position, and duration of intubation with or without local anesthesia. We hypothesized that rates of persistent TM perforation following PE tube removal are not higher with topical phenol local anesthetic.

Methods and Materials

This was a retrospective review of all patients undergoing a myringotomy for placement of a Silverstein tube and microwick. The myringotomy was placed at the same location for all patients, which was 115º from the umbo in the posterior-superior quadrant. All patients included in this study underwent administration of dexamethasone 10 mg/ml drops daily for 6 weeks for various indications. These myringotomies were performed under local anesthesia with either infiltration of lidocaine with epinephrine (control) or topical phenol (experimental). After 6 a week duration of intubation, the microwick was removed with or without the Silverstein tube. All patients were followed at three months, six months and one year for evidence of perforation or operative repair. Fisher’s exact test was used to analyze the data for a significance of p≤0.05.

Conclusions

In this study, we retrospectively compared the rates of TM perforation under local anesthesia using either lidocaine or phenol. Three months after the completion of treatment with the microwick, the perforation rates of both the lidocaine group and the phenol group were similar (66.7% vs. 68.7%). In fact, at the one year follow-up exams, the perforation rates in the phenol group were lower than the lidocaine group (20.7% vs. 8.0%). In addition, there was no differences in the need for operative repair for perforation for either group. Based on this data, topical phenol appears to be a safe method of local anesthesia for PE tube insertion without significant increased risk of persistent perforation/failure of TM healing.

One additional finding of this study indicated that at three months and one year the rates of retained PE tubes were higher for the phenol group than the lidocaine group. In light of the fact that most PE tubes are placed to improve symptoms of eustachian tube dysfunction, this could be a definite advantage of phenol versus lidocaine.

Our study has indicated that application of phenol to the TM for myringotomy is a safe and advantageous method of local anesthesia.

References

1) Todd, GB. Audit of the incidence of persistent perforation of the tympanic membrane following grommet insertion or extrusion. J Laryngol Otol 1993 Jul 107(7): 593-5.