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Massive residual dental cyst: Case report

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Abstract
A case report is presented of a massive residual dental cyst that involved over half an edentulous mandible. Presentation, diagnosis and management of the massive cyst is discussed.

Key words: Jaw cyst, residual radicular dental cyst, periapical pathology.

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Introduction

A residual dental (or radicular) cyst arises from epithelial remnants stimulated to proliferate by an inflammatory process originating from pulpal necrosis of a non-vital tooth that is no longer present.[1] The natural history begins with a non-vital tooth which remains *in situ* long enough to develop chronic periapical pathosis such as a dental (radicular) cyst. Eventually the tooth is extracted with little regard to the periapical pathosis which remains within the jaw bone as a residual dental cyst. Over the years, the cyst may either regress, remain static or grow in size. Unfortunately, little is known about the natural history of residual dental cysts, that is, what proportion of residual dental cysts regress and what proportion grow, and why. A case report is presented of an individual with a massive residual dental cyst that happened to involve over half his edentulous mandible.

Case report

A 53 year old male was referred in May 1996 by his local dentist for investigation and management of a painless golf-ball size swelling in the right parasymphyseal area of his edentulous mandible (Fig. 1). The patient had originally presented to his dentist with the complaint of an ill-fitting lower denture which he had tolerated for many years.

Upon questioning, the patient could not recall how many years had passed since he first noticed the swelling, but did point out that the last remaining teeth in his mandible were extracted over 20 years ago and he had been wearing a full set of dentures ever since. The obvious swelling in the lower jaw did not concern him, since it had been present for many years, and the only reason he saw the dentist was because the lower denture was becoming impossible to wear.

Clinically, he was relatively healthy and had led an active life as a truck driver before becoming a transport manager. The swelling in his right mandible (Fig. 1) was bony hard with some paraesthesia in the distribution of the right mental nerve area. Intra-oral examination revealed a totally edentulous mouth with a firm, buccally expanded alveolus in the right mandibular quadrant extending anteriorly to the symphysis. The overlying alveolar mucosa was normal with no signs of discharge or inflammation.

A panoramic radiograph demonstrated an extensive but well circumscribed radiolucency extending from the right angle to the symphysis and involving the whole right body of the edentulous mandible (Fig. 2). A CT-scan confirmed the extent of the lesion which appeared to be confined to bone with a mainly buccal expansion and relatively little distortion of the lingual plate, although a pathological fracture was evident in the parasymphysis (Fig. 3). The radiological appearance was that of a cyst which was confirmed by needle aspiration. The high soluble protein content of the cyst fluid (that is, 52 g/L) appeared to rule out an odontogenic keratocyst.

In June 1996 the patient was admitted to hospital for surgical management. Under general anaesthesia, the right hemimandible was surgically exposed via an extended submandibular incision and dissection along the subplatysmal plane. The periosteal envelope was then incised along the lower border of the mandible from the right angle to the symphysis and the soft tissues, including the periosteum overlying the expanded buccal plate, were carefully peeled off the bone.

Having exposed all the involved right hemimandible, the expanded buccal cortical plate was

