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British Journal of Oral and Maxillofacial Surgery 57 (2019) 268–270

BRITISH Journal of Oral and Maxillofacial Surgery

www.bjoms.com

Short communication

Chronic osteomyelitis induced by the placement of dental implants on cemento-osseous dysplasia

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Accepted 28 January 2019

Available online 18 March 2019

Abstract

Cemento-osseous dysplasia is a well-known condition in which healthy bone becomes sclerotic. Hypovascularity of the lesion (caused by cementum-like deposits) increases the risk of secondary infection and osteomyelitis, which can also be induced by the placement of implants.

Keywords: Florid cemento-osseous dysplasia; Dental implants; Osteomyelitis

Introduction

Cemento-osseous dysplasia is part of a group of benign fibro-osseous lesions in which normal bone is replaced by fibrous connective tissue, with the deposition of immature bone that gradually becomes sclerotic.[1] The lesion is initially radiolucent but becomes progressively opaque as it matures.[2] As the lesion has cementum-like deposition, decreased vascularity increases the risk of secondary infection.[2,3] In patients with this condition, elective operations such as extractions, periodontal surgery, and implant therapy, are contraindicated.[4] We describe a patient who had a dental implant placed in an area of cemento-osseous dysplasia.

Case report

A 70-year-old woman was referred to the dental hospital with swelling and pain in the left posterior mandible. She had hypertension and had been taking bisphosphonates orally for a year to treat osteoporosis. She had implants in place of missing teeth 35, 36, and 37, but the one at tooth 36 had been removed by her dentist.

On clinical examination we found exposed bone and a fistula that had formed at the site of the failed implant. A panoramic radiograph showed a radiopaque lesion with an ill-defined margin in the posterior of the mandible bilaterally, and also showed that the implant at tooth 37 had been fixed directly into it (Fig. 1).

She had curettage and was given drugs for several months, after which panoramic radiograph (Fig. 2) and computed tomography showed a sequestrum in the left posterior of the mandible. Under intravenous sedation, we did a sequestrectomy and examined the implant (Fig. 3), which had separated easily from the mass. Histopathological tests confirmed a diagnosis of cemento-osseous dysplasia with a secondary infection, and recovery was uneventful postoperatively. A

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https://doi.org/10.1016/j.bjoms.2019.01.014

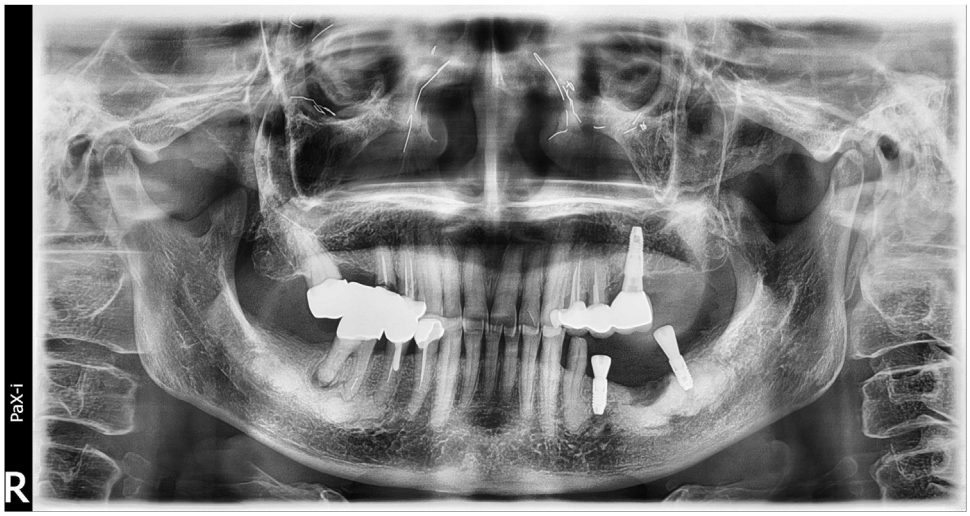

Fig. 1. Panoramic radiograph from the initial visit. Radiopaque lesion with ill-defined margins can be seen in the posterior mandible bilaterally and above the mandibular canal, and the i37 fixture is visible in the left radiopaque lesion.

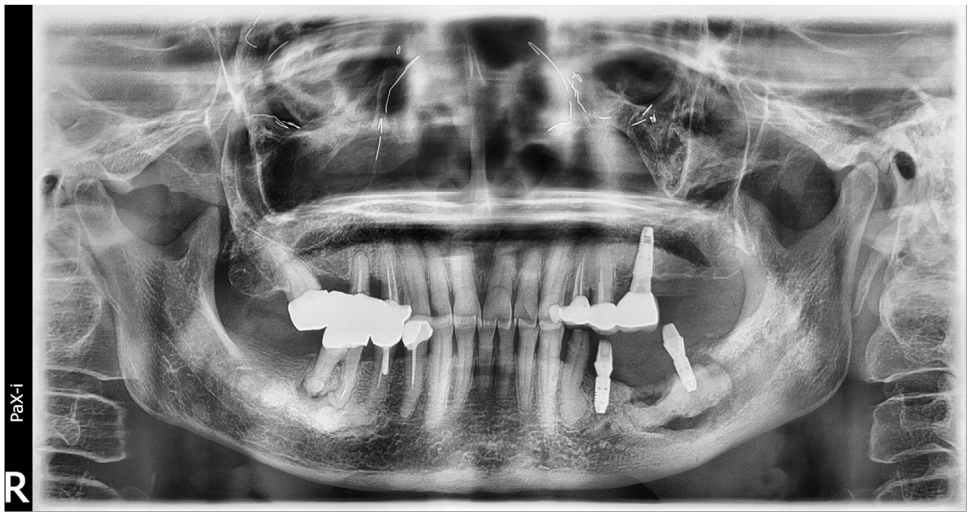

Fig. 2. Panoramic radiograph before operation showing the sequestrum in the left posterior of the mandible.

