COBLATION ENERGY IN PAEDIATRIC TONSIL TISSUE; A STUDY OF LOCAL DESTRUCTION AT VARIABLE SETTINGS

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This is the first study to look at local tissue destruction effects of coblation energy in human tonsil tissue. Coblation is increasingly used in tonsillectomy but no studies have been done to assess the depth of tissue damage.

The aim of our study was to study the effects of coblation energy on tonsils at 7W, 3W and coagulation settings. The average tissue destruction was found to be 3.1mm, 0.5mm and 1mm each. The typically used settings are 7W for debulking and 3W for pericapsular work. In this study we have conclusively proven that the depth of destruction is much lesser at 3W at 0.5mm, thereby resulting in less pain and improved patient satisfaction.

Coblation is a nonthermal radiofrequency energy that causes tissue destruction by molecular dissolution. As opposed to conventional electric cautery which burns at 400-600 degrees, coblation devices use temperature at 40 degrees and the effect on tissue is chemical, not thermal.

Methods

Thirty lesions on ten paediatric tonsils removed from consented patient were used for the study. Three types of setting were used: coblation energy at 4Watts and 7Watts and coagulation at 3Watts. Each power setting was used at 3 differing points on one tonsil. Therefore each power setting had 10 lesions each, adding up to a sum total of thirty lesions.

EVAC® 70 XTRA HP COBLATION Wand was used, and the size of the lesion generated was studied macroscopically by using a disposable surgical ruler. Histopathological analysis of the tonsil tissue was performed with haematoxylin and eosin staining.

Results

All power settings generated a circumferential shaped lesion centred around the active electrode. The overall mean and median sizes of lesions for 7W was 3.1cm, for 4W was 0.5cm and for coagulation energy at 3W was 1cm.

Discussion

Coblation is now being welcomed as a gentler way of doing tonsillectomy with less postoperative pain. In one of the earliest studies, Temple et al demonstrated a significant reduction in postoperative pain and quicker return to normal diet in the paediatric population.

Studies about the local tissue effects are few and far between. Modi et al reported similar depth of thermal injury to tonsillectomy specimens when using coblation, electrocautery and harmonic.

Our study has shown lesser depth of injury at 3W as compared to 7W. The increased incidence of postoperative bleeding after tonsillectomy in the initial years of coblation tonsillectomy was partly attributed to the use of the high energy settings at 7W throughout the surgery. Now with the use of lesser energy at 3W being used closer to the muscle the incidence is much lesser. Our study has proved that the depth of tissue destruction is much less at 3W ie 0.5mm, which in turn leads to less tissue destruction, less bleeding, less pain and therefore improved patient satisfaction.

References
