

Coblation Tonsillectomy: A Personal View

Tonsillectomy is our most common and important operation. This fact is underlined by the ongoing National Prospective Tonsillectomy Audit. After four years and over 1500 Coblation Tonsillectomies in our unit and seeing the technique spreading to other units with variable success, this article gives a personal view of the value of this technique.

Background

New ways of removing tonsils continue to appear as they have done since I started my career in ENT 20 years ago. The gold standard, dissection and ties has been challenged by diathermy, both unipolar and bipolar, laser, both for excision and ablation, ultrasonic scalpel and now coblation.

Each new method gains initial publicity and is tried by varying numbers of surgeons and in time its popularity levels out as surgeons decide whether to continue with the new method or return to their old familiar technique.

Dissection and ties, the method used by almost all surgeons 20 years ago is now used in only 10% of cases nationally. The speed and bloodless field provided by using bipolar diathermy forceps to dissect under the microscope attracted me in 1994 and this remained my method of choice until being shown bipolar scissors by the Ethicon representative in 1997. This instrument proved incredibly effective in performing a rapid, bloodless Tonsillectomy especially under microscopic vision, but after reports of thermal injuries to the tongue, the Medical Devices Agency advised against using this instrument in the mouth. The Department of Health's (DoH) introduction of disposable instruments for Tonsillectomy made the further use of this instrument untenable.

Almost simultaneously I came across coblation technology, which had been used for a few cases with the pharynx immersed in saline. Used this way, there seemed to be as much operative bleeding as found in standard dissection and visibility through a pharynx full of saline did not appear adequate. It was at least reported that there was a reduction in post-operative pain. I therefore tried the procedure with a different handpiece that delivered the necessary saline by dripping it directly onto the operating site with the nurse sucking away the spare saline and cellular debris. This proved bloodless and gave reduced post-operative pain^{1,2} but was still a little cumbersome with two staff holding instruments in the pharynx. The real breakthrough came when the manufacturers responded to my request for a handpiece that included both irrigation and suction channels. This made it possible to carry out a rapid, elegant and bloodless extracapsular Tonsillectomy with reduced post-operative pain levels. Analysis of a large series of Coblation Tonsillectomies in our department has shown a reduction in the secondary haemorrhage rate compared with Dissection Tonsillectomy plus bipolar haemostasis, the most common method in the United Kingdom at present.^{3,4} The early signs have certainly been promising.

Technique

Most people are now familiar with the technology behind this technique. Briefly, radiofrequency bipolar current excites sodium ions in the saline medium delivered to the operative site creating a plasma field, which splits tissue into molecules at a temperature of only 60-70 degrees centigrade. Used correctly this plasma field lyses the peri-tonsillar connective tissue, while a co-existing low power coagulation current coagulates vessels. No physical force is used. Any larger vessels are controlled easily, using the coagulation-only pedal. The flow of cooling saline occurs whenever either pedal is depressed. The technique works in all situations, including post-quinsy Tonsillectomies.

Why this technique results in reduced post-operative pain is unclear. The operating temperature is much less than in laser or conventional diathermy surgery and much less physical force is used in separating the tonsil from its bed than in conventional dissection.

Why there should be a reduction in secondary haemorrhage compared to dissection plus bipolar haemostasis is even less clear. As there is no physical disruption of the muscle layers there is less chance of encountering larger vessels. Any vessels encountered are coagulated with less surrounding tissue destruction and presumably less infection and lysis of clot.

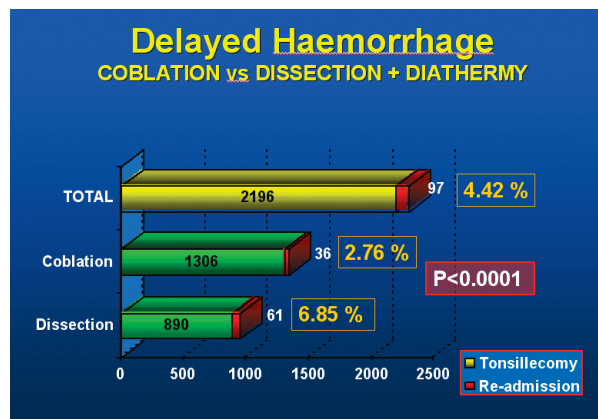


Figure 1: Delayed Haemorrhage. COBLATION vs DISSECTION + DIATHERMY.

