

HOT TOPIC 21

TITLE/QUESTION

Endotracheal Intubation or Laryngeal Mask Airway for Paediatric Adenotonsillectomy Surgery?

SUMMARY OF KEY POINTS:

- Evidence is conflicted as to whether LMA or ETT is superior in paediatric adenotonsillectomy
- LMA provides adequate airway protection but conversion to ETT is required in up to 16% of cases with the lowest rates of conversion quoted as <1%
- LMA can impair surgical access and LMA failure is higher in younger patients and those requiring controlled ventilation

REVIEW OF EVIDENCE

The aims of anaesthesia for adenotonsillectomy surgery are to protect the airway, maintain adequate ventilation and oxygenation whilst maintaining good surgical conditions. As surgery involves a “shared airway”, the use of Endotracheal Tubes (ETT) versus Laryngeal Mask Airways (LMA) has been much debated. The most recent national survey of anaesthetic practice in 2005 found that 87% of respondents used ETT for patients <3 years old and 79% used them for 3-16 year olds [1].

AIRWAY PROTECTION

Endotracheal intubation is generally viewed as the “gold standard” method of airway protection. However, the use of an ETT with throat pack does not fully protect from the entrance of blood into the trachea [2]. In a study of 204 paediatric patients undergoing adenotonsillectomy 3% of ETT patients and 6.7% of LMA patients had blood in their trachea on fiberoptic examination at the end of surgery [2]. Reassuringly, other studies have shown that contamination of the trachea when LMA is used is rarely occurs [3].

CONVERSION FROM LMA TO ETT

Deployment of the gag may lead to airway obstruction and circuit leak. This may be remedied by readjustment of the gag and/or LMA and intervention rates are quoted as high as 25% [4]. When examining the incidence of conversion from LMA to ETT, large retrospective studies, including one of 1126 patients have been able to demonstrate conversion rates as low as 0.5% [5]. In contrast a number of other studies have quoted conversion rates ranging as high as 16% [3,4,6]. Reasons cited for conversion include failure to place LMA and poor surgical access. Most commonly it is due to airway leak or obstruction due to kinking. LMA failure most commonly occurs at gag deployment [6] and although obstruction of the ETT may also occur, the chance of this is lower [3,6].

SURGICAL ACCESS

Hern *et al* found that significantly better surgical access and a greater weight of tonsillar tissue was excised when an ETT was used [7]. Reported failure rates of LMA due to inadequate surgical access ranges from 0% [2,5] to 7% [7,8].

PREDICTION OF FAILURE

Lalwani *et al* conducted a retrospective review of 1199, finding that younger age and controlled ventilation were associated with a greater chance of LMA failure. Size of LMA, obesity and larger tonsils do not appear to be associated with failure [3,4]. Some evidence suggests a lower failure rate with more experienced surgeons [4] and this was one of the main reasons cited by Gravningsbråten *et al* for their extremely low failure rate [5].

TIME

Evidence comparing length of surgery in LMA and ETT is conflicting and several, small (100-200 patients) randomised controlled studies have shown no significant difference [3,8,7]. Lalwani *et al* found LMA use shortened total time by 7 minutes [6] and LMA use was shown to be associated with both a more rapid extubation [3] and reduced time from the end of surgery until arrival in a recovery area [8].

COMPLICATIONS

The overall incidence of complications when either LMA or ETT are used in adenotonsillectomy is very low. The majority of studies have demonstrated no significant difference in respiratory or overall complications [2,3,8]. In contrast some evidence indicates a higher incidence of laryngospasm and peri-operative desaturations in the LMA group [6], although laryngospasm can still occur postoperatively in the ETT group. Retrospective reviews in centres almost exclusively using LMA for adenotonsillectomy found the incidence of desaturation and laryngospasm <1% with a delayed discharge rate of 0.1% [5]. Choice of airway does not appear to have a significant bearing on opioid requirements or the incidence of nausea and vomiting [8].

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