ACTA SCIENTIFIC DENTAL SCIENCES

Volume 8 Issue 11 November 2024

Case Report

Treatment of a Rare Maxillary Retrograde Peri-Implantitis: Case Report

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Received: October 01, 2024

Published: October 21, 2024

Abstract

This article describes a patient with retrograde peri-implantitis associated with a cyst in the maxillary bone to illustrate the diagnosis and management of the case. The 85-year-old patient was referred to us by his primary dentist for the evaluation of an osteolytic lesion associated with pain in the 1.3-2.3 region. The lesion was exposed, removed, and subsequently analyzed histologically. As an alternative to implant removal or debridement, an implant apicoectomy was performed, removing the most apical portion associated with the cystic lesion. The patient was subsequently monitored through follow-up visits, which demonstrated good healing of the surgical site.

Keywords: Oral Surgery; Retrograde Peri-impantitis; Dental Implant; Implantology; Implant Periapical Lesion

Introduction

Retrograde peri-implantitis, also called "*apical peri-implantitis*" or "*implant periapical lesion*" is defined as clinically symptomatic periapical lesion that can develop after the placement of an implant. The coronal portion of the implant maintains a normal bone-to-implant interface but the apical third develops a bone resorption [1].

Over the years, various etiological causes have been described in the literature:

- Contamination of the implant surface or surgical bed [2,3]
- Endodontic pathology of the tooth replaced by the implant or adjacent tooth [4,5]
- Incorrect preparation of the implant site or overheating [6]
- Residual root fragments or the presence of foreign body [2,11]

These etiological factors could lead to chronic inflammation or infection. Granulation tissues in chronic infections of endodontic or periodontal origin contain epithelial tissue, which can proliferate, leading to the subsequent formation of cysts [7,8].

This type of osteolytic lesion is relatively rare, it has been estimated that the incidence of retrograde peri-implantitis is between 1.6 and 2.7% and is more likely to be observe in the mandible than in the maxilla [9].

The purpose of our case report is to present the diagnosis and management of a case of retrograde peri-implantitis associated with cysts.

Material and Methods

An 85-year-old man visited the Santi Paolo and Carlo Hospital, referred by a colleague due to the presence of an osteolytic lesion. Oral examination confirmed the soft tissue swelling of the gingival mucosa and pain on palpation in the area from 1.3 to 2.2, with an extension of approximately 4 cm. The patient brought us the OPT performed by his dentist, and we prescribed a new CBCT of the area. Both radiological exams showed the presence of a radiolucent lesion with clear margins associated with a radiopaque rim in the area 1.3-2.1 [Figure 1]. The lesion appeared to have its center at the level of the apex of the implant in site 1.1. The lesion also involved the apical and median third of the implant fixture in site 1.3 and the apical third in site 2.1 [Figure 2].

The excision of the lesion was planned under general anesthesia. Local anesthesia was followed by an intrasulcular incision and the elevation of a trapezoidal mucoperiosteal flap from 1.3 to 2.3

Figure 1: Preoperative Ortopantomography.

Figure 2: Initial clinical situation.

Figure 3: Intrasulcular flap from 1.3 to 2.3.

[Figure 3]. The lesion was exposed [Figure 4]. Ostectomy was not necessary because the cortical bone had been thinned by the lesion. To reduce the chance of relapse, the implant fixture exposed by the osteolytic lesion was cut and removed [Figure 5 - 6].

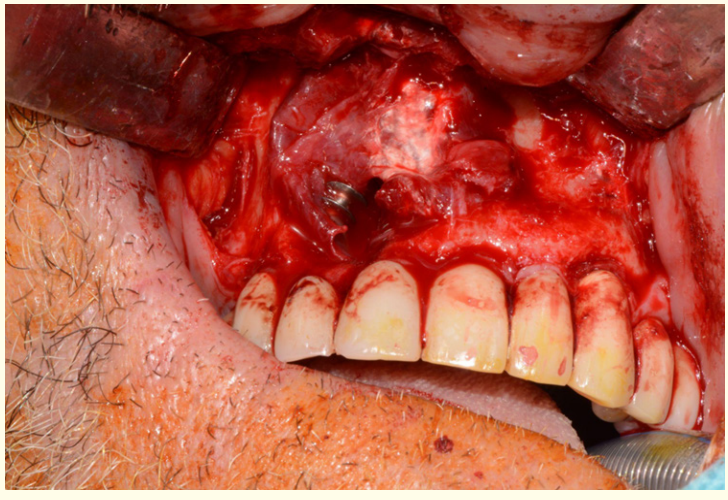

Figure 4: Bone exposure.

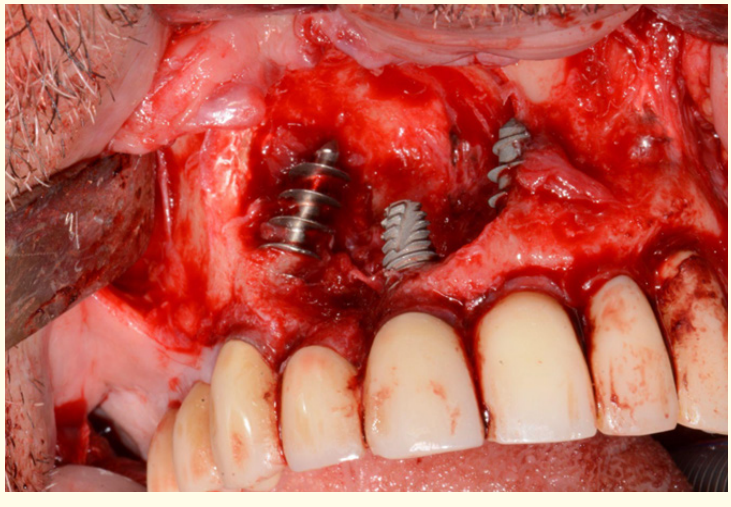

Figure 5: Exposure of cystic lesion.

