includes segmental resection with complete debridement of all nonviable tissue and subsequent reconstruction,[3] typically with vascularized bone flaps.

To the best of our knowledge, we report the first case of a patient who developed metachronous ORN of the mandible requiring resection and subsequent reconstruction with 2 sequential fibula free flaps.

CLINICAL REPORT

A 55-year-old man who had been treated 2 years previously with chemoradiation for stage IV cancer of the base of tongue was referred for treatment of a necrotic left mandibular body, resistant to local debridement and hyperbaric oxygen therapy. A segmental mandibulectomy from the left ramus to the left parasymphysis was performed, and the defect was reconstructed with a right free fibula osteocutaneous flap. The patient did well from that initial surgery.

Two and a half years later, the patient presented with ORN of the right mandibular body, resulting in a pathologic fracture. A second segmental mandibular resection was performed from the right angle to the previously placed contralateral fibula flap. Robust intramedullary bleeding was noted from the resected end of the previously placed fibula flap. The defect was reconstructed with a left fibula osteocutaneous free flap fixed to the previously placed vascularized fibula bone. The patient had an uneventful postoperative course. A solid bony union between the 2 fibulas was achieved both clinically and radiologically within 6 months, and the patient was left with satisfactory aesthetic and functional results.

DISCUSSION

Owing to advances in the nonsurgical treatment of head and neck malignancies, patients are more frequently treated with aggressive chemoradiation protocols.[4] Although they may enjoy longer periods of disease-free survival, they are at a greater risk for complications of their treatment. While the exact pathophysiology of ORN remains to be elucidated, radiation dose and fractionation, poor oral hygiene, tissue trauma during surgery, and tumor location within the mandible are thought to be contributing factors.[3] Nonsurgical treatment modalities for superficial or partial-thickness cases of ORN include hyperbaric oxygen therapy,[2,3] oral antibiotics, and dental care.[3] More aggressive measures should be taken, however, when conservative treatments fail or when patients develop pathologic fractures or fistulae.[1,3]

While other authors have reported the reconstruction of oncologic defects using sequential bilateral free fibular flaps anchored in the midline by means of osteosynthesis[4,5] or of bilateral ORN of mandible treated with a single free fibula flap[1] or staged, bilateral free fibular flaps anchored to native symphysis,[3] ours is the first reported case, to our knowledge, of metachronous ORN of the mandible treated by sequential bilateral free fibula osteocutaneous flaps with end-to-end osteosynthesis of the 2 free flaps.

CONCLUSIONS

Even in the presence of prior complex microvascular reconstructions, patients can successfully undergo additional reconstructive procedures to restore their function, appearance, and quality of life.

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Mandibular Symphyseal Fracture Simulated by a Foreign Body in the Chin

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Introduction: Penetrating foreign bodies occurring after maxillofacial injuries are a diagnostic challenge for the trauma surgeon. Different materials and various sites of penetration in the maxillofacial region are described in the literature. We present the peculiar course of a patient with an endoral retained foreign body after a penetrating facial injury. The diagnostic pitfall in this type of trauma is highlighted owing to the hyperdensity of the foreign body that, at the computed tomographic (CT) axial scan, simulated a vestibular cortical fracture of the mandibular body and deceived both the radiologist and the surgeon.

Clinical Report: We introduce the case of a boy who fell from his bicycle. Computed tomography was performed to detect any bone injuries. The radiologic report stated that a left condylar fracture was presented, associated to a vestibular cortical fracture of the mandibular body. Anamnestic questions revealed that the boy fell from his bicycle in a dug-up street. Clinical examination revealed 2 extraoral open wounds in the subnasal and periorbital areas and an endoral linear wound in the inferior fornix at the mandibular symphyseal region. Consequently, the left condylar fracture was surgically treated, and the mandibular body was explored by the endoral wound revealing an intact cortex: the road metal was removed from the soft tissue of the chin. The initial diagnostic pitfall was clarified: the radiodense foreign bodies penetrated the endoral wound in the soft tissue of the chin during the fall. They simulated a vestibular cortical fracture of the mandibular body at the CT scan deceiving both the radiologist and the surgeon.

