On-line Case Report

Squamous cell carcinoma presenting as peri-implantitis: a case report

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ABSTRACT

Dental implants have proved to be a useful adjunct in the rehabilitation of oral cancer patients. We describe the case of a 62-year-old woman who presented with a white patch in the oral cavity, diagnosed to be a squamous cell carcinoma. She underwent extensive surgery including microvascular reconstruction, followed by implant rehabilitation. Unfortunately, she suffered from multiple episodes of peri-implantitis and later on went on to develop oral squamous cell carcinoma around two of the dental implants. Here, we highlight the importance of regular follow-up and maintaining a high index of suspicion in high-risk patients.

Keywords: Dental implants – Oral squamous cell carcinoma – Peri-implantitis

Attempts to replace missing teeth date back to the Mayan Indians (100–1500 AD). The dental implant was first used on a patient in 1965. Osseo-integrated implants were used from 1969 onwards which led to the development of the modern implant, as we know it today.¹ The 5-year success rates have been reported to be as high as 90%.

Dental implants have been a useful adjunct in the oral rehabilitation of patients who have undergone resection and microvascular reconstruction for oral cancer. Studies have proved dental implants are of great success in these patients.²

Peri-implantitis is a condition characterised by inflammation and loss of supporting tissue around an implant. The American Academy of Implant Dentistry (AAID) described this state as 'implant histoclasia' or 'perimplantoclasia'. Peri-implantitis is a catabolic condition with or

without sepsis or suppuration. The major cause of peri-implantitis is dental plaque that initiates gingivitis, later progressing to pocketing and finally resulting in bone loss. Other causes include occlusal overloading and excessive lateral forces and the common causative organisms are anaerobic *Peptostreptococcus* spp. and *Fusobacterium* spp. Treatment for peri-implantitis involves meticulous oral hygiene, plaque control and systemic and local delivery of antibiotics.² There are limited reports in the literature of oral squamous cell carcinoma arising around dental implants.^{3–5}

This case report shows how oral squamous cell carcinoma can present as peri-implantitis and highlights the importance of being aware of all the possible causes of peri-implantitis.

Case report

A 62-year-old woman was referred by a general dental practitioner to our department for a white plaque over the mandibular alveolar ridge in the first molar region (Fig. 1). The patient was a life-long smoker who smoked 20 cigarettes a day for the majority of her adult life. Biopsy

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Figure 1 Lesion at initial presentation.

confirmed the white patch to be a moderately differentiated squamous cell carcinoma. This was treated with a left hemimandibulectomy, left modified radical neck dissection and microvascular reconstruction with a free osseocutaneous fibula flap. The patient did not receive any postoperative radiotherapy. The following year, implant rehabilitation was commenced; one implant was placed in the lower left posterior alveolar ridge into the grafted fibula bone and one implant in the lower right posterior alveolar ridge, together with three implants in the anterior mandible region. These were linked with a bar which was connected to the lower denture.

In the 7 years following implant rehabilitation, the patient had numerous episodes of peri-implantitis associated with the lower left molar and anterior implants. These were treated with local measures including curettage, Coe-pack dressing, antibiotics and meticulous oral hygiene. Serial biopsies showed chronic inflammation with no evidence of dysplasia or malignancy. Eight years after implant placement, one of the curetted specimens from the lingual aspect of the anterior implants was shown to be a squamous cell carcinoma (Fig. 2). Biopsies also showed squamous cell carcinoma had spread to the anterior floor of the mouth.

Figure 3 Radiograph showing the implants *in situ* following the second major surgery.

Figure 2 Image showing squamous cell carcinoma in the site of previous pre-implantitis around the lingual aspect of the mandibular central implant.

The patient underwent resection of the mandibular symphysis and right supra-omohyoid neck dissection and reconstruction of the symphyseal region with a second free osseocutaneous fibula flap (Fig. 3).

Twelve months later, three implants were placed into the symphyseal fibula graft. The following year, there was an area of peri-implantitis around the right posterior implant which was biopsy proven to be a recurrence (Fig. 4). A further excision was performed preserving the lower border of the mandible.

Thereafter, the squamous cell carcinoma followed a relentless course and the disease spread rapidly to the tongue and floor of mouth. Further recurrence followed and the patient died of distant metastatic disease.

Discussion

In the case described above, the patient underwent multiple sittings of local curettage to deal with the peri-

Figure 4 Image showing the second malignant lesion around the mandibular posterior implant.

implantitis. The various histological reports were all suggestive of chronic inflammatory changes only, except, many years later, when the presence of a malignant lesion was confirmed. The question about an implant acting as an irritant has been raised earlier.^{1,4,5} In the case above, the chronic changes may have led to the development of a second primary lesion or, alternatively, the lesion may have been just another metachronous tumour co-incidentally presenting in that site.

Smoking has been identified as a major risk factor for implant failure.³ Consideration must be given to whether the patients are still smoking. Chronic smoking is a well recognised risk factor for oral cancer. Moreover, cessation of smoking has helped to reduce implant failure.³ Although the patient had stopped smoking prior to the initial diagnosis of oral cancer, there was a history of life-long smoking. A thought in the wider spectrum – should implants be contra-indicated in smokers considering their ‘carcinogenic potential’?

It must be remembered that the cause of oral cancer is multifactorial and includes tobacco use, alcohol consumption, human papilloma virus, UV light exposure and dietary factors amongst others.

Conclusions

Peri-implantitis is a well-recognised condition. Any patient who has had an oral squamous cell carcinoma is considered at risk of a recurrence. In cases such as this, it is important to gain histological diagnosis of any areas of implantitis, especially those which are not responding to local therapeutic measures.

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