Original Research Paper

Volume - 7 | Issue - 5 | May - 2017 | ISSN - 2249-555X | IF : 4.894 | IC Value : 79.96

Dental Science

Newer Treatment in Obstructive sleep apnoea

Dr Rohan K Patel M.S. ENT; Senior Resident, B. J. Medical College, Ahmedabad.

Dr Aanjan R Patel MDS; Senior Lecturer, Ahmedabad Dental College, Ahmedabad.

ABSTRACT **Introduction:** Obstructive Sleep Apnoea (OSA) is a common condition which is associated with excessive daytime sleepiness. Coblation is a relatively new surgical technique that uses a radiofrequency electrical current that passes through a saline solution to dissect tissue at much lower temperatures. **Aim:** To evaluate the effectiveness of Coblation assisted surgeries in Obstructive Sleep Apnoea. **Methods:** This is a prospective cohort study of 30 patients carried out at Department of ENT and Head-Neck Surgery, B. J. Medical College and Civil Hospital, Ahmedabad. Among the all suspected cases of sleep apnoea, 30 patients diagnosed to have AHI >5 by Polysomnography and eventually underwent coblation assisted surgery. **Result:** Only 1 patient had minimal bleeding intra operative during tonsillectomy, which was easily controlled by coagulation mode of the coblation device. 1 patient had post-operative bleeding on 2nd post-operative day which was managed conservatively. **Conclusion:** Coblation is an advanced technology that combines gentle radiofrequency energy with natural saline which quickly and safely remove the tissue like tonsil and adenoid. Coblation offers the advantages of hemostasis with absence of charring while preserving the surrounding tissue in the surgical bed.

KEYWORDS :

Introduction: Obstructive Sleep Apnoea (OSA) is a common condition which is associated with excessive daytime sleepiness, increased risk of motor vehicle accidents, increased cardiovascular risk, neuropsychological impairment and increased impaired quality of life.[1,2]

Obstructive Sleep Apnoea (OSA) is the most common type of sleep apnoea and is caused by obstruction of the upper airway. According to American Academy of Sleep Medicine, Obstructive Sleep Apnoea Syndrome (OSAS) is characterized by recurrent episodes of partial or complete upper airway obstructions during sleep.[3]

Treatment of OSA ranges from weight reduction to CPAP and surgery. Various surgeries like tonsillectomy, adenoidectomy, UPPP, tongue channeling, turbinoplasty are suggested depending on pathology for the definitive treatment. A number of different techniques may be employed for this surgeries, including cold-dissection, guillotine, electrocautery (bipolar or monopolar), harmonic scalpel and laser.

Coblation is a relatively new surgical technique that uses a radiofrequency electrical current that passes through a saline solution to dissect tissue at much lower temperatures (60º-100ºC) than electrocautery (Parsons et al., 2006),[4] thereby theoretically reducing damage to healthy tissue and lowering pain (Mowatt et al., 2005).[5]

Aim: To evaluate the effectiveness of Coblation assisted surgeries in Obstructive Sleep Apnoea.

Materials & Methods: This is a prospective cohort study of 30 patients carried out at Department of ENT and Head-Neck Surgery, B. J. Medical College and Civil Hospital, Ahmedabad. Among the all suspected cases of sleep apnoea, 30 patients diagnosed to have AHI >5 by Polysomnography and eventually underwent coblation assisted surgery.

All the patients included in the study were explained about the purpose and use of the study and after their consent only they were included in the study. All the patients were evaluated in ENT OPD pre-operatively for history, general examination and ENT examination. Overnight polysomnography was done in all suspected cases of OSA by pulmonologist. Patients who had AHI >5 were investigated for routine blood and radiological examination if indicated.

All the patients were operated at ENT OT during period between September, 2013 to November, 2015 at Civil Hospital, Ahmedabad. Coblation assisted techniques were performed by The COBLATOR II Surgery System (Figure 15) manufactured by Arthrocare (now "Smith and Nephew).

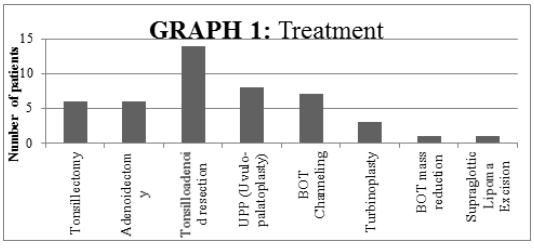
SURGICAL METHODS-

All the patients were operated under general anaesthesia and before definitive surgery **Drug Induced Sleep Endoscopy (DISE)** was performed to identify the level of obstruction.

Coblation procedure according to site of obstruction is carried out, which included **Turbinate Reduction, Tonsillectomy, Uvulopalatoplasty, Base of tongue channeling, Supraglottic lipoma excision & Adenoidectomy.**

Result: In the present study 30 Coblation assisted surgeries were done for the treatment of Obstructive Sleep Apnoea. All the cases were observed in prospective manner including their intra-operative and post-operative complication.

Patients were operated with coblation according to their level of pathology shown in **(graph 1)**. 14 patients were underwent tonsilloadenoid resection. 6 patients operated for adenoidectomy and 6 patients were operated for tonsillectomy. 3 patients were operated for turbinoplasty, 8 for UPP and 7 for base of thongue (BOT) channeling. BOT mass reduction and supraglottic lipoma, 1 for each treatment.



