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Coblation Tonsillectomy our experience

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Abstract:

Tonsillectomy happens to be the commonly performed surgery these days. Like any other surgical procedure this surgical procedure has also undergone tremendous technological changes. One such evolving change happens to be coblation tonsillectomy. Coblation technology is actually an offshoot of radiofrequency surgery. This technique involves passing radiofrequency energy through a conductive medium like isotonic sodium chloride or potassium chloride solution. This produces a plasma field which is composed of sodium and hydroxyl ions which ablates tissue. This tissue ablation takes place at (60-70° C) which is much lower than that achieved during other electro surgical techniques (400 – 600° C). This article attempts to discuss the use of this technology to perform tonsillectomy with special emphasis on sharing our experience with the system. This study involves critical appraisal of 25 coblation tonsillectomy surgeries performed at Stanley Medical college during the year 2013.

Introduction:

Tonsillectomy still remains the commonly performed surgical procedure. Surgical technique of tonsillectomy has undergone rapid evolution since the time of Celsus 30 BC who is credited with the first documented tonsillectomy procedure. Hook and knife method [1] performed by Aetius of Amida during 6th century shoud be considered as the first scientific attempt at removing tonsils. Paul of Aegina used forceps to completely extripate tonsils. This laid the foundation for tonsil guillotine. George Earnest Waugh of England was the first to use careful dissection method to remove the tonsil. He is also credited with the design of Waugh's tenaculum forceps which he used to dissect tonsil out of its bed (1909). Innovations that took place like the use of diathermy, harmonic scalpel, debrider were meant to reduce the operating time and bleeding during the procedure.

Currently coblation is being attempted to remove tonsillar tissue. This process was invented by Philip E Eggers and Hira V Thapliyal in 1999. Coblation tonsillectomy received FDA approval in 2001. [3]

Advantages of coblation tonsillectomy:

1. Less bleeding
2. Preservation of capsule is possible if done under magnification. If capsule is preserved there is less post operative pain
3. Tonsillar reduction surgeries can be performed in young children without compromising the immunological function of the lymphoid tissue

The technology:

Coblation involves passing a radiofrequency bipolar electrical current at a much lower frequency than that of standard bipolar diathermy, through a medium of normal saline which results in the production of plasma field of sodium ions. These ions breaksdown intercellular bands and in effect vaporize tissue at a temperature of only 60degrees c. The presence of saline helps to limit the amount of heat delivered to the surrounding structures and hence reduces collateral tissue damage and causes less post op pain. This is truely a bipolar system and does not need earth pad.

Methadology:

This study involves 25 patients who underwent coblation tonsillectomy. They were compared with patients who underwent cold steel tonsillectomy. This is a retrospective study involving 25 patients who underwent coblation tonsillectomy by a single surgeon (the author). The results were compared with that of cold steel tonsillectomy surgery performed by the same surgeon.

Selection criteria:

1. Random selection of patients by draw of lots

2. Children of the age group between 5-10 constituted the subjects of study

3. This study involved 50 patients out of whom 25 underwent coblation tonsillectomy while the rest underwent conventional cold steel tonsillectomy.

Data taken for analysis include:

1. Age

2. Amount of blood loss

3. Pain score

4. Post operative bleeding

Follow up was preformed by a second surgeon who did not know what procedure was followed during tonsillectomy. Each of these patients were asked to fill up a questionaire which cotained specific questions relating to the time taken for them to return back to normal life.

Statistical tools were not used to analyze the data because the study number was small.

Results:

Total number of cases taken up for study = 50

Number of patients who underwent coblation tonsillectomy = 25

Number of patients who underwent conventional cold steel tonsillectomy = 25

Average Age distribution of patients who underwent coblation tonsillectomy was = 7.16

Average Age distribution of patients who underwent conventional cold steel tonsillectomy = 7.2

Age distribution between the two study categories were more or less similar.

