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CASE REPORT

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Surgical resection of a giant peripheral ossifying fibroma in mouth floor managed with fiberscopic intubation

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Abstract

Tracheal intubation for general anesthesia can sometimes be difficult in patients with a large mass in the mouth floor. Preoperative evaluation of the patient's airway is most important when treating large oral disease.

KEYWORDS

peripheral ossifying fibroma,

1 | INTRODUCTION

Reactive fibrous growths with the histopathological presence of calcifications, called peripheral ossifying fibromas (POFs), are a common occurrence in the oral cavity. Here, we report the case of an unusually large POF (48 × 35 × 30 mm) in the mandible to mouth floor of a 41-year-old Japanese man. Large POFs have often presented heterogeneous clinical characteristics, leading to their misdiagnosis as malignant disease. A biopsy is the gold standard for the diagnosis of such lesions. For our patient, we conducted a biopsy before resecting the mass. Tracheal intubation for general anesthesia can sometimes be difficult in patients with a large mass in the mouth floor, and in our patient's case, the extensive lesion occupied the mandibular to the mouth floor, preventing the displacement of his tongue for the insertion of a laryngoscope blade. For that reason, we successfully performed nasotracheal intubation with a video laryngoscope and fiberscope, with the patient under general anesthesia.

Peripheral ossifying fibromas (POFs) are focal overgrowths, occurring in the oral cavity. POFs are also known as ossifying epulis, or peripheral fibromas with calcifications.[1] Clinically, these lesions appear as small, well-defined focal masses on the gingiva with a pedunculated base, usually originating from the periodontal ligament or gingival surface. Conventional POFs are typically <2 cm in size, but a large grown POF may displace the teeth and disturb the mobility of other structures in the oral cavity. In such cases, the unusual clinical and radiographic appearance and/or the presence of soft tissue calcifications may lead to a misdiagnosis. Such lesions were termed giant peripheral ossifying fibroma (GPOFs) by Childers.[2]

2 | CASE PRESENTATION

A 41-year-old Japanese man presented to Department of Oral and Maxillofacial Surgery at Okayama University Hospital with the complaint of a slowly growing exophytic mass in the mandible to mouth floor. A pedunculated, smooth, rubbery, gingival tissue-like mass was seen extending from the mouth floor to the lower labial alveolar ridge (Figure 1A,B). The mass was 48 × 35 × 30 mm. Indentation due to an upper lateral incisor and canine was seen in the surface of the mass. The upper lateral incisor and canine were flared out by the mass. Panoramic x-rays indicated displacement of a lower lateral incisor and alveolar bone resorption (Figure 1C). Traditional computed tomography (CT) imaging revealed a small amount of calcified tissue in the mass (Figure 1D).

