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AIRWAY MANAGEMENT OF A PATIENT WITH AN ACUTE FLOOR OF THE MOUTH HEMATOMA AFTER DENTAL IMPLANT SURGERY IN THE LOWER JAW

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☐ **Abstract—Background: Over the last decades, dental implants have become increasingly popular in the prosthetic rehabilitation of patients. This has subsequently led to an increase of perioperative complications. Obstruction of the airway as a result of a floor of mouth hematoma after dental implant surgery is a rare but life-threatening complication. Case Report: A 62-year-old man presented to the emergency department with a compromised airway caused by a hematoma in the floor of the mouth that occurred during dental implant surgery in the edentulous anterior mandible. Computed tomography angiography images revealed an elevation of the floor of mouth with subsequent occlusion of the airway. In addition, a perforation of the lingual mandibular cortical plate was observed that was caused by two malpositioned dental implants. Awake fiberoptic intubation was immediately performed, the two malpositioned dental implants were subsequently removed, and the patient was extubated after 3 days. Why Should an Emergency Physician Be Aware of This?: Perforation of the lingual mandibular cortical plate during dental implant surgery can lead to life-threatening bleeding in the floor of the mouth. This condition can be successfully treated by awake fiberoptic intubation and, if necessary, the malpositioned dental implants can be subsequently removed.** © **2016 Elsevier Inc. All rights reserved.**

☐ **Keywords—acute floor of mouth hematoma; airway management; airway obstruction; dental implant complications**

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INTRODUCTION

Dental implant surgery is a clinically well documented and validated treatment procedure in dentistry and is considered to be a safe surgical procedure with overall high success rates (1). Nevertheless, surgical complications and failures do occur, some of which can be life-threatening. Many implant complications can arise before dental implant osseointegration and are often a result of intraoperative or short-term postoperative problems (2). Typical early complications are hemorrhages, damage to adjacent teeth, neurosensory disturbances, jaw fractures, and maxillary sinus violations. Many of the surgical complications can be managed during the surgical procedure without causing long-term damage to the patient. However, in some cases, life-threatening complications may occur during routine dental implant surgery, especially in the lower jaw because of the proximity of the surgical site to the neighboring blood vessels.

CASE REPORT

A 62-year-old man presented at our emergency department with extensive bleeding into the submandibular and sublingual space, resulting in a life-threatening acute airway obstruction. Two dental implants had been inserted in the edentulous anterior mandible in a private

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dental practice approximately 30 minutes before he arrived.

The clinical examination revealed severe bleeding and formation of a massive hematoma in the floor of mouth resulting in a superior and posterior displacement of the tongue and floor of the mouth. A computed tomography angiography scan revealed a clear perforation of two dental implants through the lingual cortical plate of the anterior mandible into the lingual soft tissues (Figure 1). Despite the obstructed airway, the patient could initially still breathe spontaneously sitting in an upright position. No further adjunct therapies were necessary. However, the continuous spread of blood into the floor of mouth (Figure 2) eventually induced progressive respiratory distress, and immediate awake fiberoptic intubation was performed in the emergency department. In addition, a trauma surgeon was on standby to perform a cricothyrotomy if necessary.

First, the nasopharynx was anesthetized using 2% lidocaine spray that was administered through both nostrils. The tongue and tongue base were nebulized with a 10% lidocaine spray, using a spatula to keep the enlarged tongue down. A flexible fiberoptic bronchoscope (FOB) was prepared with a 7.0-mm endotracheal tube (ET) and introduced through the nasopharynx. However, passing the vocal cords was problematic because of a narrow supraglottic space. The patient experienced a coughing reflex, so supplemental spray-as-you-go lidocaine 2% was administrated through the FOB to anesthetize the larynx. The fourth attempt to pass the vocal cords was successful and the tube was easily inserted into the trachea. After visual confirmation of correct placement of the ET and detection of CO_2 by capnography, general anesthesia was induced with fentanyl, propofol, and rocuronium. The patient was then transported to the intensive care unit for further treatment and mechanical ventilation. After the patient was stabilized, the malpositioned dental implants were easily removed with extraction forceps. Removal of these implants was necessary for prosthetic reasons because the malpositioned implants could not act as retentive appliances for a full denture. The patient was successfully extubated after 3 days.

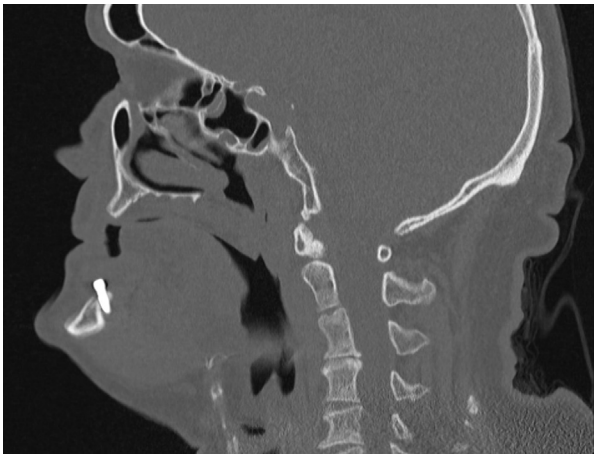

Figure 1. Computed tomography scan (sagittal view) revealing obstruction of the upper airway and a malposition of the dental implant, perforating the lingual cortical plate of the mandible.

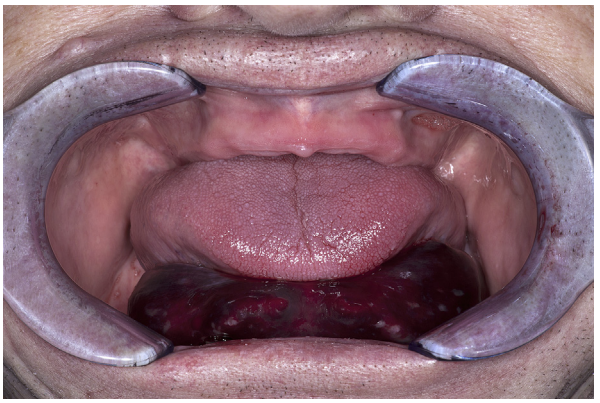

Figure 2. Hematoma of the floor of mouth with superior and posterior displacement of the tongue causing obstruction of the upper airway.

DISCUSSION

In this case report, a man who had undergone dental implant surgery in the edentulous anterior mandible developed severe arterial bleeding. The bleeding was caused by an accidental perforation of the lingual cortical plate of the lower jaw. The arterial blood supply of the floor of mouth is formed by an anastomosis of the sublingual and submental arteries that lie in the proximity of the canine teeth. This area (between the two mental foramina in the mandible) is commonly used to place two dental implants in completely edentulous patients. The sublingual artery arises from the lingual artery and is found coronal to the mylohyoid muscle. The submental artery is a branch of the facial artery (3).

Clinicians performing dental implant surgery should have a thorough understanding of the vascular structures in the surgical field and constantly be aware of circumstances that can induce iatrogenic vascular injuries. Apart from drilling directly into the vessels, severe bleeding can occur because of a lack of proper soft tissue protection in the lower jaw, and clinicians should therefore make every attempt to avoid lingual cortical plate perforations (4).

In this study, the “difficult airway algorithm” published by the American Society of Anesthesiologists was used to define the best airway management strategy (Figure 3) (5). In this context, awake fiberoptic intubation