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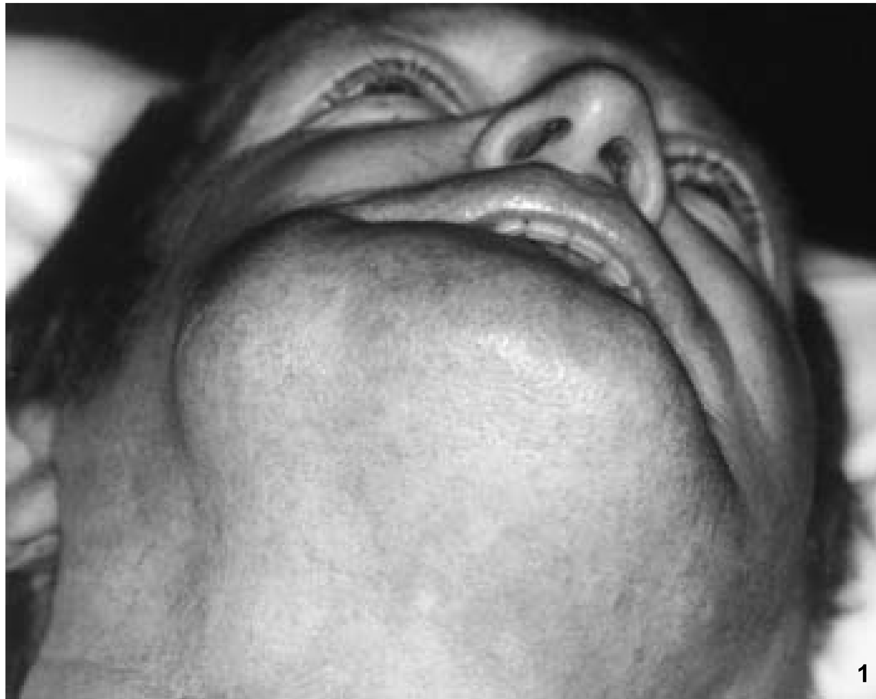


Fig. 1.–Submental view of the patient demonstrating the golf-ball size lump in the right mandible.

osteotomized and removed to reveal the cyst lining underneath. The cyst was then carefully enucleated without breaching the oral mucosa and leaving the lingual plate of mandibular cortical bone intact. The inferior alveolar neurovascular bundle was unfortunately sacrificed as it became extremely difficult to separate it from the cyst lining.

Because of the fragile nature of the remaining lingual cortical plate, particularly with the pathological fracture already noted in the right parasymphysis (Fig. 3), a bridging mandibular reconstruction plate with bicortical screws was fixed from the right angle to the symphysis to help fortify the weakened right hemimandible (Fig. 4). An autogenous cortico-cancellous bone graft was also procured from the iliac crest and placed within the remaining cavity to fill the large bone defect created by the removal of the cyst. Postoperative recovery was uneventful and the patient was discharged from hospital after three days.

The histopathology report confirmed the diagnosis of an inflamed odontogenic cyst, most probably a residual dental cyst with no evidence of odontogenic keratocyst or neoplasia in any of the multiple sections examined under light microscopy (Fig. 5).

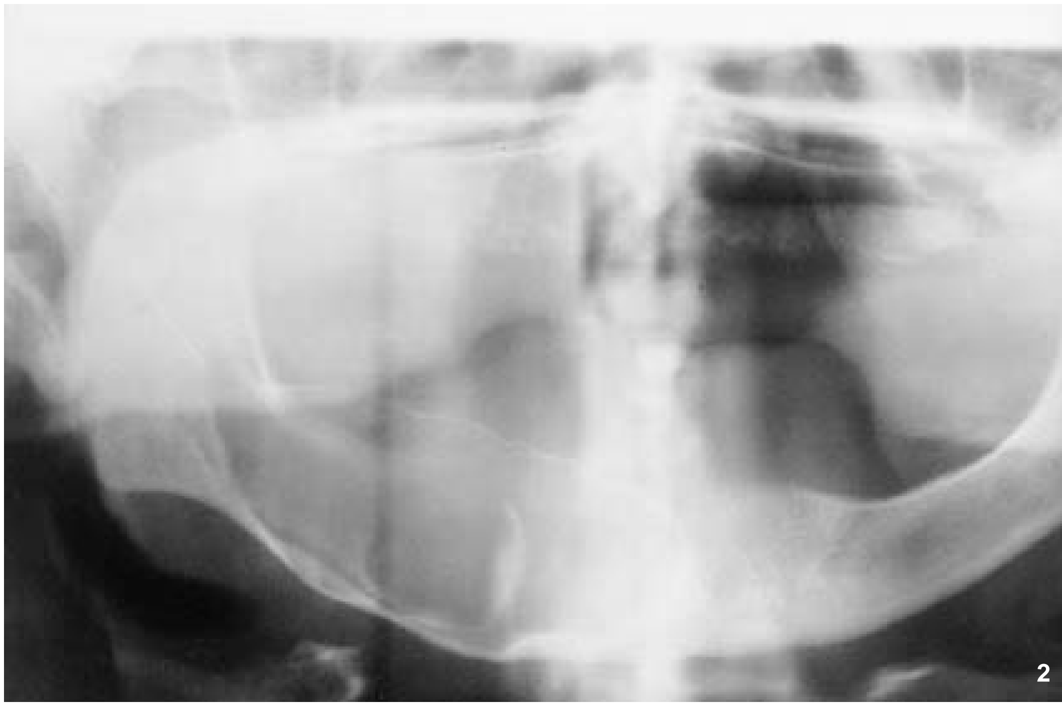
There were no postoperative complications or sequelae up to six months after surgery and there was no sign of recurrence when he was last seen in January 1997. The long-term plan is to remove the reconstruction plate and offer the patient the option of prosthetic rehabilitation using osseointegrated dental implants.

