ABSTRACT

Objectives: Evaluate the impact of electrocautery, microdebrider and coblation techniques on outpatient pediatric adenoidectomy costs and outcomes.

Methods: An observational cohort study in a multi-hospital network using a standardized accounting system. Children 18 years of age and younger that underwent outpatient adenoidectomy were included from January 2008 to September 2015. Those undergoing additional procedures and those using more than one technique were excluded. The cohorts were divided into children that underwent electrocautery, microdebrider or coblator adenoidectomy. Direct cost of each procedure, surgical time, operating room (OR) time, complications, and adenoid regrowth were evaluated by instrument type.

Results: A total of 1,065 cases of adenoidectomy were performed with electrocautery (34.9%), microdebrider (26.1%), and coblator (39.0%) techniques. There was an increased average direct cost associated with the microdebrider ($834 SD $363) and the coblator ($796.6, SD $262) compared to the electrocautery ($597 SD $361) (p < 0.0001). There was a greater overall OR time associated with use of the microdebrider (mean 28.7, SD 11.0 min), compared with electrocautery (mean 24.7, SD 8.1 min) and coblator (mean 26.2, SD 9.8 min) (p < 0.0001). No significant difference was found in regards to complication rates, however, the incidence of repeat adenoidectomies was significantly greater for microdebrider (9.7%) compared to electrocautery (2.7%; p=0.0002) and coblator (5.3%; p=0.0336) techniques.

Conclusion: These results suggest that electrocautery adenoidectomy is significantly less expensive than microdebrider and coblator adenoidectomy. There were no differences in complication rates among the techniques. Microdebrider adenoidectomy was associated with a longer overall OR time and a higher rate of adenoid regrowth.

METHODS AND MATERIALS

Methods: An observational cohort study was performed in a multi-hospital network using a standardized accounting system.

Patients were identified with CPT codes for primary adenoidectomy in children <18 years between January 2008 and September 2015. Those undergoing additional procedures or secondary adenoidectomies were excluded.

Surgery time was defined as the duration of the procedure alone whereas the total time in the operating room (OR time) included surgical time and set up. A non-parametric Kruskal-Wallis test was used to determine statistical significance of differences in direct cost, total cost, OR time and surgery time among the different instruments.

The database was queried for ED visit or re-admission codes within 21 days after the procedure. The incidence of post-operative complications and repeat adenoidectomies were compared between surgical methods by use of contingency tables and a two-tailed Fisher’s exact test for significance.

RESULTS

Cost and Time

• 1,065 total cases of adenoidectomy performed at 23 different medical facilities, by 64 different surgeons.

• There was a greater average direct cost associated with the microdebrider and the coblator compared to the electrocautery method (p < 0.0001). There was no difference in direct cost between microdebrider and coblator (p=0.9999) • There was no statistically significant difference in surgical times but there was a higher overall OR time associated with the microdebrider (mean 28.7, SD 11.0 min), compared with both the electrocautery (mean 24.7, SD 8.1 min) and coblator (mean 26.2, SD 9.8 min) (p < 0.0001).

Outcomes

• Potential reasons for re-admission or presentation to the Emergency Room (ER) within 21 days included bleeding, emesis, fever, pain, asthma exacerbation, hypoxia, pneumonia, and apneic episode.

• The most common causes of presentation to the ER for post-operative dehydration fever (n = 12), (n = 7), and pain (n = 6). Comparing these etiologies for ER visits demonstrated no significant difference in incidence between surgical methods.

• The incidence of repeat adenoidectomies was greater for the microdebrider (9.7%) compared to electrocautery (2.7%; p=0.0002) and coblator (5.3%; p=0.0336). The mean percentage incidence of repeat procedures per surgeon was not significantly different and was 1.5% (SD 4.7%), 3.3% (SD 5.6%), and 3.6% (SD 5.4%) for electrocautery, coblator, and microdebrider, respectively.

CONCLUSIONS

These results suggest that electrocautery adenoidectomy is significantly less expensive than microdebrider and coblator adenoidectomy. There were no differences in complication rates among the techniques. Microdebrider adenoidectomy was associated with a longer overall OR time and increased adenoid regrowth.

REFERENCES