



HOT TOPIC

SHOULD WE AIM FOR OPIOID FREE ADENOTONSILLECTOMY AS “GOLD STANDARD”?

SUMMARY OF KEY POINTS:

- Historically, opioids have played a central role in perioperative analgesia for adenotonsillectomy.
- Minimising the use of perioperative opioids is important when looking to avoid opioid related side effects such as respiratory depression and apnoeas, especially in patients with significant obstructive sleep apnoea (OSA).
- Opioid free intraoperative analgesia may provide adequate pain control for adenotonsillectomy in some patients, but is likely to require the addition of adjuncts such as dexmedetomidine and ketamine into the analgesia regime.
- The use of intracapsular coblation as a surgical technique is likely to facilitate an opioid sparing or opioid free technique.

REVIEW OF EVIDENCE

Background

In the UK each year roughly 30,000 children have a tonsillectomy¹, of which around 53% include an adenoidectomy.¹ The majority of these are performed for recurrent tonsillitis. The remainder are performed for either tonsillar hypertrophy or sleep disordered breathing.¹

Despite being a commonly performed procedure, pain management remains challenging and often inadequate and opioids are often used, either routinely or as rescue analgesia. However, there are benefits of minimising opioid use and hence, opioid side effects such as respiratory depression, in children having tonsillectomy surgery. This is particularly important in those with obstructive sleep apnoea (OSA).

Children with ‘severe’ OSA routinely require an overnight stay in hospital following general anaesthesia and may need postoperative care in a high dependency unit, due to their risk of postoperative respiratory events e.g. apnoeas with associated desaturation. The severity of hypoxaemia is associated with respiratory complications in children with OSA.² Children with OSA are known to be more sensitive to opioid drugs and therefore, minimising their use in this group is a priority. Conversely they are also reported to experience increased pain after adenotonsillectomy.²

Delivering effective analgesia whilst minimising opioid use during adenotonsillectomy, is the goal. This is to reduce the likelihood of postoperative apnoeas and respiratory depression, and potentially reducing postoperative nausea and vomiting and facilitating earlier discharge from hospital.

What other adjuncts are there for multimodal analgesia?

Common practice is to give a combination of paracetamol and an NSAID either preoperatively or intraoperatively and to continue these into the postoperative period, unless contraindicated. Previous concerns with regards to NSAIDs and potential bleeding risk have not been substantiated in recent





studies.³ In addition, a single dose of intravenous dexamethasone seems to have a significant analgesic effect, and is recommended.³ Postoperative honey has also been shown to be of benefit in some studies, reducing pain scores and analgesic requirements.³

Other adjuncts include alpha₂ agonists (clonidine and dexmedetomidine), ketamine, magnesium, gabapentinoids and local anaesthetics. These were not recommended as first line in a recent systematic review³, either due to weak evidence or due to potential side effects. However, they recommended considering intravenous ketamine or dexmedetomidine and/or preoperative gabapentinoids in patients who are unable to take NSAIDs and/or paracetamol or when postoperative pain was expected to be greater than usual. Subsequently, they could also be considered in patients where opioid analgesia should be avoided.

What effect does surgical technique have?

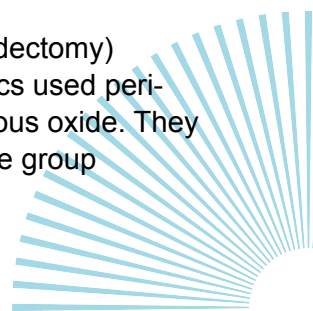
Traditional tonsillectomy methods have involved extracapsular dissection where the whole tonsil was separated from the pharyngeal muscle using either cold steel instruments or bipolar dissection. Over the past 10 years, intracapsular coblation tonsillectomy has become increasingly common. As the palatine tonsils are devoid of neural tissue, the intracapsular approach is theoretically less painful. Coblation involves passing radiofrequency energy through a conductive medium which produces a plasma field. Controlled tissue disintegration is obtained at a lower temperature than traditional methods. The amount of thermal damage to surrounding structures is decreased, which is also thought to contribute to reduced pain. There were initial fears that the postoperative haemorrhage rate might be increased with coblation, but this does not appear to be the case.⁴ The other fear that long term re-operation rates were higher also appears to be unfounded.⁵

The rate of postoperative pain appears to be lower when coblation is used, in comparison with cold dissection.⁶ However, to date, most studies have evaluated surgical technique with respect to bleeding rather than focusing on difference in postoperative pain as their primary outcome. Studies that have looked at pain outcomes have used varied pain assessment tools, making them difficult to compare in a meta-analysis.⁵ Although, further studies are needed here, pooling qualitative data from individual studies would suggest that children experience less pain with coblation tonsillectomy compared to other commonly used techniques.

What current evidence is there to support an opioid free adenotonsillectomy technique?

Few studies have looked directly at the efficacy of opioid free adenotonsillectomy. One centre in Seattle⁷ has decreased the use of opioids for rescue analgesia to less than 10%, and decreased the rate of PONV by using an opioid sparing anaesthesia protocol. This protocol consists of preoperative oral paracetamol, IV dexmedetomidine 0.5mcg/kg and ketamine 0.5mg/kg at induction, IV dexamethasone 0.15mg/kg and ketorolac 0.5mg/kg towards the end of surgery. Dexmedetomidine 0.1mg/kg IV was used as first line in recovery for agitation and morphine boluses were titrated to effect for moderate to severe post operative pain. This was in conjunction with a patient / parent mindfulness / anxiety module pre-operatively. However, this regime produced a slight increase in their PACU length of stay and they did not look at the incidence of apnoeas or other adverse respiratory events.

A recent retrospective study of patients who underwent elective tonsillectomy (+/- adenoidectomy) showed that opioid-sparing techniques were safe and effective.⁸ The non-opioid analgesics used peri-operatively included paracetamol, ibuprofen, dexamethasone, dexmedetomidine and nitrous oxide. They found slightly higher postoperative analgesic requirements in the intraoperative opioid free group





compared with the intraoperative opioid group ($p=0.033$). However, the PACU length of stay was similar between the two groups. Both these studies looked predominantly at low risk, healthy patients classified as ASA I or II, and no patients with 'severe' OSA were included.

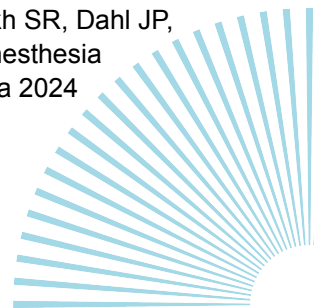
A retrospective study of high risk children (with at least one risk factor of either severe OSA, BMI > 99th percentile, age under 2 years or a craniofacial or neurological disorder) found that an intraoperative opioid free technique was not associated with an increased need for opioids postoperatively.⁹ In addition, patients who received opioids were as likely to experience postoperative desaturations and require supplemental oxygen as those who did not receive opioids. However there was great variability in the doses of opioids administered, and the results should be interpreted with caution. Nevertheless, the results suggest that opioid free intraoperative analgesia may provide adequate pain control in high risk patients.

Conclusion

Our feeling is that omitting opioids altogether is possible, however, there is a lack of evidence as to the benefit, especially in otherwise healthy patients with no OSA and further studies are needed. Omitting opioids is likely to require the addition of adjuncts such as dexmedetomidine and ketamine into the analgesia regime. The increased use of intracapsular coblation as a surgical technique is likely to facilitate this.

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