lingual instrumentation to protect the lingual nerve. This group of practitioners advocate the raising of a buccal muco-periosteal flap with removal of only buccal bone along with sectioning of the lower third molar tooth to allow its removal.

The above technique is suitable for simple teeth extracted under out-patient local anesthesia; however, for more difficult cases many surgeons still prefer to raise a lingual flap to allow insertion of an instrument to protect the lingual nerve. This has led to differences in opinion regarding which technique carries the lowest morbidity to the lingual nerve.

I consider that raising a wide tension-free lingual flap, which allows for the insertion of a wide metal retractor to protect the lingual nerve, does not increase lingual nerve morbidity. I will outline the surgical technique and present the results of a 20-year retrospective audit of the technique.

I hope that my session will stimulate debate about the differing surgical techniques and when it may be appropriate to use each technique. There is also a developing viewpoint that de-coronation of the impacted lower third molar may provide an even safer alternative method of treatment to either of the above methods.

References

Absi EG: Int J Oral Maxillofac Surg 22:149, 1993
Robinson PP: Br Dent J 180:456, 1996
Moss CE: Br J Oral Maxillofac Surg 37:255, 1999

The Effect of Injury and Protocols for Management

Alison R. Loescher, BDS, PhD, FDSRCS, MBChB, Sheffield, England

There are many different causes and mechanisms and lingual and inferior alveolar nerve injury. This talk will review the different types of mechanical injury that may occur to either the lingual or interior alveolar nerves during third molar removal, together with likely clinical sequelae. The effects and some common surgical medicaments — BIPP (bismuth iodoform paraffin paste), Surgicel (oxidized regenerated cellulose), Whitehead's varnish (compound iodoform paint) and Carnoy's solution (ethanol, chloroform and acetic acid) - on neural function will also be reported.

The majority of lingual and inferior alveolar nerve injuries result in a transient sensory disturbance but in some cases permanent paraesthesia, hypoesthesia or, even worse, dysesthesia can occur. Structural changes within the neuromas may play a role in the development of these persistent sensory disorders. The results of detailed light and electron microscopical studies that have examined lingual nerve neuromas removed from patients, and correlated the histological changes with the clinical symptoms, will be discussed.

Finally, the importance of early evaluation of the injury type and the subsequent monitoring of recovery will be outlined; together with algorithms for the management of both lingual and inferior alveolar nerve injuries.

References

Loescher AR and Robinson PP: British Journal & Oral and Maxillofacial Surgery 36; 327-332, 1998
Robinson PP, Loescher AR, Yates JM and Smith Git British Journal of Oral and Maxillofacial Surgery 42; 285-292, 2004.
Vora AR, Loescher AR, Boissonade FM and Robinson PP: Peripheral Nervous System. 9(4):200-8, 2004

The Results of Nerve Repair and the Management of Nerve Injury–Induced Pain

Peter P. Robinson, BDS, PhD, DSc, FDSRCS, FMedSci, Sheffield, England

There is good evidence to indicate that trigeminal nerve repair can improve the level of sensory recovery. In a prospective quantitative study of 53 patients who had lingual nerve repair, we found a significant improvement in the results of sensory testing, and patients reported that the procedure was worthwhile. However, the level of recovery was variable and never complete. Furthermore, the number of patients suffering from injury-induced pain was not reduced, although the level of the symptoms often declined. More recent observations on a group of 20 patients who had undergone inferior alveolar nerve decompression revealed significant improvements in sensation and reductions of dysesthesia, but the level of improvement was small.

In laboratory experiments, we have sought an explanation for the development of injury-induced pain (dysesthesia) in some patients. Damaged inferior alveolar and lingual nerve fibers developed spontaneous and mechanically-induced discharge and this was associated with an accumulation of neuropeptides, specific sodium channel sub-types, and nitric oxide in the damaged fibers. The application of corticosteroids to an experimental injury site decreased the mechanically-induced discharge, and carbamazepine reduced the spontaneous discharge in some axons. Studies on lingual nerve neuromas taken from patients undergoing nerve repair also revealed an accumulation of neuropeptides, as well as inflammatory and structural changes, but the presence of most of these features did not correlate directly with the patients reported symptoms.

