anterior compartment pressures were elevated, this may have set the stage for the hypotensive anesthesia to decrease the perfusion of the compartment to below a level providing adequate perfusion, because his systolic and diastolic pressures were purposefully decreased intraoperatively, and at one point were significantly lower than desired. As mentioned earlier, the relationship between the induced hypotensive diastolic pressure and the potentially high compartment pressure in this patient's injured left lower extremity may have been perilously close, and could indeed account for the development of CS in this case.

In conclusion, we present an unusual complication of orthognathic surgery in which a patient developed CS in conjunction with hypotensive anesthesia for maxillomandibular advancement surgery to treat obstructive sleep apnea. Although this is clearly a very unusual occurrence, the fact that the morbidity is significant (and the condition sometimes fatal) in this and other reported cases would suggest that the oral and maxillofacial surgeon should have this problem on the list of possible causes of lower extremity abnormalities in the perioperative period.

Identification of risk factors preoperatively, such as a history of recent extremity trauma or exercise-induced pain, taking careful intraoperative preventative measures such as only using hypotension for those portions of the case where it truly is needed, and rapid response in case of acute lower leg pain will allow patients like ours to realize the benefits of our surgical procedures and minimize the risk of a complication that can produce long-term morbidity or potential mortality.

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A Case of Inferior Alveolar Nerve Entrapment in the Roots of a Partially Erupted Mandibular Third Molar

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Inferior alveolar nerve injury is one of the most feared complications of mandibular third molar surgery. A careful preoperative radiographic evaluation is mandatory to precisely define the relation between third molar roots and the inferior alveolar nerve.[1]

Usually only impacted third molars have strict relations with the inferior alveolar nerve.

Perforation of the lower third molar roots by the inferior alveolar nerve is an uncommon event, and only few reports exist in the international literature.[2-5] The aim of the present study is to report and discuss

a case in which the inferior alveolar nerve was entrapped between the roots of a partially erupted mandibular third molar.

Report of a Case

A 40-year-old woman was referred in September 2005 for extraction of both lower third molars. The orthopantomogram (Fig 1) showed that the left third molar was almost in a vertical position, and its roots were superimposed by the inferior alveolar nerve.

Computed tomography with the Dentascan program (Somatom multislice CT; Siemens IS, Milano, Italy) was therefore recommended to the patient. On ortho-radial scans (Fig 2), the inferior alveolar nerve appeared to run through the tooth roots, which were curved and clearly in contact with each other below the nerve; the buccal root was mesially directed and the lingual root was distally directed. Intraoral examination revealed a partial impaction of the tooth whose crown was partially visible.

Surgery was performed under local anesthesia with a mepivacaine block of the left inferior alveolar nerve and an infiltrative mepivacaine adjunctive injection with adrenaline. After the flap was elevated, a pericoronal ostectomy was performed to expose the root furcation for a complete crown separation and to allow easy mobilization of the 2 fragments (Fig 3), so that no pressure could be applied to the nerve during luxation.

Separate extraction of the 2 roots was therefore carried out. One root was unintentionally fractured at the nerve level during its delivering; the apical fragment of the root was gently luxated and then extracted by twisting it around the nerve, which was clearly visible during all root managing (Fig 4).

Neither subsequent problems with nerve sensitivity nor any other complications developed after surgery.

Discussion

Computed tomography is currently widely used to program third molar extraction[1] because it allows one to define not only the root morphology, tooth inclination, and tooth crown proximity to one mandibular side or to the other, but also, and above all, to explain relations between the inferior alveolar nerve and tooth roots.

FIGURE 1. Orthopantomogram shows the inferior alveolar nerve superimposed by the left third molar roots; at that level it makes a loop with an upper convexity.

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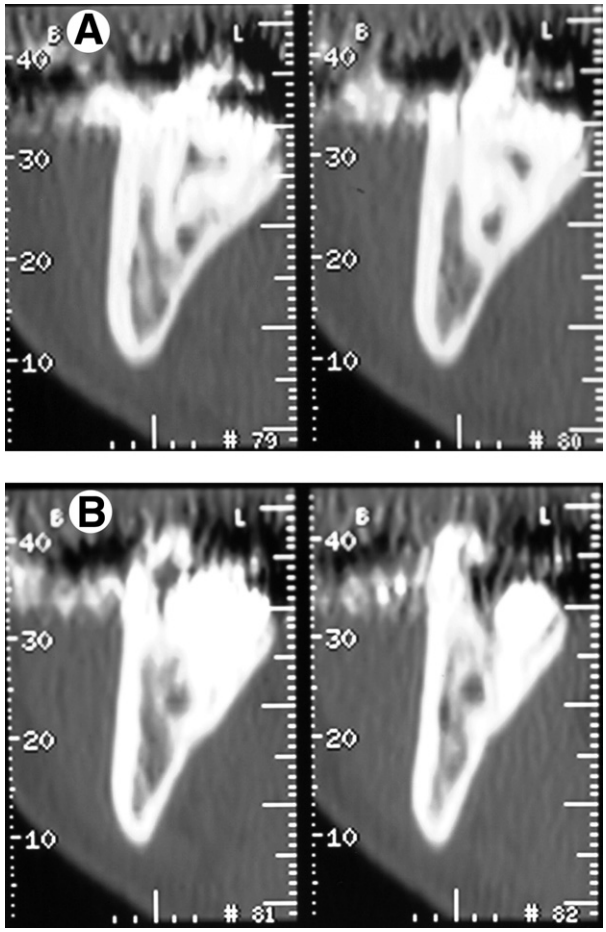

FIGURE 2. Orthoradial computed tomograms with Dentascan: (*A*) 79-80, (*B*) 81-82; the nerve clearly runs through third molar roots.