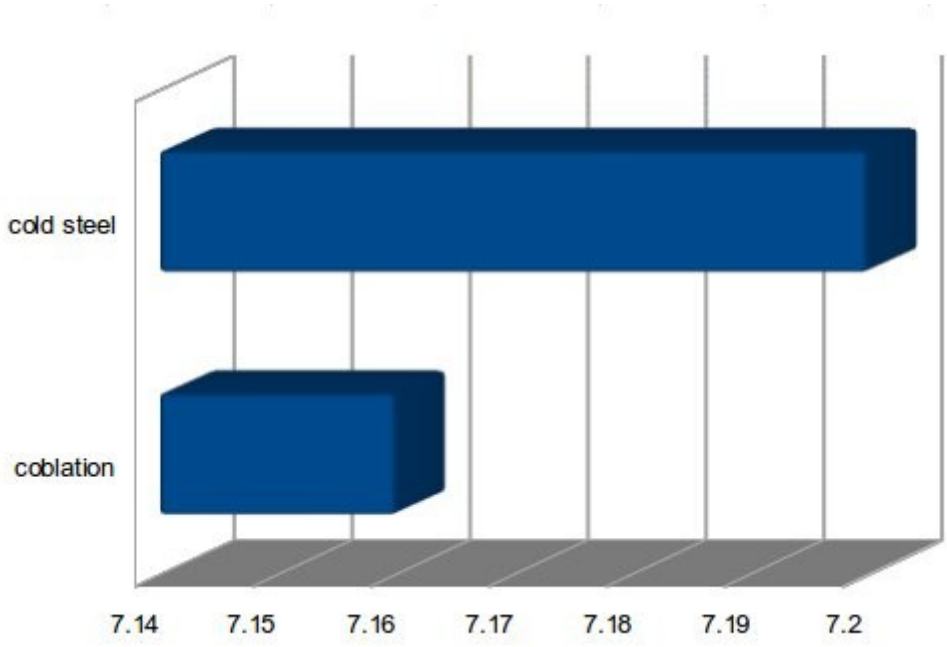


Figure showing age distribution between two study groups

Assessment of blood loss during these two procedures:

Cotton balls and gauze planned to be used during surgery should be carefully weighed before autoclaving. Used cotton and gauze should be weighed and the difference in weight is an assessment of blood contained in them. The difference in weight can be converted into milliliters by dividing the difference in weight by specific gravity (1.055). [4]

Saline taken in the bowl is measured and kept at 150 ml. This volume is used to keep the suction tube unclogged. This volume should be subtracted from the volume of blood inside the suction bottle. This volume added to the volume of blood loss estimated from cotton and gauze gives the volume of blood loss during the procedure.

All patients were premedicated with injection atropine which helped in reducing normal salivary secretions. Oral cavities of these patients were cleaned dry using gauze before the start of procedure.

Average blood loss of these patients was:

Coblation tonsillectomy = 86 ml

Cold steel tonsillectomy = 90 ml

These values indicate that there was no appreciable difference in blood loss between these two groups.

