

Uvulopalatopharyngoplasty: A Surgical Treatment of Obstructive Sleep Apnoea (OSA)

O.A. Lasisi¹ MBChB, FWACS, FMCORL, A.A. Sanusi² MBBS, FMCA FWACS, S.B. Amutta³ MBBS, F.T. Awodesu⁴ MBChB, O. Baiyewu⁵ MBBS, FMCPsych, FWACP

¹Senior Lecturer/Consultant, Department Of Otorhinolaryngology

²Senior Lecturer/Consultant, Department Of Anaesthesia

³Senior Registrar, Department Of Otorhinolaryngology

⁴Senior Registrar, Department Of Anaesthesia

⁵Professor/Consultant, Department Of Psychiatry

University College Hospital, Ibadan, Nigeria.

Correspondence to: Dr. O.A. Lasisi, P.O. Box 22040, University of Ibadan, Ibadan, Nigeria.

Email: sakeemng@yahoo.com.

Snoring is now seen as one end of sleep-related breathing disorder resulting ultimately in obstructive sleep apnea. Uvulopalatopharyngoplasty (UPPP) is the first surgical procedure specifically designed to alleviate the abnormalities, although the use of laser appears to be the new trend. We present a case of Obstructive Sleep Apnoea (OSA) in an overweight young adult male which was corrected with the traditional UPPP. This paper also highlights the role of high index of suspicion and meticulous clinical decision making in the absence of sophisticated sleep studies.

Introduction

Obstructive sleep apnoea (OSA) is defined as the presence of 30 or more apnoeic episodes in a 7 hour of sleep or apnoeic index greater than 5 per hour, with persistent respiratory effort^{1,2,3}. Estimated prevalence rate is 2% in women and 4% in men in the U.S.A³.

Snoring is the noise produced during sleep as a result of partial upper airways obstruction¹. It occurs in all age groups, but in general, 10% of men under the age of 30 years and 60% over 60 years snore¹. It is reported in 24% of men and 14% of women among Italians. OSA is reported in 0.3% of men in the 35 – 65 years age group in the U.S.A^{2,3}.

The aetiopathology of OSA is poorly understood. The peak of presentation in children is about the age of five years and this is attributed to lymphoid hyperplasia involving the Waldeyer's ring⁴. The documented risk factors for OSA are obesity with body weight greater than 15% of the ideal, male sex, craniofacial skeletal abnormalities and adenotonsillar hypertrophy. Moreover, alcohol and sedatives are known to aggravate OSA^{3,5}

Therapy for snoring and obstructive sleep apnea can range from the simple and inexpensive life style changes, continuous positive airway

pressure to surgery. Surgery is a last resort option when snoring and apnoeic attacks are particularly severe⁵⁻⁸. Various procedures have been reported in the treatment of OSA. These include tonsillectomy, which is the commonest procedure^{1,4}. Others are adenoidectomy; advancement of the tongue or mandibular bones; surgical correction of septal deviation, turbinate hypertrophy or nasal polyps; somnoplasty, and life saving tracheostomy when other treatments have failed^{4,5,6}.

The multiplicity of these options may suggest that success is not full proof in many cases and this may be related to the aetiopathology being poorly understood. Uvulopalatoplasty (UPPP) as a surgical treatment of OSA is rarely indicated. It involves tonsillectomy, partial resection of the anterior and posterior faucial pillars, soft palate and uvula. It was done by dissection, which was the traditional method, although in recent times the use of laser (Laser assisted uvulopalatoplasty) is the trend. We present here the report of a 30-year-old man with OSA managed with UPPP by dissection in Nigeria.

Case Report

The patient was a 30-year-old unemployed Nigerian male with 9-years history of recurrent relapsing schizophrenia being managed in the psychiatric unit with anti-psychotic drugs including haloperidol, trifluoperazine and

chlorpromazine. The psychiatrists admitted him 4 weeks earlier for treatment of an acute episode of schizophrenia and disturbed sleep pattern. He was then referred to the otorhinolaryngology unit for progressively worsening snoring, nasal obstruction and apnoeic attacks during sleep. The airway obstruction had become so severe within 2 weeks that the patient was dependent on oropharyngeal airway for most of the day and throughout the night (figure1). He was diagnosed with systemic hypertension 18 months before presentation and the blood pressure was controlled with oral Nifedipine and Moduretic.