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Discussion: According to the literature, soft tissue foreign bodies can be detected by ultrasonography, plain radiography, CT, and magnetic resonance imaging. Superficially retained foreign bodies are easily detected with ultrasonography if they are not covered by overlying bone or gas. If this easily available technique had been applied initially in this case, the correct diagnosis might have been established at the initial admittance. Deeply located foreign bodies are best visualized by CT. The foreign body in the case introduced was made by radiopaque substance it presented the same radiodensity as the bone.

Key Words: Foreign body, mandibular fracture, facial trauma

Penetrating foreign bodies occurring after maxillofacial injuries are a diagnostic challenge for the trauma surgeon; approximately one third of all foreign bodies are initially missed. Different materials and various sites of penetration in the maxillofacial district such as nose, orbit, mouth, and ear are described in the literature.[1]

When a facial fracture occurs, plain radiography alone is rarely indicated because of the poor sensitivity and specificity. It does not allow accurately identification of the fractures; moreover, radiologists and clinicians may misinterpret normal suture lines as nondisplaced fractures.[2]

Conversely, in the management of a facial trauma, radiologic imaging by computed tomography (CT) is very often indicated to exclude other fractures and to plan a proper surgical procedure. A CT scan by coronal, sagittal, and three-dimensional reconstructions permits a more precise visualization of the facial structures than standard radiography does.[3,4]

We present the peculiar course of a patient with an endoral retained foreign body after a penetrating facial injury. The diagnostic pitfall in this type of trauma is highlighted owing to the hyperdensity of the foreign body that, at the CT axial scan, simulated a vestibular cortical fracture of the mandibular body and deceived both the radiologist and the surgeon.

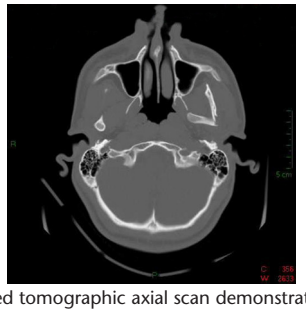

FIGURE 1. Computed tomographic axial scan demonstrating the left condylar fracture.

CLINICAL REPORT

We introduce the case of a 16-year-old boy who fell from his bicycle during a race; it was admitted at the Novara Major Hospital on July 2010 with the diagnosis of facial trauma. Neurological examination was negative for abnormality. Anamnestic questions revealed that the boy fell in a dug-up street.

Computed tomography was performed to detect any bone injuries. The radiologic report stated that a left condylar fracture was presented (Fig. 1), associated to a vestibular cortical fracture of the mandibular body (Figs. 2A–E).

Clinical examination revealed 2 extraoral open wounds in the subnasal and periorbital areas, perioral bruising, posttraumatic malocclusion, and an endoral linear wound (1,5 cm) in the inferior fornix at the mandibular symphyseal region, associated to road metal that penetrated the soft tissue of the chin (Figs. 3A, B).

Informed consent was obtained for open reduction and internal fixation of the fractures. The left condylar fracture was surgical treated and the mandibular body was explored by the endoral wound revealing an intact cortical: the road metal was removed from the soft tissue of the chin.

The initial diagnostic pitfall was clarified: the radiodense foreign bodies penetrated the endoral wound in the soft tissue of the chin during the fall. They simulated a vestibular cortical fracture of the mandibular body at the CT deceiving both the radiologist and the surgeon.

