

Lingual mandibular osteonecrosis after dental impressions for orthodontic study models

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A 43-year-old man sought orthodontic treatment to close anterior diastemas. During the impression procedure for routine documentation, the orthodontic assistant exerted excessive pressure on the metallic tray; 2 days later, the patient reported the detachment of a small piece of mucosa overlying the mylohyoid crest and was referred to a maxillofacial surgeon with a diagnosis of lingual mandibular osteonecrosis. The etiology of bony osteonecrosis is discussed, together with the anatomic variations that can be present in the basal bone and that must be carefully checked before an impression is taken. (*Am J Orthod Dentofacial Orthop* 2018;153:445-8)

Lingual mandibular osteonecrosis is a clinical condition frequently associated with the use of bisphosphonates, antiresorptive medications (denosumab), and antiangiogenic therapies, as stated by the American Association of Oral and Maxillofacial Surgeons in a position paper on medication-related osteonecrosis of the jaw, updated 2014.¹

It has been observed that, anatomically, these lesions are found more often in the mandible than in the maxilla (2:1 ratio), usually in areas where a thin mucosa overlies bony prominences (ie, tori, bony exostoses, mylohyoid ridge),²⁻⁴ and that they occur spontaneously, after damage to the mucous membrane, or after routine dental extractions, a clinical procedure that can occasionally cause the formation of a bony sequestration in the jaws.⁵⁻⁷

This case report describes the onset of lingual mandibular osteonecrosis in a 43-year-old man after dental impressions were taken for orthodontic study models.

DIAGNOSIS AND ETIOLOGY

A 43-year-old man seeking improvement of his smile was referred by his general dentist to an orthodontist (C.C.) at his private practice in Almere in the Netherlands, to correct his malocclusion and allow for the placement of 6 veneers in the maxillary anterior area. He had a dental Class I malocclusion, mild skeletal Class III pattern, reduced overjet and overbite, and anterior spacing (Fig 1).

The patient was a nonsmoker with asthma and high blood pressure, and had undergone gastric bypass surgery in 2013 for the treatment of obesity. After the bypass surgery, he began a daily regimen of pantoprazol (antacid) and hydrochlorothiazide (diuretic). His weight was normal, and he regularly played sports.

Before the orthodontic consultation, the patient was regularly followed by a dental hygienist who controlled plaque and gingival inflammation and performed scaling and root planing in the area of the maxillary first and second molars and the mandibular right first and second molars. After 6 months of periodontal health and stability, he received a full-mouth bleeding score of less than 15% and a full-mouth plaque score of less than 15% and was deemed eligible for the orthodontic treatment.⁸

During the initial orthodontic consultation, intraoral and extraoral photos were taken, together with an orthopantomogram (Fig 2), a lateral telerradiograph (Fig 3), and alginate impressions for the orthodontic study models.

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All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest, and none were reported.

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Fig 1. Intraoral images of the patient.



Fig 2. Orthopantomogram.

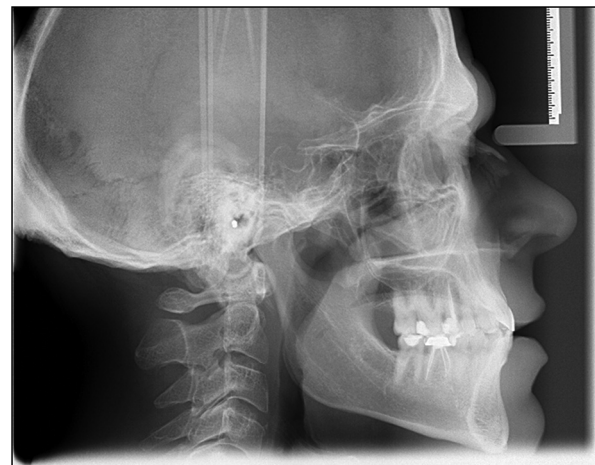


Fig 3. Lateral head film.

The largest metallic trays were used for the impression (size 6 X-Large Upper [navy] and Lower [navy] Perma-Lock Stainless Steel Impression Trays; ASA DENTAL, Jericho, NY), but the lower tray was not sufficiently expanded or well adapted to the patient's anatomy; moreover, the assistant who took the impression had a robust physique and exerted excessive pressure during the procedure, causing pain in the area of the patient's mylohyoid ridge.

Two days later, the patient reported the detachment of a piece of mucosa overlying the mylohyoid ridge, exposure of the underlying bone (Fig 4), pain, and a burning sensation, especially in association with certain foods (bread, spicy foods). Therefore, he was referred to the Department of Maxillofacial Surgery at Academisch Medisch Centrum in Amsterdam, The Netherlands for treatment of lingual mandibular osteonecrosis.

TREATMENT PLAN

The treatment protocol called for surgical debridement of the area, removal of the necrotic bone, and allowing the site to bleed to encourage rapid onset of the healing process.⁶⁻⁹

Surgical removal of the exposed and avascular bone was performed 2 weeks after the onset of osteonecrosis, at the initial maxillofacial consultation, to reduce the patient's discomfort. Surgical closure of the mucosa was unnecessary, since the second-intention healing process (characterized by the formation of granulation tissue and subsequent reepithelialization) occurred rapidly.¹⁰ Amoxicillin (500 mg; 3 times daily for 2 weeks) was

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