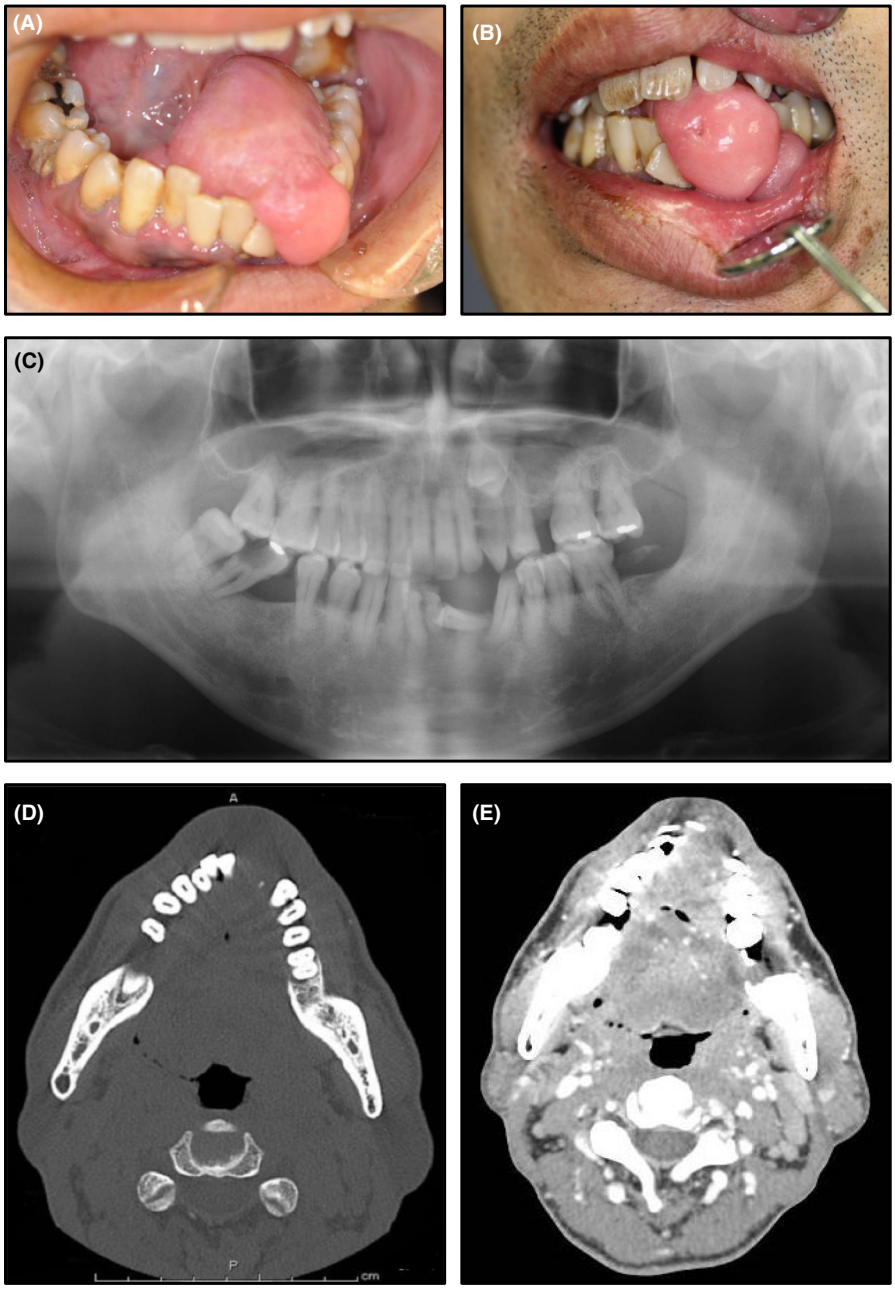

FIGURE 1 Intraoral photograph and X-ray images: A, Intraoral photograph: A painless gingiva-like mass in the left mandibular region. B, Intraoral photograph: upper anterior tooth dislocated due to the mass. C, Panoramic radiograph indicating lower anterior teeth are dislocated. D, Conventional CT images. E, Contrast-enhanced CT image

Contrast-enhanced CT images displayed a homogeneously enhanced margin of the mass (Figure 1E).

A biopsy and histological examination were performed; malignant disorder was denied. He does not have any medical history. We planned a resection of the mass with the patient under general anesthesia. The large mass located at the mouth floor complicated the insertion of a laryngoscope blade. The Mallampati score is used to predict the ease of intubation, and our patient's Mallampati score was IV. We therefore performed nasotracheal intubation using a McGrath™ video laryngoscope and fiberscope. With the patient under general anesthesia, the mass was excised completely along with adjacent mucosa and periosteum (Figure 2A). Floating lower lateral incisor was extracted. The bone surface was covered with collagen sheet and a tie-over. The cut section of a resected specimen showed marked pseudo-epitheliomatous hyperplasia of stratified squamous epithelium with a calcified area in the subepithelial connective tissue (Figure 2B,C). The lesion included fibrous tissue with calcification, and it was surrounded by a cellular mass of proliferating fibroblastic cells (Figure 2D). There was no finding of inflammation or recurrence 1 year after surgery.

3 | DISCUSSION

A POF is a benign osteogenic tumor with membranous ossification. It therefore involves exclusively the maxillofacial bones. It comprises fibrous tissue containing a variable quantity of mineralized material resembling bone.[1] A POF

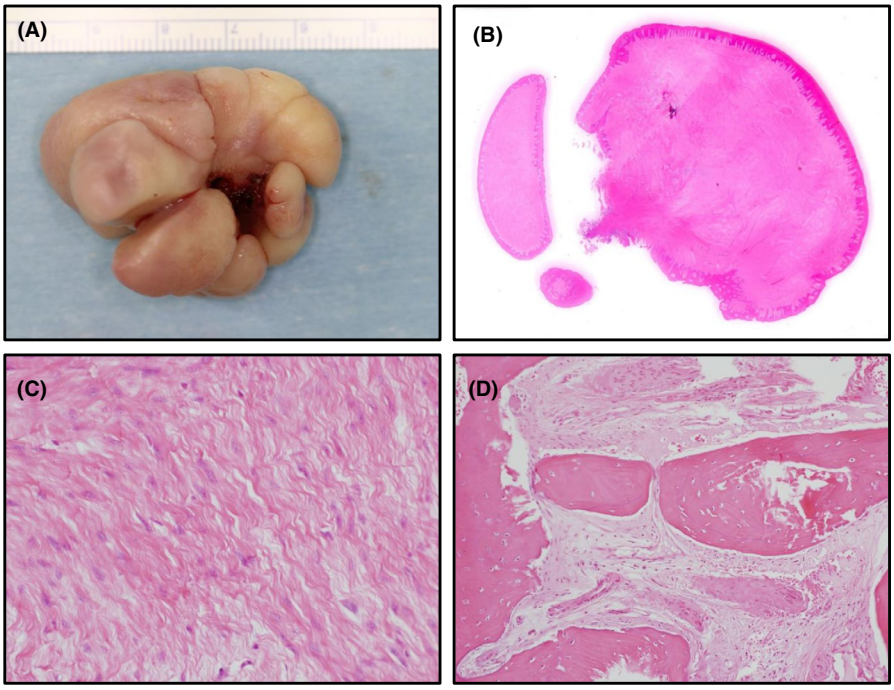

FIGURE 2 Histological analysis. A, Gross appearance of the resected specimen. A well-circumscribed lobular mass measuring 48 × 30 × 30 mm. B, Macroimages of a sectioned specimen (H-E stain). C, Histopathological examination: Fibroblastic and myoblastic cell proliferation area (H-E stain). D, Osseous metaplasia surrounded by connective tissue (H-E stain)

generally occurs between the second and fourth decade of life, with no gender difference. The most frequent locations are the mandible and maxilla, involving the premolar and molar region.[3-5]