Only 1 patient had minimal bleeding intra operative during tonsillectomy, which was easily controlled by coagulation mode of the coblation device. 1 patient had post-operative bleeding on 2nd post-operative day which was managed conservatively hydrogen peroxide gargles and injection heamcoagulase. In the patients of BOT mass and laryngeal papilloma complete resection of lesion was not possible.(Table 1)

Complication	No. Patients (out of 30)	Percentage (%)
Intra-op bleeding	1	3.33
Post-op bleeding	1	3.33
Incomplete Surgery	2	6.66

Average stay of the all patients was near 2 days and that is because of all the patients were operated under general anesthesia. 1 patient was discharged on 4th post-operative day because of post-operative bleeding. The mean stay at the hospital of this group was 2.16 days.

All patients had epworth score below 10. The mean ESS of this study group at 6 months follow up was 6.33. In comparison with pre-operative ESS there was 50% reduction in Epworth sleeping scale.

Discussion: One large-scale trial performed to date, found a 1% hemorrhage rate[6] using the coblation technique. In our study, we found 6.66 % which is rather close to mentioned trial. Coblation assisted tonsillectomy can result in less blood loss and tissue damage, which may minimize the postoperative recovery period and earlier return to normal activity.

The present results demonstrate the ability of endoscopic coblation adenoidectomy to ensure complete and safe removal of adenoid tissue, due to endoscopic control and the small wand tip, which is able to reach the most cranial part of adenoid and the adenoid intranasal extension (impossible to access with the Beckmann curette).

In our study there was significant reduction in size of inferior turbinate at 6th month of follow up. In other study by Back LJ et al, at the 3-month follow-up of 26 patients, there was a statistically significant decrease in the nasal and overall symptom domains of the RSI were noted.

In this study there was no intra operative or post-operative complication found in base of tongue channeling. Significant reduction size of tongue was noted during 4 to 6 weeks of follow-up. In the patient of base of tongue mass there was significant reduction of tumor size during 6 months of follow-up. Coblation is a safe, effective and minimally invasive way to treat benign hyperplasia of tongue base under endoscopy.[7]

In the study of UPP, the median overall pain was significantly less in the Coblation group compared with the laser group. The early post-operative pain (first week) was less in the Coblation group compared with the laser group, but was not statistically significant. Both methods are adequate treatment options for snoring. The less painful recovery in Coblation palatoplasty promotes this surgical technique as the authors preferred choice for palate surgery.[8]

In our study there was only 1 case of laryngeal lesion i.e. supraglottic lipoma. There was significant reduction in size of the tumor but capsule of the tumor cannot be excised completely due to surgically difficult access of the site of origin. In these types of cases coblation offers a great safety during surgery by being targeted tool. The patient's recovery was uneventful, and no signs of edema were seen on endoscopic examination the following morning.

Conclusion: Obstructive sleep apnoea (OSA) is a type of breathing sleep disorder characterized by excessive snoring, day time sleeping, fatigue and disturbed sleep. It is an independent risk factor for hypertension, diabetes mellitus, cardiovascular diseases and stroke, leading to increased cardio-metabolic morbidity and mortality.

- Coblation is novel option of the treatment of OSA having many favorable outcomes comparing with conventional methods.
- Unlike traditional upper airway procedures, which remove tissue by burning, Coblation is an advanced technology that combines gentle radiofrequency energy with natural saline which quickly and safely remove the tissue like tonsil and adenoid.
- Coblation does not remove the tissue by heating or burning, leaving the healthy tissue surrounding the tissue intact. Coblation allows effective removal of sessile or bulky laryngeal lesions such as papilloma, tumors, and polyps.
- Coblation offers the advantages of hemostasis with absence of charring while preserving the surrounding tissue in the surgical bed.
- The ability to have one tool to ablate, coagulate, suction and irrigate make it an attractive technique to consider for resection of tissue.

There is further scope for research in treatment of OSA and to evaluate coblation and its effective role. More studies on large scale and for longer duration are required to judge the long term outcome of this treatment modality.

References:

1. Young T, Peppard PE, et al. Epidemiology of obstructive sleep apnea: a population health perspective.Am J Respir Crit Care Med. 2002;165:1217–39.
2. Jennum P, Riha RL. Epidemiology of sleep apnoea/hypopnoea syndrome and sleep-disordered breathing.Eur Respir J. 2009;33:907–14.
3. Sullivan CE, Issa FG, Berthon-Jones M, Eves L. Reversal of obstructive sleep apnoea by continuous positive airway pressure applied through the nares. Lancet 1981;1:862-5.
4. Parsons,S.P., Cordes,S.R., and Comer,B. (2006). Comparison of posttonsillectomy pain using the ultrasonic scalpel, coblator, and electrocautery. Otolaryngology-Head and Neck Surgery 134, 106-113.
5. Mowatt,G., Cook,J., Fraser,C., and Burr,J. Systematic review of the safety and efficacy of electrosurgery for tonsillectomy. 2005.
6. Lee KC, Altenau MM, Barnes DR, Bernstein JM, Bikhazi 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.
7. Zhang Q, Liu D. Lin Chung Er Bi Yan Hou Tou Jing Wai Ke Za Zhi. Coblation for benign hyperplasia of tongue base under endoscope. 2009 Jun;23(12):529-30, 534.
8. Magne Tvinnereim, Svetislav Mitik, Rolf K. Hansen. Plasma Radiofrequency Preceded by Pressure Recording Enhances Success for Treating Sleep-Related Breathing Disorders. Laryngoscope. 2007;117:731-736.