protein revealed a monoclonal IgG with a κ chain. Chemotherapy with melphalan, cyclophosphamide, predonisolone and vincristine, and local radiotherapy for the mandibular mass were administered. The chemotherapy was replaced with melphalan and predonisolone. The patient was discharged following the disappearance of the mass. But 8 months later pancytopenia was noted. The patient was then referred to a hematologist for chemotherapy with a diagnosis of acute myelogenous leukemia. However, the patient died of acute renal insufficiency several months later.

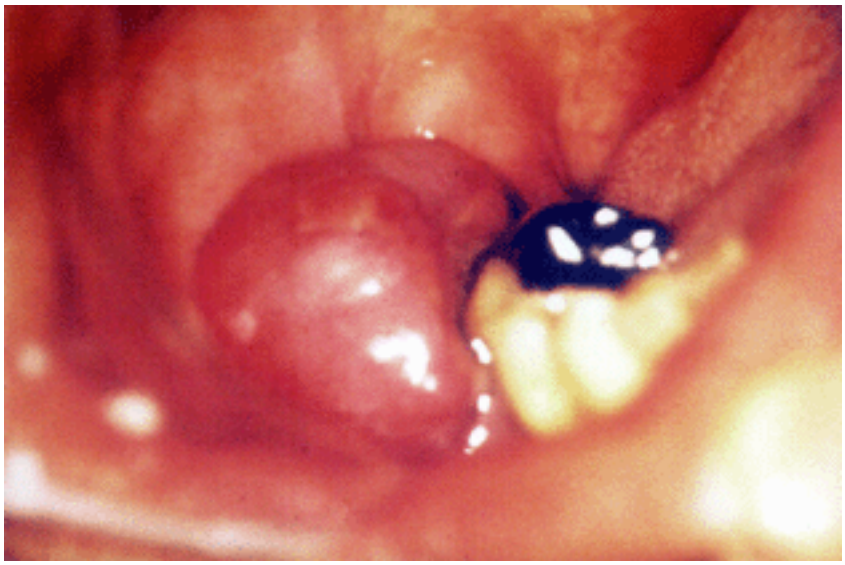

Fig. 4. Gingival mass located on the lower right 1st molar area (Patient 4).

Discussion

Although uncommon, an initial presentation of multiple myeloma may reveal oral or maxillofacial symptoms. These include swelling, mass formation, paresthesia of the lower lip, pain, bleeding and fracture of the jawbone, macroglossia and radiolucent lesions (Yaegaki et al., 1983). Osteolytic lesions are more frequent in the mandible than in the maxilla (Lee et al., 1996), especially in the posterior teeth region, ramus and condylar process, presumably because of greater hematopoietic activity in these areas (Lambertenghi-deliliers et al.,

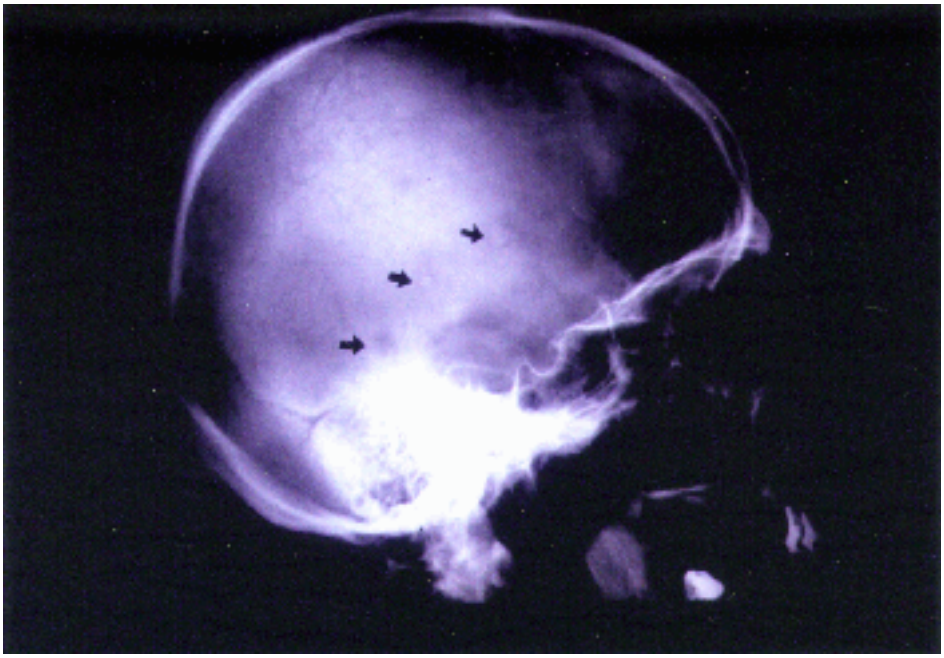

Fig. 5. Radiograph of a skull showing multiple “punched-out” osteolytic lesions (Patient 4).

1988; Lee et al., 1996). Oral lesions in patients with multiple myeloma are not uncommon, but multiple myeloma is often overlooked. Because the symptoms are various, it is very difficult to diagnose multiple myeloma in the oral and maxillofacial region. Amyloidosis as an additional complication has been reported in 6% to 15% of patients with multiple myeloma (Erich et al., 1986). Amyloid involvement of oral tissue is rather rare, and the tongue is the most encountered subsite (Rutger et al., 2002). Macroglossia, usually seen in primary amyloidosis, occurs in approximately 20% of patients (Smith and Speculand, 1985; Yusa et al., 2001). It seems that almost all secondary amyloidosis originates from reactive systematic conditions (Mardinger et al., 1999). Oral amyloidosis often comes along with various manifestations, such as multiple soft nodules, hemorrhagic-type raised lesions, rubbery swellings, with a normal overlying mucosa, with or without multiple nodules on the lateral borders of the tongue or with prominent crenation (Muto et al., 1991). In the present study, submental swelling, tongue stiffness, macroglossia and dysphagia were noted in Patient 1, and disturbed lingual mobility, induration of the tongue and dysphagia, in Patient 3. But there were no other abnormalities in the oral and maxillofacial region. The tongue is the organ which is comparatively easy to observe. Oral amyloidosis seems to be an important key in leading to a diagnosis of multiple myeloma. In Patient 1, we performed partial glossectomy to alleviate functional oral difficulty. The survival time of patients with amyloidosis associated with multiple myeloma is shorter than those without amyloidosis (Eddie et al., 1994). Patients with primary amyloidosis should be treated palliatively because of their short survival periods. Medical history and biochemical and hematologic findings would be helpful in diagnosing multiple myeloma in case of unexplained swelling and nodules in the oral region, even if radiography shows no osteolytic lesions. Furthermore, when a diagnosis of tongue amyloidosis is confirmed, dentists should start searching for underlying disorders, such as multiple myeloma.

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Received June 16, 2003; accepted July 31, 2003

Corresponding author: Masami Shibata