Discussion

Large odontogenic cysts within the jaws are uncommon, and when they do occur, they tend to be odontogenic keratocysts or dentigerous cysts. Residual dental cysts harbour an innocuous pathosis and are often discovered as incidental findings on routine radiographs. Unless infected, it is rare to find symptomatic residual dental cysts which will result in clinical signs or symptoms that will concern the patient enough to seek treatment.

In this particular instance, interference with denture wearing was the sole factor that prompted the patient to seek treatment, even though he was well aware of the obvious lump in the right para-symphyseal area. The patient, however, was unaware of the pathological fracture in the right symphysis and the right mental nerve paraesthesia until he was tested clinically prior to surgery.

The decision to approach the lesion via the neck, rather than intra-orally, was based on a number of premises. Direct and adequate exposure of the lesion was desirable in order to facilitate the removal of the entire lesion although when one takes into account the highly benign nature of the lesion, one may argue that treatment may perhaps have been just as effective with simple intra-oral curettage. The authors opted for the extra-oral approach because of the requirements of reconstruction rather than ablation. It was apparent that with the extensive destruction of the mandible, removal of the cystic lesion would jeopardize the strength and integrity of



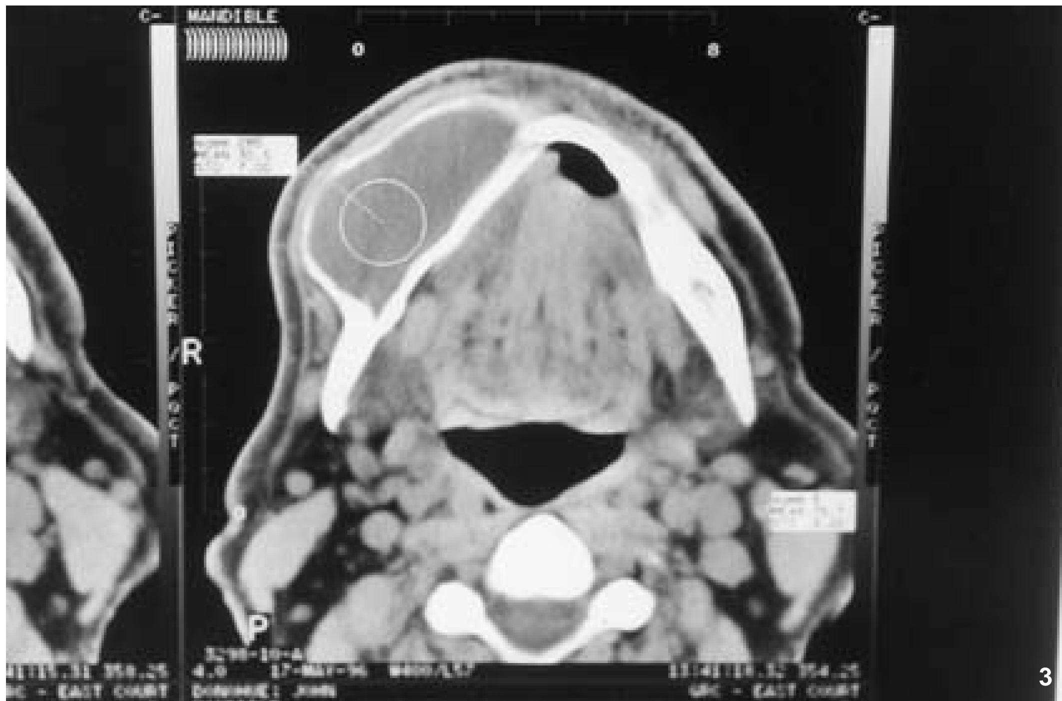
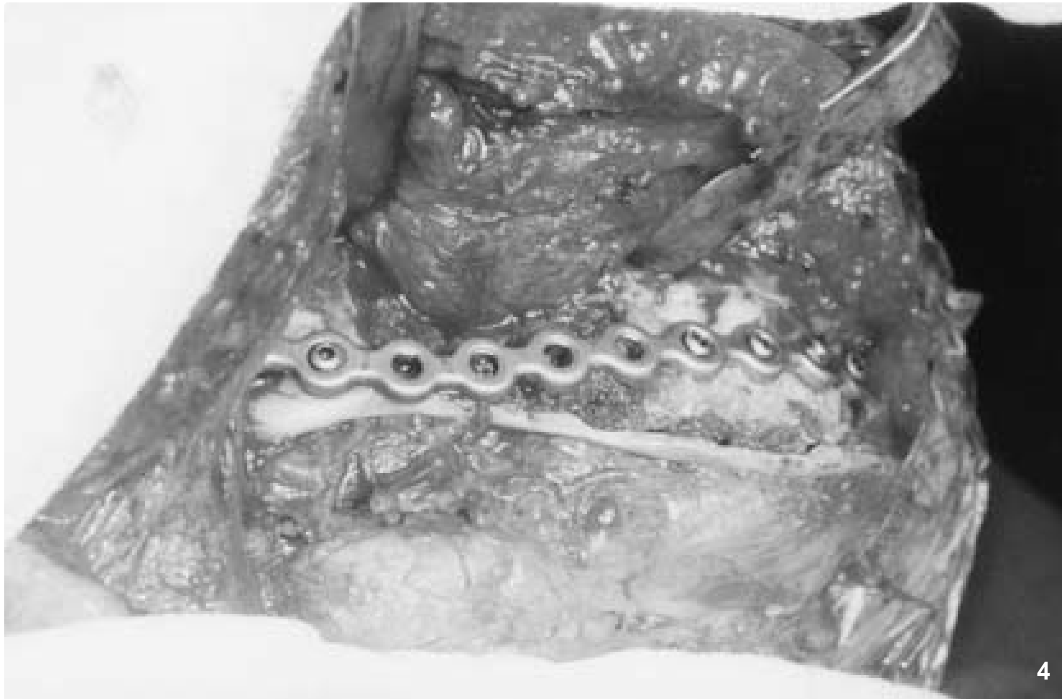


Fig. 2.–Panoramic radiograph showing an extensive radiolucency involving the whole body of the right mandible.
Fig. 3.–Axial CT scan of the mandible demonstrating the massive buccal expansion with relatively little distortion of the lingual plate. A pathological fracture is evident in the right parasymphysis.

the remaining mandible resulting in fracture and gross instability. Therefore the only way to stabilize and reinforce the remaining mandible was through autogenous bone grafting coupled with the placement of a sturdy mandibular reconstruction plate. It was decided by the authors that an intra-oral approach would not only increase the likelihood of bone graft contamination and loss, but would also make the placement of a large mandibular reconstruction plate a very difficult exercise indeed.