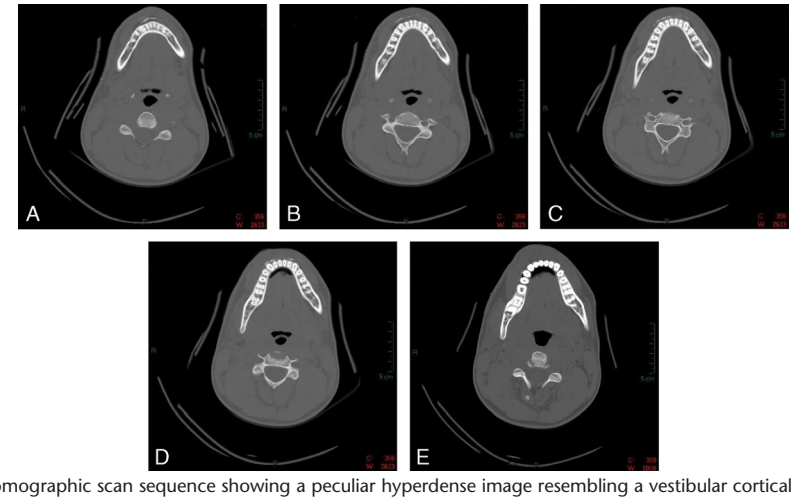

FIGURE 2. A to E, Computed tomographic scan sequence showing a peculiar hyperdense image resembling a vestibular cortical fracture of the mandibular body.

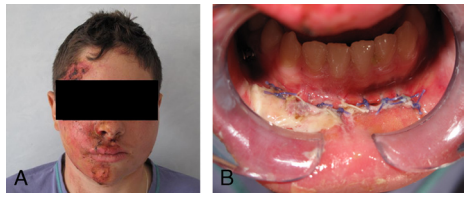

FIGURE 3. Photographs showing the clinical view (A) and the endoral wound (B).

The postoperative course was uneventful, and the radiographic control demonstrated a successful osteosynthesis (Fig. 4). The patient was discharged 4 days after the surgical procedure.

DISCUSSION

The correct diagnosis of a retained foreign body is often difficult because it may follow relatively minor trauma, and it may be not clinically identified.[2] In the case presented, the retained foreign body in the chin was initially missed, and its radiologic appearance was misinterpreted.

In the appropriate trauma setting, a penetrated and retained foreign body must always be suspected; especially in cases with laceration of the facial soft tissue, a foreign body must be excluded.[5,6]

According to the literature, metal, glass, and stone are the most common foreign bodies found in the maxillofacial region, and they can be detected by ultrasonography, plain radiography, CT, and magnetic resonance imaging. Superficially retained foreign bodies are easily detected with ultrasonography if they are not covered by overlying bone or gas.[1,2]

If this easily available technique had been applied initially in this case, the correct diagnosis might have been established at the initial admittance. Deeply located foreign bodies are best visualized by CT. The foreign body in the case introduced was made of radiopaque substance, and it presented the same radiodensity as the bone.

Foreign bodies with low radiopacity, which could be detected in air with CT, became less visible in muscle tissue and between bone and muscle. Performing ultrasonography to detect foreign bodies with low radiopacity is relatively better than performing CT.[7]

Computed tomography is a more useful technique for detecting foreign bodies in air than ultrasound and conventional plain radiography. Ultrasonography visualizes superficial foreign bodies with low radiopacity in the tissues of the body more effectively than CT and conventional plain radiography.[8]

Foreign bodies are usually dirty and carry many microorganisms; wound infection is very frequent. Although a foreign body may lead to an aseptic foreign body reaction, antibiotic treatment must be started with good anaerobic coverage. Both types of inflammation demand complete surgical removal of the retained foreign body to resolve the symptoms.[8]

Clinically, the infection can be very severe; Guyennet et al[9] reported the case of a cephalic tetanus after extraction of a wooden foreign body with right facial nerve palsy, disorders of swallowing, contralateral III cranial nerve palsy, and trismus. Other studies from the literature report of necrotizing mediastinitis and cervical abscess.[10–12]

In summary, the vestibular cortical fracture of the mandibular body was actually simulated by the retained foreign body, which was penetrated in the submucosal layer of the chin by the vestibular labial wound.

This experience taught us that a high index of suspicion, along with meticulous examination of the wound, is necessary in any patient presenting with a penetrating injury of the face, particularly if the nature of the injury is unknown or atypical; radiologic and clinical examination must be complementary to avoid potential diagnostic pitfalls.

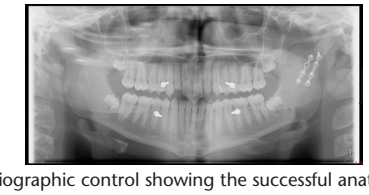

FIGURE 4. Radiographic control showing the successful anatomic reduction.

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Intraorbital Epidermoid Cyst: A 5-Year-Old With Exophthalmos and Strabismus

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