Examination revealed an obese man in

respiratory distress, sweating with noisy breathing that could be heard 20 metres from his bed. He was 1.9m in height and weighed 102kg with a body mass index (BMI) of 28.3kg/m².

Oral examination revealed an enlarged and elongated uvula, which flapped between the nasopharynx and oropharynx with respiratory efforts, moderately enlarged Tonsils and weak redundant soft palate and faucial pillars. Figure 1 shows Picture showing the patient in supine position with oropharyngeal airway insitu. Figure 2 shows Picture of the patient seen in the out-patient Clinic two weeks after surgery.

Figure 1: Picture showing the patient in supine position with oropharyngeal airway insitu.



BEFORE UVULOPALATOPHARYNGOPLASTY



POST UVULOPALATOPHARYNGOPLASTY

Figure 2.

Pre-operative Chest and neck radiographs, the electrocardiogram and full blood counts (FBC) were normal. The patient was prepared for UPPP with adequate counseling and consent for a tracheostomy if necessary. The anti hypertensive drugs and trifluoperazine were continued till the day of surgery. No premedication drug was administered. He was transported to the operating theatre in a semi-recumbent position. Preparations made for difficult airway management included availability of different sizes of endotracheal tubes, bougies, long blade laryngoscopes and a tracheostomy set.

Following administration of 0.6mg of Atropine, anaesthesia was induced using the inhalational technique with 50% oxygen (O₂) in nitrous oxide (N₂O) and incremental concentrations of halothane. Ventilation was manually checked and found adequate with no airway obstruction. Then the anaesthesia was deepened with intravenous Thiopentone 200mg and suxamethonium 150mg was administered to aid endotracheal intubation. The airway was secured with an 8.0mm orotracheal tube and the patient was manually ventilated via a Bain circuit with a gas flow rate of 8L/min. The anaesthesia was maintained with 1-2% Isoflurane and 50% O₂ in N₂O. Muscle relaxation was maintained with Pancuronium 7mg and pentazocine 60mg was administered for analgesia. Intraoperative monitoring included non-invasive blood pressure measurement, ECG and O₂ saturation.

Examination under anaesthesia (EUA) of the nose, nasopharynx and direct Laryngoscopy showed no narrowing or mass lesion in the nose and larynx. Examination of the preoperative oropharynx confirmed the oral findings above. The site of obstruction was thus confirmed clinically to be the oropharynx and the pathology was velopharyngeal incompetence. He had UPPP i.e. tonsillectomy, partial resection of the anterior posterior faucial pillars, soft palate and uvula. The upper parts of the anterior and posterior faucial pillars were repaired on each side.

Post operatively, the patient was able to breathe without the use of the oropharyngeal airway (Figure2). There was significant improvement of the snoring and complete cessation of the apnoeic episodes. He was discharged home for outpatient follow up on the 7th postoperative day.

Discussion

In our patient, velopharyngeal incompetence (VPI) was the main cause of snoring, while another contributing factor was the overweight (BMI=28.3). In VPI, obstruction occurs when the increased negative intraluminal pressure is greater than the ability of the dilator to hold the pharynx open². The resultant prolonged hypoxia and frequent arousal from sleep may present with multiple clinical problems such as systemic hypertension and social embarrassment as presented in this patient. Other problems are marital problems, impotence, daytime hypersomnolence, road traffic accident and cardiac arrhythmias^{2,8}.

UPPP as a surgical treatment for OSA was first reported by Ikematsu and later modified and popularized by Fugital². The goal of the surgery is to increase the cross sectional area of the velopharynx thus decreasing the airway resistance, eliminating the turbulent airflow and vibration responsible for collapse of the pharynx and snoring. The perioperative management of such patients should involve a high degree of clinical suspicion, control of airway throughout, judicious use of medications and appropriate monitoring¹⁰.

