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LETTER TO THE EDITOR

- 1 Examining the life-cycle of the Coblator II device: Increases in paediatric post-tonsillectomy haemorrhage after six years of use

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Examining the life-cycle of the Coblator II device: Increases in paediatric post-tonsillectomy haemorrhage after six years of use

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Abstract

All paediatric tonsillectomies were examined from 2012 – 2019 at a single tertiary-referral institution, and all were performed by one of two paediatric otolaryngologists. One exclusively used the diathermy, the other exclusively used the Coblator II. Two Coblator units were purchased simultaneously in 2012 and not replaced. There was no significant difference in number of tonsillectomies performed (1298 *via* diathermy, 1221 *via* Coblator), nor in postoperative day of bleed, patient age, indication for procedure, and no patient had an underlying coagulopathy. The most common indication for tonsillectomy in both groups was sleep-disordered breathing. There was no significant difference in postoperative haemorrhage rates between groups for the first six years of the study (0%-1.4%/year). Years 7 and 8 saw the Coblator group haemorrhage rate significantly increase (0%-0.6% diathermy group *vs* 2%-3% Coblator group), though still fell within accepted rate of postoperative haemorrhage. The devices were then replaced, and the differences in haemorrhage disappeared. There appears to be a significant increase in paediatric post-tonsillectomy haemorrhage when using a Coblator device greater than six years old. This may suggest a useful lifespan for the Coblator II device.

Key Words: Tonsillectomy; Paediatric; Post-operative; Haemorrhage; Diathermy; Coblator

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Core Tip: There appears to be a significant increase in paediatric post-tonsillectomy haemorrhage when using a coblator device greater than six years old.

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TO THE EDITOR

Many techniques have been described for paediatric tonsillectomy, diathermy and Coblator each have long, successful, histories of safe outcomes[1,2]. As with any piece of technology or hardware, there is a potential useful life for the Coblator device after which the reliability becomes more questionable. Ochsner acquired two Coblator devices in January 2012 and used the same devices continuously (without replacement, with manufacturer-prescribed periodic preventative maintenance performed according to the manufacturer's protocol) continuously throughout the study period. We describe the experience of tonsillectomy bleeds by two paediatric otolaryngologists requiring return to theatre at a quaternary referral centre. One surgeon exclusively utilized diathermy, the other exclusively Coblator, all other practice parameters equivalent, from 2012–2019. For insurance reasons, all patients were seen within our health system for all elective and emergent complaints (Table 1).

2519 paediatric tonsillectomies were performed during the study period. 1298 by the diathermy surgeon, 1221 performed by the Coblator surgeon. There were no significant differences with respect to bleeding dyscrasias, medical co-morbidities, age, indications, day of bleed, or bleeds managed expectantly. No significant differences in postoperative haemorrhage were noted for the first five years (2012–2017: Diathermy surgeon: 0%-1.4%/year, Coblator surgeon: 0%-1.3%/year). Years six and seven revealed a significant ($P < 0.05$) increase in haemorrhage requiring return to theatre in the Coblator group (2018–2019 diathermy surgeon: 0%-0.6%/year, Coblator surgeon: 2%-3%/year). This resolved with replacement of the Coblator devices after 2019. As with any hardware device, there is presumably a useful lifespan. The device life for the Coblator II unit has not been previously reported in relation to paediatric tonsillectomy, though device maintenance for Coblator-based reusable wands have been discussed in the orthopaedic literature[3]. These orthopaedic reports are significantly different in that the complication was from the reusable wand, rather than the Coblator unit itself. The wand used in paediatric tonsillectomy is single-use, but each was connected to the same Coblator devices in our study. It appears that the rate of postoperative haemorrhage essentially doubles for Coblator tonsillectomy after six years of continued use. Even this elevated haemorrhage rate falls within the "acceptable" range for paediatric tonsillectomy, but is still significantly elevated when compared to younger devices. This could describe a "working life" for the Coblator device in paediatric tonsillectomy. Lower haemorrhage rates could potentially be maintained with regular device replacement[4].

Table 1 Postoperative haemorrhage rates by year and surgical technique

Year	Coblator actual (%)	Diathermy actual (%)	P value
2012	0-0	0-0	1.0
2013	1-0.7	2-1	0.77
2014	1-0.7	0-0	0.30
2015	2-1.4	1-0.5	0.38
2016	2-0.9	1-0.5	0.62
2017	1-0.6	2-1.3	0.51
2018	4-2	1-0.6	0.05
2019	5-3	0-0	0.03

FOOTNOTES

Author contributions: All authors participated in experimental design, patient care/protocol application, and manuscript preparation and review.

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