

Mandible Fracture After Radiotherapy: Case Report

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Abstract

Oral cancers are among the most common types of cancer. Squamous cell carcinoma accounts for approximately %90 of oral cancers. The prognosis in oral squamous cell carcinomas differs depending on the treatment and the size of the lesion. Treatment options for squamous cell carcinomas include marginal resection, radiotherapy and chemotherapy. Although radiotherapy is an effective treatment option in head and neck cancers, it is known to cause some complications. Treatment options for squamous cell carcinomas include. In this case report, the complication of mandibular fracture seen after radiotherapy treatment is presented.

A 77-year-old female patient who was treated at the medical oncology clinic with the diagnosis of oral squamous cell carcinoma was referred to our clinic for pathological mandibular fracture and extraoral fistula caused by radiotherapy. As a result of intraoral examination, it was observed that the ramus was exposed due to pathological fracture in the right mandible corpus region. After the antimicrobial washing in the mouth, sequestrotomy was performed. Palliative treatment of the patient was performed, then the patient was followed up with telemedicine methods.

A detailed evaluation should be made before oral surgery in patients with a history of radiotherapy from the head and neck region. Precautions should be taken against the possible risk of osteoradionecrosis.

Keywords: Pathological fracture, radiotherapy, osteoradionecrosis

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INTRODUCTION

Squamous cell carcinoma (SCC) is the 8th most common type of cancer. In addition, these cancer type; constitute approximately 90% of oral cancers (1). SCC is thought to occur spontaneously or as a result of mutation in oral keratinocytes. (2). Smoking and alcohol consumption are risk factors that can cause mutations. Moreover; There are also risk factors such as oral health level, malnutrition and decreased immune response (3). SCC is frequently seen on the floor of the mouth and tongue. Other localizations are the hard and soft palate, alveolar crests, and buccal mucosa (4, 5).

Prognosis in oral SCC varies depending on the the patient's medical condition, treatment type and lesion size (3). The factors affecting the cancer treatment plan are as follows; degree of local invasion, presence of distant metastases, regional lymph node involvement, age and general health of the patient (6). Marginal resection, removal of cervical lymph nodes, radiotherapy and chemotherapy are the treatment options in SCC (3).

In spite of radiotherapy is an effective treatment option in head and neck cancers, it is known to cause some complications (7). In the literature, it has been stated that the tissues become hypocellular, hypovascular and hypoxic as a result of radiotherapy (8). Another important complication thought to occur due to tissue hypoxia and its consequences is osteoradionecrosis. (9, 10).

According to the accepted definition in the literature, osteoradionecrosis is defined as a condition in which the irradiated bone is exposed through the wound and continues without healing for 3-6 months (11, 12). Oral and systemic manifestations of osteoradionecrosis can be seen in the irradiated bone

as a result of many etiological factors such as tooth extraction, chronic infection and surgical treatment (10, 13). These clinical findings can be listed as chronic pain, numbness, trismus, dysphagia, orocutaneous fistula and systemic infections (14). Osteoradionecrosis may have a chronic or progressive clinical course, as well as cause pathological fractures (11).

Pathological fractures are treated with reconstruction plates applied after resection in indicated cases. Flap surgeries can be performed in advanced cases (7).

CASE

A 77-year-old female patient was referred for mandibular fracture and extraoral fistula. In the detailed anamnesis, it was learned that the patient had undergone radiotherapy with the diagnosis of SCC. (Fig. 1,2)



Figure 1. Exposed necrotic ramus

In the patient's anamnesis, there was no surgical procedure that could cause trauma to the relevant region after radiotherapy. As a result of intraoral and radiological examination, it was observed that the ramus was exposed due to pathological fracture in the right mandible corpus region. (Figure 3)



Figure 2. Extraoral fistula



Figure 3. Panoramic radiography

It was determined that there was drainage from the extraoral fistula associated with the fracture. line. Considering the current medical condition of the patient, palliative treatment was planned. Surgical treatment was postponed until the patient's medical condition stabilized. After the antimicrobial washing in the mouth, sequestrotomy was performed. (Figure 4)

The patient was prescribed intravenous antibiotics and intravenous analgesics. Due to the patient's medical condition, controls could be made through telemedicine. Although there was a regression in the signs of infection in the 2-week follow-up, it was learned that the patient's medical condition worsened

in the course of time, and the patient died at the end of 2 months.



Figure 4. Intraoral view after sequestrotomy

DISCUSSION

Osteoradionecrosis, which was first defined as radiation osteoitis by Ewing in 1926. Osteoradionecrosis can be seen after radiotherapy in head and neck cancers (13). There is no consensus in the literature about how long after radiotherapy osteoradionecrosis can be seen. Cases of osteoradionecrosis reported 2 months after radiotherapy, as well as cases reported after 45 years have been reported (8). In our case, mandibular fracture due to osteoradionecrosis was determined 2 months after radiotherapy.

Osteoradionecrosis is seen 24 times more frequently in the mandible than in the maxilla (8). The posterior region of the mandible is affected more frequently than other parts of the mandible due to its dense bone structure and lack of vascularization (10). There are different opinions in the literature about the relationship between edentulous jaws and osteoradionecrosis. It is thought that being edentulous for a long time before radiotherapy may protect from osteoradionecrosis, but newly formed edentulism may increase osteoradionecrosis (15-17). In our case, it was learned that tooth extraction was performed

from the relevant region 6 months before radiotherapy.

According to the osteoradionecrosis classification defined by Notani et al., pathological fractures and fistulas are classified as Stage III, as in our case (18).

Reconstruction plates, fibula, scapula and iliac grafts are preferred in pathological fractures; Tissue transfer and regional flaps can be applied for soft tissue defects (19). As in the case report of Pandey et al., a reconstruction plate can be applied after partial resection or resection can be performed without applying a plate (13, 20). Gassner et al. applied a plate after resection and used a latissimus dorsi flap for the soft tissue defect (7).

In stage III and stage IV cancer cases, palliative treatment is performed as the patients cannot tolerate the surgical procedure. Similar to our case, in Floriano et al.'s case, palliative treatment was performed for unilateral pathological fracture, and it was reported that a fracture occurred in the contralateral jaw in the controls (21).

CONCLUSION

In patients with a history of radiotherapy from the head and neck region, a detailed evaluation should be made before oral surgery. Precautions should be taken against the possible risk of osteoradionecrosis.

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