Epithelial Inclusion Cyst After Intermaxillary Screw Placement: A Case Report

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In recent years, intermaxillary fixation (IMF) screws have been widely used for anchorage in the treatment of maxillofacial fractures.1,2 These screws have many advantages over the conventionally used arch bar and continuous wire system: they are not time-consuming to place, their placement causes no traumatic damage to teeth or periodontal tissue, and oral hygiene can be easily maintained.

Several complications have been reported in relation to the use of screws, such as iatrogenic damage of dental roots, breakage or loss of the screws, and infections at the screw sites.3-5 No reports, however, have described a case of bone cyst arising at the screw site. We present the first case of a bilateral mandibular cystic lesion formed in the regions where IMF screws had been placed to treat mandibular fracture.

Report of a Case

A 24-year-old man was referred to the Department of Oral and Maxillofacial Surgery, Yokohama City University Hospital, with a chief complaint of gingival swelling and pain in the left mandible. He had undergone closed reduction of a left mandibular angle fracture in another hospital 7 years previously. One IMF screw was placed into the alveolar bone at the premolar region of each jaw; closed reduction was performed for 2 weeks without any complications (Fig 1). Good occlusion had been restored postoperatively and the patient had been asymptomatic until the aforementioned symptoms occurred. The patient’s family history was unremarkable.

Oral examination revealed gingival swelling and spontaneous pain at the canine and first premolar teeth of the left mandible. No mobility or percussion pain was observed in the adjacent teeth. Vitality tests indicated which teeth on which side of the cysts were vital. Panoramic radiograph showed radiolucent cystic lesions between the canine and first premolar teeth of the left mandible and between the second premolar and first molar teeth on the right side (Fig 2). Computed tomogram revealed demarcated radiolucent areas with compression and resorption of the buccal cortical bone in both regions (Fig 3). The clinical diagnosis was multiple mandibular cysts.

Conventional cystectomies were performed bilaterally under local anesthesia. Intraoperatively, the buccal cortical bone had disappeared and the cysts containing no fluid were easily removed from the circumferential bone. Histopathologic examination showed that both cyst walls consisted of thin nonkeratinized squamous epithelium, sparse fibrous connective tissue with multiple capillary vessels, coagulant substances, and hemosiderin. A diagnosis of epithelial inclusion cyst was made in both instances (Fig 4). The patient has been free of symptoms for 30 months postoperatively and bone healing has been achieved.

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Various complications of using IMF screws have been reported occasionally, but we found no reports of cyst formation at a placement site. In this case, it is difficult to discriminate from other odontogenic tumors and cysts without a history of the mandible. However, because the cystic lesions were consistent with the sites of the IMF screws that were used at closed reduction, traumatic bone cyst, traumatic periapical cyst, and epithelial inclusion cyst were sus-


Intraoperative findings on removal showed cystic lesions with thin membranes. In the histopathologic examination, both cyst walls were lined with a nonkeratinized, hyperplastic, stratified, squamous epithelium covered with fibrous connective tissue. The cysts were finally diagnosed as the result of entrapped epithelium, which is an epithelial inclusion cyst, because the teeth adjacent to the cysts were vital teeth. The cysts were formed 7 years after IMF screw placement, which does not contradict the onset mechanism. The development of a cystlike lesion after IMF screw placement is, to date, an unpublished event.

However, because the patient was asymptomatic during the follow-up period, no further radiographs were taken and the cysts would have developed gradually without bone healing. Surgeons should carefully check the screw sites on radiographs during the follow-up period until bone healing is achieved. If bone healing is not achieved within a certain period, surgical intervention including curettage should be considered.

References

FIGURE 4. Histopathologic examination (hematoxylin and eosin stain, weak magnification) showing fibrous connective tissue containing multiple capillary vessels, coagulant substances, and hemosiderin in the cyst wall led to the diagnosis of an epithelial inclusion cyst.