Laboratory studies aimed at enhancing regeneration of damaged axons have had limited success. However, recent observations suggest that reducing scar formation at the site of nerve repair could enhance the outcome. Further laboratory studies are needed to allow the development of new therapeutic approaches that will enhance regeneration and prevent the development of dysesthesia.

References

Robinson PP, Loescher AR, Smith KG: Br J Oral Maxillofac Surg 38:255, 2000

Robinson PP, Loescher AR, Yates JM, et al: Br J Oral Maxillofac Surg 42:285, 2004

Robinson PP, Boissonade FM, Loescher AR, et al: J Orofac Pain 19:287, 2004

SYMPOSIUM ON PRACTICAL MANAGEMENT OF SLEEP-RELATED BREATHING DISORDERS

Presented on Friday, September 23, 2005, 8:00 am—10:00 am
Moderator: Bruce N. Epker, DDS, MSD, Weatherford, TX

Diagnostic Work-Up and Pathophysiology

J. David Johnson, Jr, DDS, Oak Ridge, TN

Obstructive sleep-disordered breathing (OSDB) is a spectrum of relatively common medical problems ranging from upper airway resistance syndrome (UARS) to hypopnea to apnea. UARS consists of frequent arousals in response to increased respiratory effort as a result of upper airway narrowing without overt apnea or hypopnea. Individuals with UARS are usually heavy snorers. Hypopnea is defined as a reduction of 25% of airflow followed by arousal or desaturation of greater than 2% or more. Obstructive apnea is the temporary cessation of airflow during sleep for ten seconds or more despite continued ventilatory effort.

Symptoms of OSDB include excessive daytime sleepiness; fatigue; snoring; apnea observed by bed partner; early morning and nocturnal headache; enuresis; depression; impairment of thinking, perception, and memory; and sexual impotence. Physical findings of OSDB include obesity; increased neck circumference; crowding of the upper airway structures; enlarged tonsils; nasal obstruction; retrognathia; hypertension; lower limb edema; and signs of cor pulmonale. Investigation reports for OSDB may include secondary polycythemia; respiratory failure; nocturnal cardiac arrhythmia; gastroesophageal reflux, and proteinuria.

Diagnostic workup of the OSDB patient should include a complete history and physical examination, nasopharyngoscopy, cephalometric radiography, and polysomnography. The oral and maxillofacial surgeon should understand the salient features of such a workup.

References

Johnson J, Boyd S: Obstructive sleep apnea: A case report. J Tenn Dental Assoc Fall:48, 2002

Bahamman A, Kryger M: Decision making in obstructive sleep-disordered breathing: Putting it all together. Clin Chest Med 19:87, 1998

Davila D: Medical considerations in surgery for sleep apnea. Oral Maxillofac Clin North Am 7:205, 1995

Comprehensive Snoring Management

N. Ray Lee, DDS, Newport News, VA

Snoring is the hallmark sign of the sleep disordered breathing. It is estimated that the incidence of snoring is between 20 and 25% of the general population. This percentage increases slightly in the elderly, however the importance of the respiratory event is controversial.

Comprehensive management of simple snoring involves surgical and nonsurgical modalities. The selection of the treatment modality is based upon the experience of the clinician and selection by the patient, given successful outcome data.

Various treatment options include oral appliance therapy, radiofrequency thermal ablation of the palate, laser assisted uvulopalatoplasty, laser assisted uvulopalatopharyngoplasty, the uvulopalatal flap, and the modified palatoplasty lateral inversion flap. These techniques in combination with weight loss therapy in the obese patient appear to be effective.

To date, there are no definitive clinical algorithms for technique selection. Successful outcome data maybe helpful in establishing clinical algorithms and should be a basis for technique selection.

Simple snoring compromise the vast majority of sleep disordered breathing patients. It is incumbent upon the oral and maxillofacial surgeon treating sleep disordered breathing to be knowledgeable in directing the course of simple snoring treatment. Successful treatment outcome can be rewarding for the oral and maxillofacial surgeon and quality of life enhancing for the patient.

References

Lowe AA, Oral appliances for sleep breathing disorders, *in* Kryer M, Roth T, Derment W (eds): Principles and Practice of Sleep Medicine (ed 3). Philadelphia, PA, Saunders, 2000, pp 929-939.

Powell NB, Riley RW, Troell RJ, et al: Radiofrequency volumetric reduction of the palate in subjects with sleep-disordered breathing. Chest 113:1163, 1998