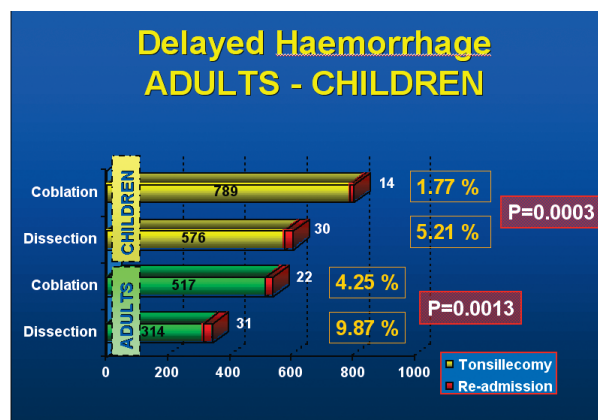


Figure 2: Delayed Haemorrhage. ADULTS - CHILDREN.

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Areas of Controversy

Learning the technique

In order to get good results with coblation, a completely new approach is needed. This is not a conventional Tonsillectomy done with a new tool. If the wand itself is used as a dissector, all sight of tissue planes will quickly disappear in a pool of blood and deeper tissues, rich in blood vessels will be entered. When this happens, most surgeons reach for the diathermy machine, immediately losing all the benefits of this technique. The moment conventional diathermy is introduced the procedure ceases to be a Coblation Tonsillectomy. Used more like a fine paint brush to apply the plasma field gently to the peritonsillar fibres, the wand effortlessly separates intact tonsil capsule from the underlying muscle, leaving the latter unviolated. Video presentations of the technique are usually met with disbelief and suggestions of editing. This is particularly so when a surgeon has already 'tried' the equipment unsupervised or without heeding the advice of the company representatives who usually attend initial trials. It is obviously difficult for a surgeon to accept advice on an operation he or she thinks they have done possibly thousands of times before, but the technique is so different from a standard Tonsillectomy that unless training is undertaken or advice heeded, the chances of getting it right by mistake are remote.

The need for formal, accredited training days is in the process of being addressed.

Some surgeons have found high rates of secondary haemorrhage in their early cases. There is of course a learning curve and its extent will vary from surgeon to surgeon. The figures accumulated in East Lancashire are so robust that it is pointless attributing poor results to the technique itself. If results are poor then the procedure is not being done well enough, and further advice, training and experience is needed. This can be a difficult pill to swallow when it relates to an operation we think we know so well.

Haemorrhage rates

Regarding haemorrhage rates, it is tempting to think that our own rates are lower than those quoted in the published evidence comparing coblation with dissection plus diathermy haemostasis (by far the commonest method in the UK).

Bleeding rates are always difficult to compare between departments due to differing definitions of what constitutes a bleed. In our unit, a patient with any history of bleeding however trivial is re-admitted, whatever method of Tonsillectomy has been used. In some units, not all re-bleeds are admitted and counted and some units only quote the numbers of patients transfused or taken back to theatre. Rates of secondary haemorrhage for electro dissection in adults as high as 24% have been published⁵ and it appears that in general, rates are higher than we would like to believe. The only way to compare with our published rates is to look at one's own figures and check if the same definitions are being used. The current National Audit records re-admissions but does not record how the decision to re-admit is reached, which is a weakness, but one that cannot be corrected at this stage.

Conclusion

The experience gained with Coblation Tonsillectomy in East Lancashire over the past four years in over 1500 patients has convinced us that this technique has a lot to offer patients in terms of reduced post-operative pain and bleeding. If the DoH ever re-introduces disposable instruments, it is compliant with that process. Only a gag, Luc's forceps and some sort of pillar retractor are needed in addition to the wand.

The drawbacks currently include the need to learn this technique properly, preferably after seeing the procedure performed live. Otherwise some surgeons will continue to obtain sub-optimal results and what is to us a delightful technique may again attract negative publicity. That would be a great shame for both surgeons and patients.

References

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Competing Interests:

Mr Michael Timms has received financial support from Arthrocare to travel in the UK and abroad to speak at meetings and to teach the surgical technique in live demonstrations.

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