Because of the extremely benign nature of the lesion, a sensible approach was used to preserve the surrounding hard and soft tissues, in particular the lingual cortex and part of the lower border of the mandible as well as oral mucosal lining. An intact



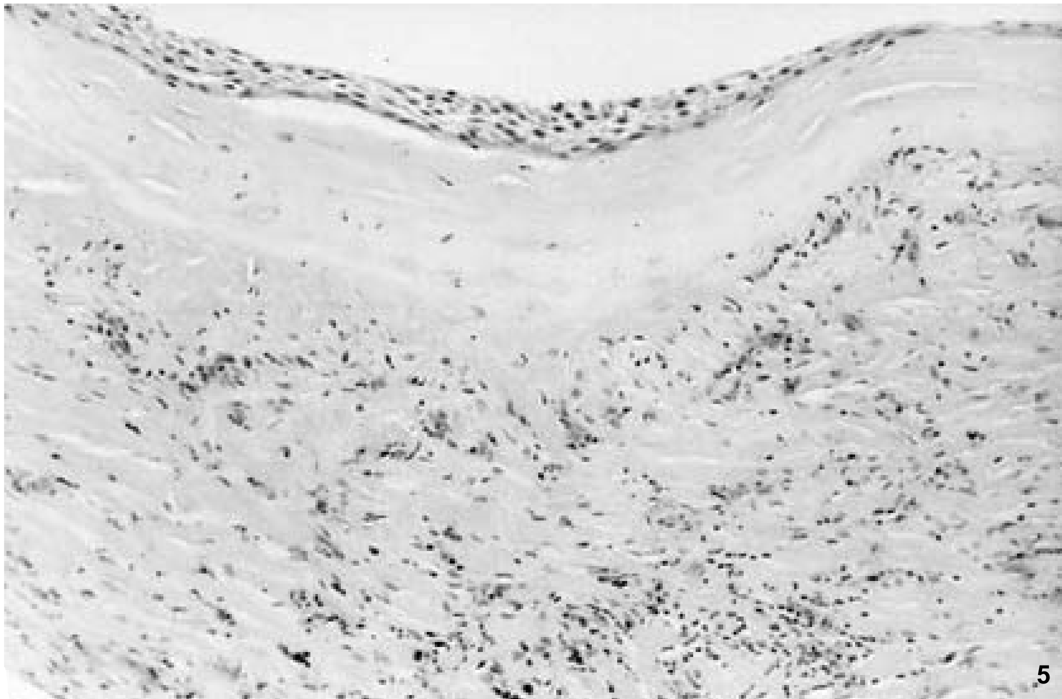


Fig. 4.–Intra-operative view of the mandibular reconstruction plate fixed to the remaining mandible with cortico-cancellous iliac bone packed into the defect.

Fig. 5.–Histopathology showing cyst lining composed of odontogenic epithelium overlying an inflamed connective tissue bed.

oral mucosal lining assured the autogenous bone graft would be placed into a clean tissue bed without fear of oral contamination. By preserving the lingual cortical plate and part of the lower border of the mandible, the airway was adequately maintained and so additional measures such as postoperative intubation or tracheostomy proved unnecessary. Repair of the inferior alveolar nerve with an autogenous cable nerve graft was considered a complex affair with unknown results that did not justify the added morbidity of the donor site.[2] Reconstruction was simple and straight forward which meant that the patient only remained in hospital for a relatively short period (three days) after surgery.

There is some controversy as to the actual existence of residual dental cysts as a distinct

pathological entity, since it is often the case that the diagnosis is made upon the exclusion of other possibilities.[3] Furthermore, it has been suggested in the endodontic literature that judicious removal of periapical pathosis after tooth extraction is unjustified.[4] The significance of this case report is to illustrate a rare and dramatic example of what may happen when judicious removal of periapical pathosis is not undertaken following the extraction of a non-vital tooth.

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