UPPP is not a widely practiced surgical option in the management of OSA because of its limited effectiveness and the multi-factorial cause of OSA. Predicting which patient will benefit from it is often difficult³. Identification of the level of obstruction is crucial to the outcome of the surgery; this often needs a sleep endoscopy study or a polysomnography¹¹ which was not done in this patient because it was not available in our hospital. We accept this as a drawback in the diagnosis of this case.

In spite of this, our clinical assessment was strongly suggestive of velopharyngeal incompetence, hence the indication for surgery. Conservative management was not considered because of the severity of snoring and airway obstruction which was confirmed by the far distance from which the snoring could be heard as well as dependence on oropharyngeal airway two weeks prior to surgery. Additional reasons are comorbidity factors such as poor mental health, possibility of non-compliance, particularly as the patient was on anti-psychotic drugs to control the

schizophrenia. Although there was pain postoperatively, other complications namely Velopharyngeal incompetence and hypernasal speech were not seen in the patient; however the patient is still being followed up.

The cessation of apnoea, independence of oropharyngeal airway and remarkable improvement in snoring postoperatively were the indices of the successful outcome of surgery (Figure 2). The reported success rate of UPPP in curing snoring is 80 – 90% and 50 – 60% for OSA².

In conclusion, UPPP as a surgical option for the treatment of OSA has been beneficial for our patient. Therefore, it remains a useful therapeutic option for patients with OSA, who satisfy the criteria.

References

1. D. Lowe, K. Rama chandram and A fresh: pre-operative polysomnography in the management of the snoring child. CME Bulletin otorhinolaryngology. Head and neck surgery 2002; 6 (1): 4-6.
2. Charles B.C. and Michael BP; Snoring and sleep Apnoea. In; Scott Brown's Rhinology. 6th Edition, Butterworths, London 1997.
3. Gnuechtel MM and Postma GN: Uvulopalatopharyngoplasty versus sequential uvuloplasty for surgical treatment of snoring. Mil Med 2000 Jun; 165(6):456-458.
4. Sullivan CF, Issa FG, Berthone-Jones M, Eves I. Reversal of obstructive sleep apnea by CPAP applied through the nares. Lancet 1981,1. 862-5.
5. Walker RP, Grigg-Dainbeger MM, Gapalsami C. Uvulopalatoplasty versus laser-assisted uvulopalatoplasty for the treatment of obstruction sleep apnea. Laryngoscope 1997, 107(1): 76-82.
6. Skatvedf O, Akre H, Godtlibsen OB. Continuous pressure measurements in the evaluation of patient for laser assisted uvulopalatoplasty. Eur. Arch. Otorhinolaryngol 1996, 253(7) 390-4.
7. Riger M, DiMartino E, Westhofan M. Conservative treatment in mild obstructive sleep apnea: comparison of theophylline and nasal continuous positive airway pressure ventilation. Laryngorhinootologie 2004, 83(5): 324-9.
8. Blum RH, McGovan FR Jr. Chronic upper airway obstruction and cardiac dysfunction; anatomy, pathophysiology and anaesthetic complications. Paediatr Anaesth 2004; 14(1): 75-83.
9. Scierski W, Namyslowski G, Urbmiel N, Misiolok M, Namyslowska K. and Pilch J. Complications after laser assisted uvulopalatoplasty in the treatment of snoring and obstructive sleep apnea syndrome. Otolaryngol Pol 2003, 57(5): 675-8.
10. Meoli AL, Rosen CL, Kristo D, Kohrman M, Gooneratne N, Aguillard Fayle R, Kramer R, Casey KR, Coleman J Jr; Clinical practice review committee; American Academy of sleep Medicine. Upper airway management of the adult Patient with obstructive sleep apnea in the perioperative period-avoiding complication. Sleep 2003 26(8): 1060-5.
11. Gami AS, Caples SM, Somers VK. Obesity and obstructive sleep apnea. Endocrinol Metab Clin North Am 2003; 32(4): 869-94.