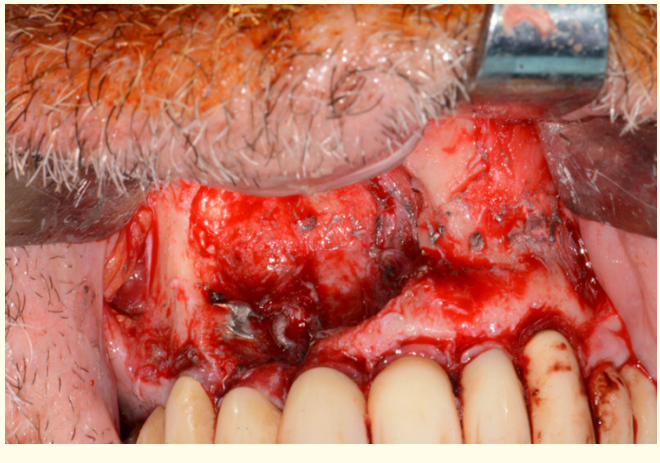

Figure 6: Removal of cystic lesion and implants apicoectomy.

The flap was sutured with 4/0 absorbable in his original position [Figure 7].

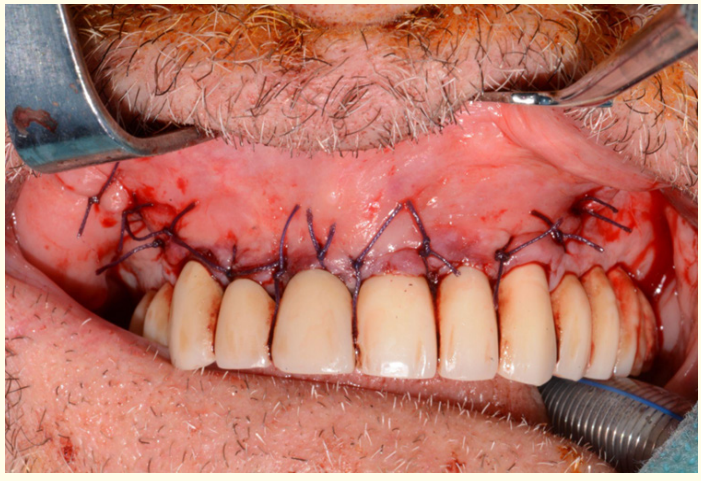

Figure 7: Suture.

A histopathological examination of the removed lesion was requested.

Post-operative instruction was given to the patient.

The following post-operative therapies were provided to the patient:

- Antibiotic therapy with amoxicillin + clavulanic acid for 6 days with a dosage of 1 g every 12 h.
- Rinses with chlorhexidine mouthwash 0.12% for 10 days, to start 24 hours after the surgery.
- Local applications of 1% chlorhexidine gel, 2 times a day for 10 days.
- Non-steroidal anti-inflammatory drugs as needed.

Results

The patient underwent a 12-month clinical and radiological follow-up. At the end of this period, there were no clinical signs of inflammation or infection. The fixed prosthesis was in place with no signs of mobility, and the OPT showed reossification of the site.

The lesion, approximately 5 centimeters in diameter, with a dark liquid content, is sent for examination. The histopathological diagnosis reveals findings compatible with an odontogenic cyst with diffuse and extensive wall fibrosis.

The presence of artificial material inside the lesion suggests a lack of reabsorption of the collagen membrane used before the insertion of the implants. We suspect that this may represent the etiological factor, but we have no medical record about the previous implant placement performed years ago in a private practice.

Discussion

Regarding the treatment of retrograde peri-implantitis, there is no univocal consensus in the literature [1,9]. The treatment of apical or retrograde peri-implantitis depends on the presence of a symptomatology. In an asymptomatic case a wait-and-see approach may be sufficient. The presence of signs and symptoms that characterize an ongoing infectious condition constitute an indication to the treatment.

In this case the diagnosis of retrograde peri-implantitis was late, associated to symptoms and it was not possible to choose a pharmacological therapy due to the degree of advancement of the pathology. The surgical treatments described in the literature are different: open flap implant surface decontamination and apical degranulation associate or not to an apical implant resection [1,9]. Another treatment option described in literature is the removal of the implants, but we chose to avoid it to maintain the fixed prosthesis.

The resection of the implant was chosen as treatment option because it allowed to remove the lesion and the implant contaminated part but allow leaving enough integrated implant length to support the restoration and the stability of the implant.

This treatment option is considered when the bone resorption involves more than the 25% of the implant's length and there is no mobility of the fixture [10].

We did not choose to proceed with a regenerative surgery for the general health condition of the patient and for his smoke habits.

Conclusion

A successful case of retrograde peri-implantitis treatment demonstrates the feasibility of implant apicoectomy as an alternative to implant removal or implant surface debridement. Instead of opting for implant removal or debridement, the patient underwent an implant apicoectomy, where the most apical portion linked to the cystic lesion was excised. Follow-up appointments thereafter showed positive progress in the healing of the surgical area. This case sheds light on the potential benefits of apicoectomy in managing periapical lesions associated with dental implants [Figure 8 - 9].

Figure 8: Healing after 12 months.

Figure 9: Orthopantomography of the surgical site healing at 12 months.

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