

## Intracapsular Tonsillectomy: A Safe Alternative for OSA in Children

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### Abstract

**Introduction:** Intracapsular tonsillectomy (ICT) represents an effective treatment for Obstructive Sleep Apnoea (OSA) and Sleep disordered breathing in children. The literature supports its use owing to efficacious treatment and a lower risk of post-operative pain and bleeding compared with total tonsillectomy. Here we present our technique of ICT using cold radiofrequency ablation (Coblation®). One of the perceived barriers to ICT is increased operative time, especially in the case of large protuberant tonsils. Our technique however is fast, safe and easy to replicate. For a fully informed choice, in appropriate cases, parents should be offered ICT as a safe alternative to total tonsillectomy especially in children at increased risk of post-operative haemorrhage.

**Keywords:** Tonsillectomy, Obstructive Sleep Apnoea, Sleep-Disordered Breathing

### INTRODUCTION

Tonsillectomy is a commonly performed operation in children with Obstructive Sleep Apnoea (OSA) and recurrent tonsillitis. Total tonsillectomy is very effective but has high associated morbidity particularly pain and bleeding, which can be especially problematic in younger children.(1) Intracapsular tonsillectomy (ICT) or more accurately tonsillotomy, is gaining popularity in the UK for treatment of OSA and sleep disordered breathing in children. A recent systematic review concluded that treatment outcomes were not statistically different between ICT and total tonsillectomy. Outcome measures were apnoea-hypnoea index scores and minimum oxygen saturation (2)(3) Repeated studies have separately demonstrated ICT's lower side effect profile. ICT is associated with less dehydration (0.2% vs 0.8%), lower risk of post tonsillectomy haemorrhage (0.2 vs 2.9%) and a quicker return to normal activity when compared to total tonsillectomy. (3) (4) This was

reinforced by a large case series at Evelina hospital with no complications in over one hundred ICT operations. ICT can be performed with a microdebrider, suction monopolar diathermy or Coblation® (cold radiofrequency ablation). A significant drawback of ICT previously cited is the additional operative time. We believe our Coblation® ICT technique described below is easily replicated and in our experience takes no longer than total tonsillectomy (about 10 minutes operating time).

### TECHNICAL NOTE

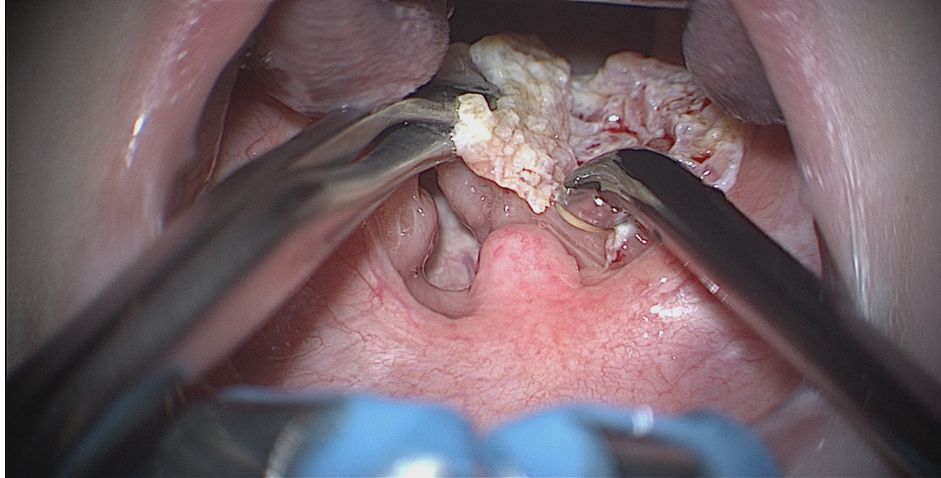
The patient position is supine with the neck extended with the aid of a shoulder roll. A Boyle Davis gag and Draffin rods are positioned to afford good visualisation of the oropharynx. In our technique we use an Arthrocare® Coblation® II system on the pre-setting of 9 (the highest power). This corresponds to an output voltage of 330vrms. A Luc's forceps is used to medialise the tonsil. (fig. 1) The Coblater face down is then used to excise the portion of the tonsil medial

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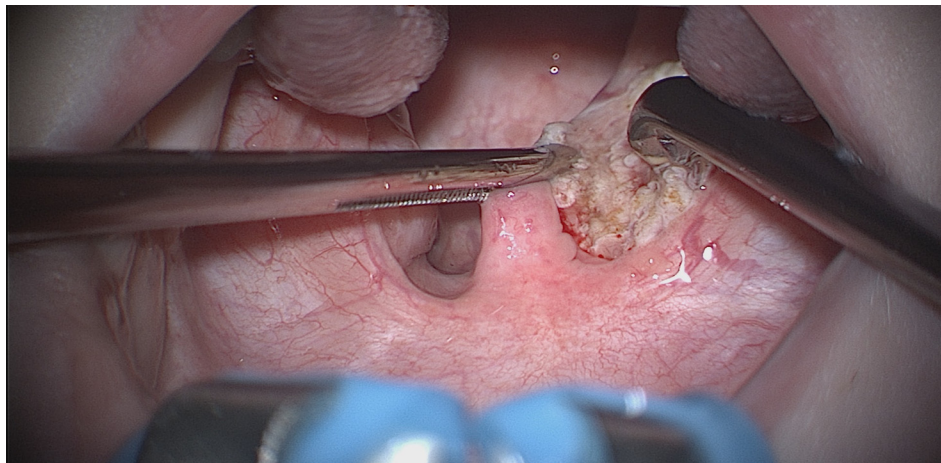
to the Palatoglossal and Palatopharyngeal arches. (fig 1.) The medial portion of the tonsil in the Luc's forceps can then be disregarded.

The Palatopharyngeal arch is then medialised with a pair of toothed forceps (fig. 2). The Coblator is turned down to 7 (265vrms) to ablate the remaining tonsil within the fossa down as far as the tonsil capsule (fig. 2). The lower energy setting is important to reduce the risk of breaching through into the constrictor muscle.

A Mollison's pillar retractor can also be useful to visualise the superior and anterior fossa. Any bleeding points are addressed with the diathermy built into the tip of the Coblator face usually on setting 3, which corresponds to an output voltage of 75 vrms. Excising the medial portion of the tonsil reduces the amount of ablation significantly speeding up the procedure. We believe the operative time to be the same as total tonsillectomy.



**Fig 1.** Medial portion of right tonsil being excised, reducing the amount of tissue to ablate and greatly speeding up the operative time.



**Fig 2.** Right Palatopharyngeal arch is medialised with forceps and the remaining tonsil within the fossa is ablated taking care not to breach through the capsule into the constrictor muscle.

## DISCUSSION

The authors acknowledge the limitations of ICT in general, namely the possibility of future tonsillitis and a small percentage of repeat surgery for re-growth (2%). (3) However, ICT is as efficacious as total tonsillectomy for treating OSA and sleep disordered breathing and has a lower side effect profile making it an excellent

choice in young children. We have found it particularly useful for children at increased risk of haemorrhage i.e. those not taking enteral nutrition or where post-operative analgesia compliance is a concern. Surgeons should therefore consider this treatment option and offer it to suitable patients to enable a fully informed patient decision. Our described technique is fast, safe and is easily replicated.

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### SUMMARY

- Tonsillectomy is commonly performed on children to treat OSA however carries a high morbidity.
- Intracapsular tonsillectomy has the same efficacy as total tonsillectomy with reduced post-operative pain, bleeding and a quicker return to normal activity.
- Intracapsular tonsillectomy should be offered to suitable patients as a treatment option.

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