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This type of examination should therefore be performed when plane radiographs show that the roots are superimposed by the inferior alveolar nerve, to establish how the nerve runs in relation to the roots, not only in case of impacted lower third molars but also in normally erupted third molars. Actually, it allows discovery of the course of an anomalous nerve and therefore leads to choosing the best surgical technique to avoid nerve injury.

Some modifications of the routine surgical procedure have been proposed for performing the extraction when the inferior alveolar nerve passes through a foramen in the molar roots.

Walker[2] reported a case in which a thin lingual root was first amputated and then definitively separated

FIGURE 3. Intraoperative view: after mesiodistal tooth sectioning, the buccal half of the tooth is first elevated.

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from the greater buccal root before complete tooth extraction.

Howe and Poyton[3] suggested widely exposing the tooth by buccal bone removal and sectioning it at the level of the nerve trunk. Mishra[4] proposed creating a window on the buccal aspect of the root above the level of the nerve, through which the nerve is gently lifted out. Hosein Kalantar Motamedi[5] suggested first separating and extracting the tooth crown from an oval window created on the buccal aspect of the alveolar process and then sectioning the root trunk mesiodistally so the 2 fragments can be carefully removed.

Coronectomy,[6-8] in other words, intentional tooth root retention, has been alternatively proposed to completely avoid the surgical risk of nerve injury, although complications can subsequently occur[9] and, if removal is then necessary, the surgical dilemma remains.[5]

In the present case a simple crown separation was first carried out and a careful lever luxation then allowed delivery of the roots, 1 in 2 fragments, without nerve damage.

Why root perforation by the nerve occurs is really not clear, although the roots probably end their formation surrounding the nerve. *Nerve entrapment* is therefore a more appropriate term than *root perforation* for this condition.

This type of process can also explain the rarity of this feature and, above all, of nerve entrapment in the case of normally erupted third molars.

Actually, in the latter case, the nerve probably remains entrapped during root maturation and it therefore follows the roots during tooth movement toward the occlusal plane. It can therefore explain the present anomalous and unusual loop of the nerve with an upper convexity in relation to third molar roots. This loop made the surgeon suspicious of nerve entrapment through tooth roots, compelling him to prescribe computed tomography.

How root fusion occurs below the nerve is unclear, although it may be due to the high growing power of root apices.

Computed tomographic examinations do not always allow one to define whether the apices are really fused or only in contact with each other and, more importantly, if the contact area is wide.

In the present case, root apices were only in close contact with each other and therefore a simple vertical crown section was sufficient to gently separate one root from the other and to extract them independently.

It is possible to suggest that, if complete root separation does not occur after crown sectioning due to a real apical fusion, an attempt should be made to definitively separate the roots by a careful lever luxation, although Mishra[4] considered this procedure to be unsafe because the nerve can be injured by tooth fragments especially during their mobilization and lifting. However, if the extraction becomes very difficult because of root apex fractures below the inferior alveolar nerve, the fractured apical portions can be left in situ; in this case, the patient should be informed and a strict clinical and radiographic follow-up should be started, although inflammatory complications are reported to be very rare.[6,7,10]

It is possible to conclude that an anomalous nerve running should be suspected when plane radiographs show that the inferior alveolar nerve appears superimposed by third molar roots, especially if the tooth has normally or almost normally erupted.

In such a case computed tomography is mandatory to carefully assess root morphology and its relation to the inferior alveolar nerve.

FIGURE 4. The extracted tooth after reconstruction with red wax.

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Permanent iatrogenic injury, and the related legal implications, can be therefore prevented if a modified surgical technique is performed and an informed consent is obtained based on a complete preoperative evaluation.

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Bell's Palsy and Dental Infection: A Case Report and Possible Etiology

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Bell's palsy is the most common acute facial paralysis with unclear causes[1] (Sir Charles Bell, a 19th-century Scottish surgeon, was the first to describe the condition in 1821). It is idiopathic, mostly unilateral (<1% of cases are bilateral), and of sudden onset. The pathogenesis is unknown, and the incidence is about 23 per 100,000 persons annually,[2] affecting men and women equally at any age, but it commonly occurs between 15 and 60 years of age. The incidence of Bell's palsy appears to be slightly higher in persons of Japanese descent (30 per 100,000 persons).[3] The cause has been effectively shown to be (in cases formerly labeled as "idiopathic") viral[4] with associated ischemia and compression of the facial nerve in the narrow confines of its course through the temporal bone.[5] Herpes simplex virus type 1 (HSV-1) was identified by Burgess et al[6] in an elderly man who died 6 weeks after the onset of Bell's palsy. The polymerase chain reaction technique amplifies viral genomic sequences and has been used to identify HSV-1 in 11 of 14 cases of Bell's palsy that were surgically decompressed because of the severity of their syndromes.[6]

Therefore it can be stated that Bell's palsy comprises a subset of patients with facial nerve paralysis (FNP) that originates from a virus (HSV-1) reactivation. Although the triggers for reactivation of HSV-1 from the dormant state are not known, systemic immunodeficiency (diabetes, human immunodeficiency virus, and others), stress, lack of sleep, minor illness, upper respiratory infection, autoimmune syndromes, and pregnancy (among other factors) appear to play a significant role in outbreaks of this condition.[6-9] Three quarters of peripheral facial nerve palsy cases are of this type ("idiopathic"), and one quarter are secondary, with possible causes including trauma, surgery, local infections, tumor, and stroke.[7,10]

Peripheral Bell's palsy (lower motor neuron paresis or paralysis) results from a typical peripheral injury to the facial (seventh) nerve at the level of its emergence from the narrow bony (fallopian) canal at the stylomastoid foramen of the cranium. It usually affects all 5 voluntary motor branches of the facial nerve: tem-

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