follow-up radiograph nine months later showed bony remodelling in the left posterior mandible.

Discussion

The diagnosis of florid cemento-osseous dysplasia is based on radiographic examination in which lesions show as irregular, radiopaque calcifications that are surrounded by a radiolucent margin.[4,5] These calcifications are located bilaterally and are usually more common in the mandible than the maxilla.[5]

A more mature lesion is changed to dense, sclerotic, acellular and avascular, calcified tissue.[2] The affected alveolar bone has a reduced capacity of osseous regeneration, osseointegration, and healing.[2,4] It has been suggested that the placement of dental implants in the affected area can induce osteomyelitis (usually resulting from injury). Overheating during the preparation of the osteotomy site can lead to necrosis of the bony tissue that surrounds the dental implant, and if drilling is done without adequate cooling, the damage to the bone will be increased.[6] If the adjacent inflammatory process spreads into the sclerotic bone, necrosis often occurs and leads to osteomyelitis.[2,5] Radiological features that are mainly associated with chronic osteomyelitis are the formation of a bony sequestrum,[7] and infection may not respond to antibiotics because of the avascular nature of the lesion (and that will require debridement and enucleation).[2]

In this case, implant 37 failed to remain osseointegrated, but implantation away from the area of the lesion could still be successful because drilling into the lesion is the main cause of this type of failure. Implant 35, which was beside the lesion and had normal trabecular patterns, seemed to remain osseointegrated. Esfahanizadeh and Yousefi also reported a case of successful dental implantation that had been planned near an area of cemento-osseous dysplasia.[8]

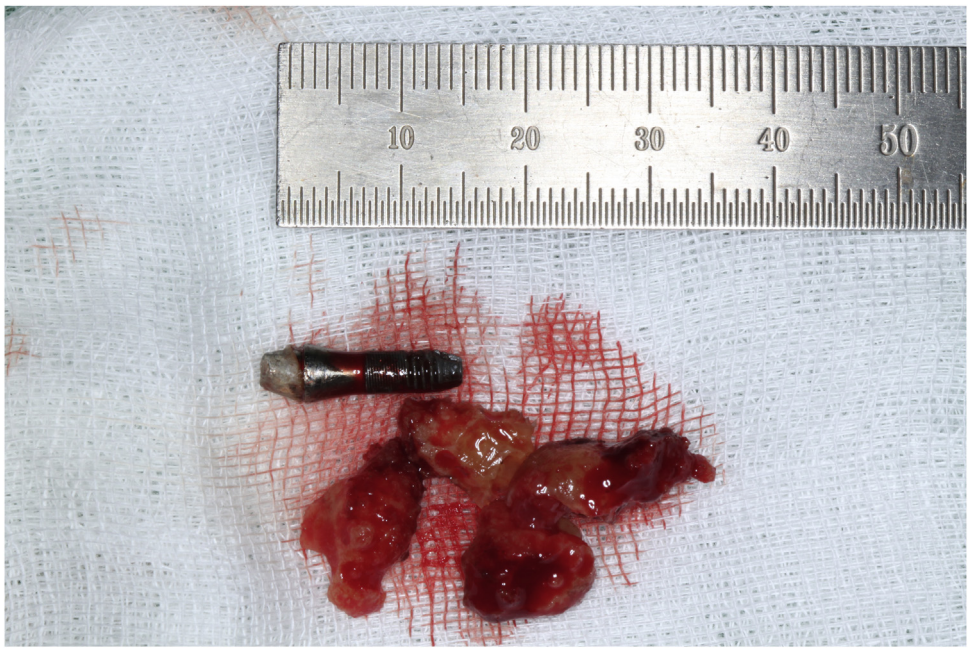

Fig. 3. Intraoperative photograph of the removed sequestrum and i37.

In this case, the patient had a history of taking bisphosphonates orally, but that is not an absolute contraindication for the placement of dental implants, and implants have been known to osseointegrate successfully under such circumstances.[9] Although bisphosphonates may be a risk factor for the failure of an implant, we think that drilling on the lesion seemed to contribute more than the use of the drug.

Conflict of interest

We have no conflicts of interest.

Ethics statement/confirmation of patient's permission

This study was approved by the local Ethics Committee of the Daejeon Dental Hospital, College of Dentistry, Wonkwang University, Daejeon, Korea. (IRB number: W1805/001-001)

Sources of support in the form of grants

This study was supported by Wonkwang University in 2017.

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