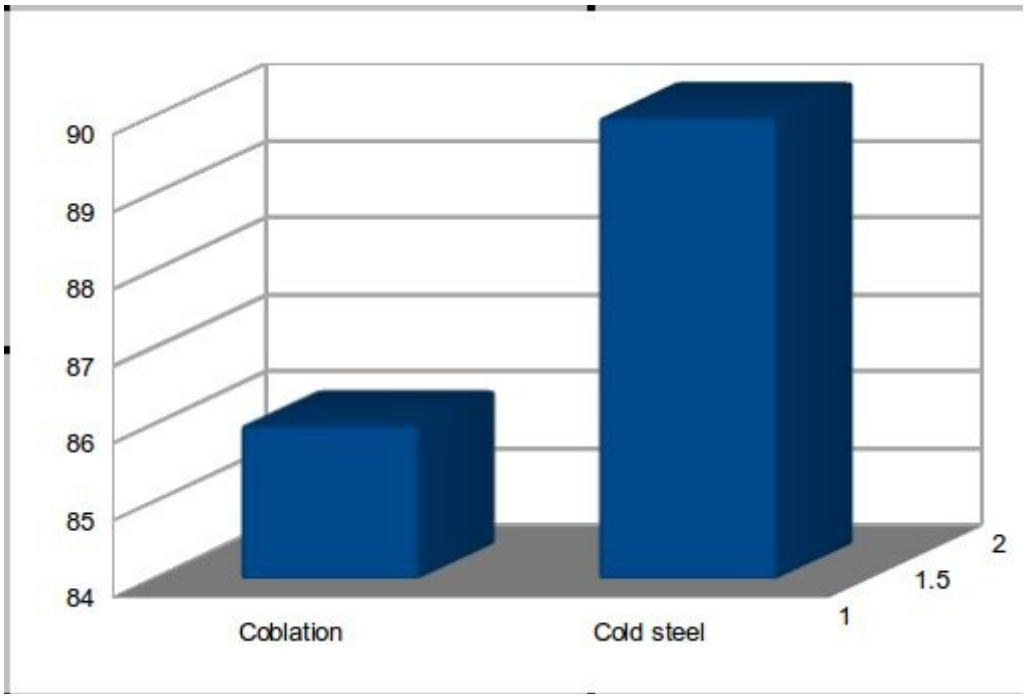


Figure showing comparison of blood loss between coblation and cold steel tonsillectomy groups

Pain score:

Pain score was calculated using Wong-Baker FACES Pain Rating scale. One child of age 3 who underwent tonsillectomy was excluded from the study since the response was unreliable.

The child is shown image containing 6 faces and is asked to choose which best describes his / her current feeling.

Coblation tonsillectomy group:

1. 6 patients choose image 2

2. 10 patients choose image 3

3. 8 patients choose image 4

1 patient was excluded since the child was 3 years old

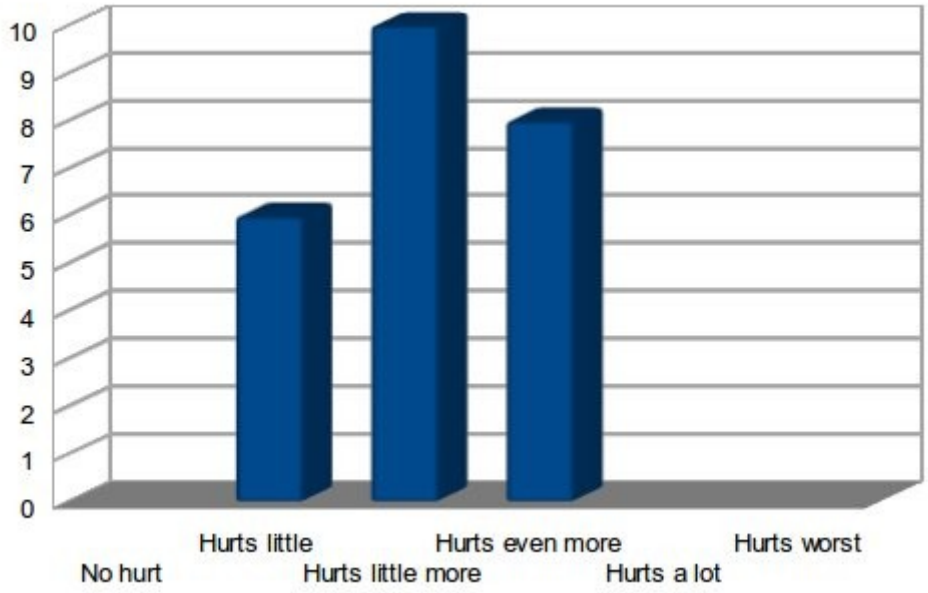
Cold steel tonsillectomy group:

1. 10 patients choose image 5

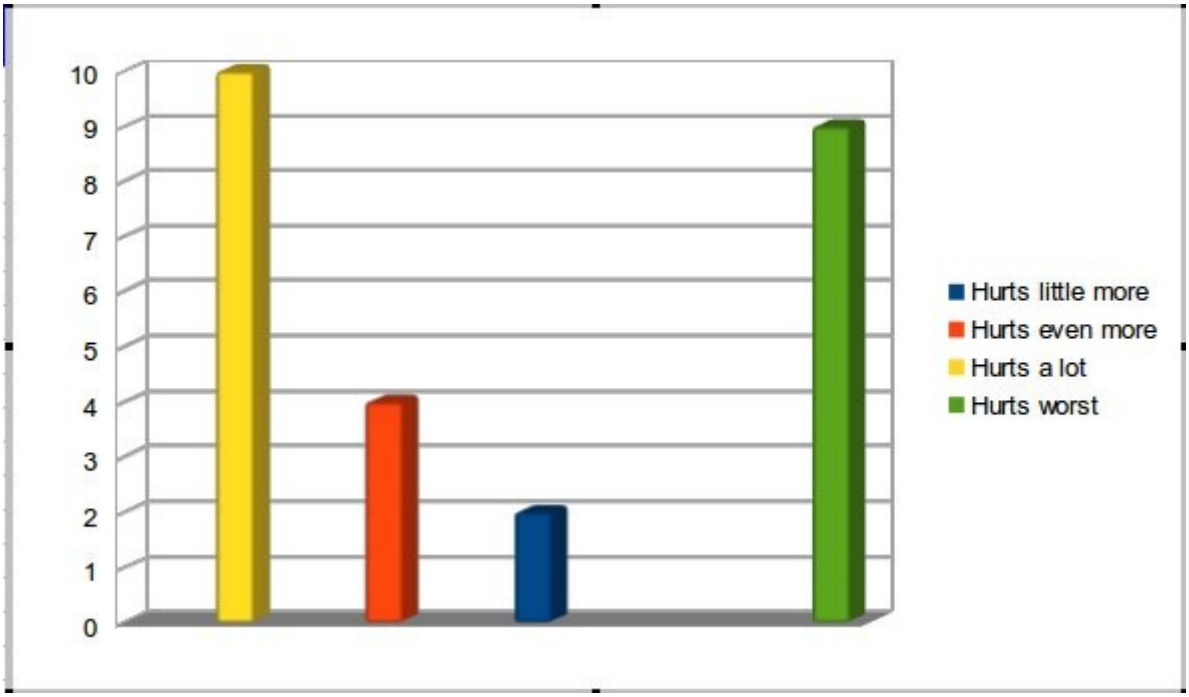
2. 4 patients choose image 4

3. 2 patients choose image 3

4. 9 patients choose image 6



Pain score in coblation group



Pain score in cold steel tonsillectomy group

Pain scores were found to be rather high in patients who under went cold steel tonsillectomy. This could be attributed to the extracapsular dissection which is done in coblation. Leaving behind tonsillar capsule has been postulated to reduce pain because there is less muscle exposure and irritation. Pain due to tonsillectomy has been attributed due to pharyngeal muscle spasm which is commonly seen when the muscle fibers are exposed.

Post operative bleeding:

Our study did not show any post operative bleeding in the cold steel tonsillectomy group. One patient belonging to coblation group developed secondary bleeding on the 8th day following surgery. Patient recovered on being treated with antibiotics [5]. Noon et al in their study have reported a greater incidence of post op bleeding in patients who have undergone coblation tonsillectomy. [6] They attributed this to the formation of healthy granulation tissue in the tonsillar fossa which had a tendency to bleed even on trivial trauma.