Peripheral ossifying fibromas have also been referred to by various names such as fibrous epulis with calcification, peripheral cemento-ossifying fibroma, peripheral odontogenic fibroma, peripheral fibroma with calcification, and calcifying fibroblastic granuloma.[6] A POF is inherently considered to be reactive lesion. In 1982, Gardner described the term "peripheral ossifying fibroma" for a lesion that is reactive in nature and is different from the extraosseous counterpart of a central ossifying fibroma.[1] A central ossifying fibroma arises from the endosteum or the alveolar periosteum adjacent to the tooth root; this causes the expansion of the marrow cavity. In contrast, a POF occurs from soft tissues covering the tooth-bearing areas of the jaws. Compared to POFs, central ossifying fibromas tend to grow more quickly.[7] In vast majority of POFs, there is no apparent underlying bone involvement visible on the x-ray image. However, superficial erosion of bone is noted occasionally.[5] In such case, bone removal must be needed.

The causes of POFs include irritation factors such as plaque, calculus, improper restorations, and trapped food. POFs are thus considered non-neoplastic; rather, they are suspected to be a hyperplastic reaction due to inflammation. The mouth floor is a rare location for a POF.[8] In addition, most reports of POFs have described the size of the lesion as <2 cm. Some reports indicated larger atypical presentations of POF; for example, huge atypical POFs were mentioned as giant, large, atypical, or huge POFs. Childers reported a POF case and reviewed another 10 cases of POF, and he proposed the usage of the term "giant POF (GPOF)" for atypical POFs.[2] We identified another 11 reports of GPOF that were published after Childers' review [2,5,9-16](Table 1). The lesions ranged in size from 2.0 to 10.0 cm in greatest dimension. The patient age ranged from 11 to 62 years. All POFs are pedunculated. Although the POFs generally did not cause tooth displacement, in our patient the giant POF did result in tooth dislocation, and the tooth dislocation occurred on the maxilla. When a giant POF is encountered, the surgeon must be careful to avoid misdiagnosis, and the difficulty of tracheal intubation under general anesthesia must be considered. In our patient's case, the atypical presentation led to the impression of an aggressive or malignant lesion, and we thus conducted a biopsy before the surgery. The Mallampati score is used to predict the ease of endotracheal intubation,[17] and fiberscopic intubation must be considered in cases with the Mallampati score of III or IV. Some reports indicated that a video laryngoscope and fiberscope-assisted nasal intubation are suitable tools for managing difficult airways in oral disease.[18] In any case, the preoperative evaluation of the patient's airway is most important when treating large oral disease such as a giant POF.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

TO participated in the case study, wrote the original manuscript, and edited and reviewed the final manuscript. KO and

TABLE 1 Clinical features of giant peripheral ossifying fibroma

	Review by Childers et al[2]	Franco-Barrera et al[5]	Barot.et al[9]	Ogbureke et al[10]	John. et al[11]	Reddy. et al[12]	Chaudhari. et al[13]	Ashok et al[14]	Gulati et al[15]	Mariano et al[16]
Greatest dimension (cm)	5.6 ± 2.7 (2.5-10.5)	4	2	4.5	10	5	5.9	4	4	3.5
Base	Pedunculated 9 Gingival 1 Well demarcated 1	Pedunculated	Pedunculated	Pedunculated	Pedunculated	Pedunculated	Pedunculated	Pedunculated	Pedunculated	Pedunculated
Tooth displacement	Yes 5 No 2 Edentulous 2 Unknown 2	Yes	Yes	No (Implant)	Yes	Yes	Yes	Edentulous	Yes	Yes
Patient age (years)	35.8 ± 24.1 (7.6-70)	11	30	44	62	55	55	60	56	38
Location	Maxillary anterior 1 Maxillary posterior 3 Mandible anterior 1 Mandible posterior 5 Mandible 1	Maxillary anterior	Mandible anterior	Mandible posterior	Maxillary posterior	Mandible posterior	Mandible posterior	Maxillary posterior	Mandible anterior	Mandible anterior

KH: helped write the original manuscript. IS and AS: participated in the case study, and edited and reviewed the final manuscript.

ETHICAL APPROVAL

Informed consent for his case to be published was obtained from the patient. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

DATA AVAILABILITY STATEMENT

The data used and/or analyzed in this report are available for the corresponding author Dr Tatsuo Okui on responsible request.

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