Discussion:

Coblation tonsillectomy is a recent innovation. It has evoked a lot of curiosity among otolaryngologists. Tonsillectomy has been performed commonly worldwide. [7]

Experience with coblation is quite recent. More and more literature is being generated world wide by people using this technology. Even though this study is limited by the number of patients studied, it gives a clear pointer to one aspect i.e. coblation tonsillectomy causes less post operative pain when compared to conventional cold steel procedure. This is due to the fact that tonsillectomy

using this procedure is extracapsular. Debulking of enlarged tonsils can also be performed preserving the immunological functions of the tonsils. This study showed no evidence of lesser post operative bleeding between the two groups under study.

Conclusion:

Coblation is a promising technology for otolaryngological use. Major advantage the author noticed while performing tonsillectomy is reduced post operative pain scores. Patients started eating with very little discomfort following surgery. A more comprehesive study would throw more light on this technology.

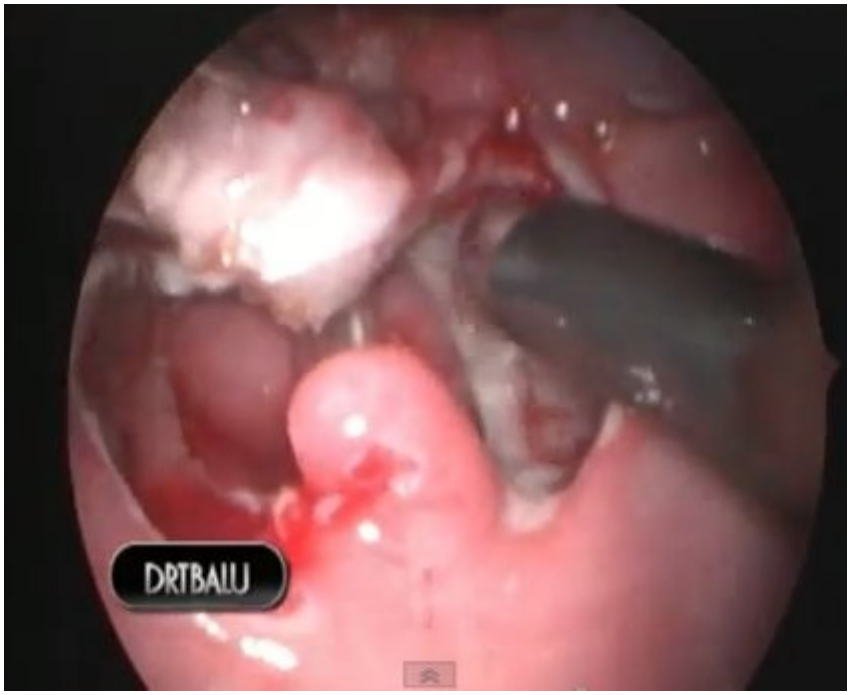


Figure showing coblation tonsillectomy being performed

References:

1. Curten JM: The history of tonsil and adenoid surgery. Otology Clinics North America 1987;20:415.

2. Kaempel JA. On the origin of tonsillectomy and dissection method, Laryngoscope 2002 ; 112:1583-1586.

3. Temple RH, Timms MS. Paediatric coblation tonsillectomy. Int J Pediatr Otorhinolaryngol 2001; 61(3): 195-8.

4. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3227830/

5. Lee KC, Altenau MM, Barnes DR, Bernstein JM, Bi khazi NB, Brettscheider FA, et al. Incidence of complications for subtotal ionized field ablation of the tonsils. Otolaryngol Head Neck Surg 2002; 127(6): 531-8.

6. Noon AP, Hargreaves S. Increased post-operative haemorrhage seen in adult coblation tonsil lectomy. J Laryngol Otol 2003; 117(9): 704-6.

7. Mann DG, St GC, Scheiner E, Granoff D, Imber P, Mlynarczyk FA. Tonsillectomy--some like it hot. Laryngoscope 1984; 94(5 Pt 1): 677-9.