

Surgical treatment of chronic sinus pain developing after dental implant placement: a case report with 3-month follow-up

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ABSTRACT

Dental implant surgery in the maxillary posterior region with insufficient alveolar bone height can be performed in one or two stages, depending on the amount of residual bone. Anatomical structures in the area where the procedure will be performed increase surgical sensitivity, and failure to make the necessary preparations may lead to various complications. During dental implant surgical procedures, various complications may be encountered in the relevant area. A 56-year-old male patient applied to our clinic with the complaint of severe and persistent pain. With panoramic and cone beam computed tomography evaluation, it was determined that the apical parts of the last two implants were in the sinus. After obtaining consent, two adjacent implants were explanted within the same session on the planned day, and the procedure area was closed with buccal fat tissue obtained from the patient and autologous platelet-rich fibrin.

Keywords: Buccal fat pad, dental implant, explantation, maxillary sinus, sinus lifting

INTRODUCTION

Dental implants are increasingly used in the oral rehabilitation of partially and completely edentulous areas.¹ This method is preferred by many physicians over traditional fixed or removable partial dentures because its functionality and aesthetics are similar to natural teeth.²⁻⁴ However, in these procedures, it is necessary to pay attention to the anatomical structures during the application and if there is a pathological condition, it is necessary to postpone the procedure or turn to a different option. Preliminary evaluation of the remaining alveolar bone height and sinus during implant placement in the upper jaw posterior edentulous area is very important for the success and prognosis of the surgical procedure. The presence of a pathological condition in the area may result in acute infection, pain-fever-swelling-discharge, and failure of implant surgery. In the presence of chronic sinusitis, surgical procedures may cause the chronic process to turn into an acute painful form. If any pathology is detected in the patient's history or imaging during the evaluation of the sinus, ear, nose and throat consultation is required. Our aim in this case report is to present the management of the surgical field by removing the factors that cause maxillary sinus-related pain from the area. The only solution in treatment management is to carefully remove the source of pain from the area and use safe antibiotics.

CASE

A 56-year-old male patient applied to Kırıkkale University Faculty of Dentistry Periodontics Clinic with the complaint of persistent pain in the left maxillary sinus area (Figure 1).



Figure 1. Panoramic image of the patient

According to the anamnesis, it was learned that the patient had no systemic disease, had a history of maxillary sinusitis, and had a dental implant procedure 4 months ago. When intraoral examination was performed, there was no redness around the implants, no bleeding on probing, no pus formation, and no deep probing depth was observed. With panoramic (Figure 1)

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and CBCT evaluation, it was determined that the apical part of the last two implants was located in the maxillary sinus and there was a thickening of the Scheneiderian membrane. Based on the patient's complaints and radiographic evaluation, the ear, nose and throat clinic was consulted. It was decided to remove the implants located in the area of teeth 26 and 27. The patient was informed about the procedure. 1 day before the procedure, once a day Ceftinex 600 mg (PharmaVision Industry and Tic. Inc., İstanbul, Türkiye) twice a day, Kloroben 1.5 mg/ml+1.2 mg/ml mouthwash (Drogsan Pharmaceutical Industry. and Tic. Inc., Ankara, Türkiye) and Bi-profenid 100 mg (Sanofi Pharmaceutical Industry. and Tic. Inc., Kırklareli, Türkiye) was started 1 hour before the procedure.

Following routine surgical preparations, an envelope flap was created to provide a comfortable field of view. Bone tissue was removed around both implants under serum cooling with rond drills and trephine drills, respectively. The released implants were removed without any problems by moving them counterclockwise towards the oral cavity (Figure 2). The cavity was evaluated. Granulation tissues were cleaned and irrigation was performed with physiological saline and rifampicin (Figure 3).



Figure 2. Removing implants



Figure 3. Checking the defect

After the irrigation process, a 1 cm horizontal incision was made on the mucosa at the level of the 2nd molar tooth

to reach the cheek fat tissue. The buccinator muscle was passed and the buccal fat tissue was reached. The liberated fat tissue was excised and placed in the sockets of the resulting implants (Figure 4).



Figure 4. Transfer and adaptation of buccal fat tissue to the cavity

In addition, the membrane obtained from 2 tubes of autologous PRF obtained from the patient was covered over the fat tissue. Both incision lines were closed primarily using 4.0 silk suture (Figure 5). Precautions and recommendations after the procedure were explained. Ceftinex 600 mg once a day (PharmaVision Industry and Tic. Inc., İstanbul, Türkiye), Kloroben¹ 1.5 mg/ml+1.2 mg/ml mouthwash twice a day (Drogsan Pharmaceuticals Industry. and Tic. Inc., Ankara, Türkiye), Bi-profenid 100 mg twice a day (Sanofi Pharmaceutical Industry. and Tic. Inc., Kırklareli, Türkiye), Aerius 5 mg once a day (Sanofi Pharmaceutical Industry. and Tic. Inc., Kırklareli, Türkiye), Otrivine care 1 mg/1 ml (Zentiva Health Products Industry and Trade Inc., Kırklareli, Türkiye) was prescribed twice a day. Cold application was recommended on the day of the procedure and the day after. A follow-up appointment was made for 14 days later.



Figure 5. Closing the incision line with 4.0 silk suture

After the procedure, a periapical image was taken from the relevant area (Figure 6).

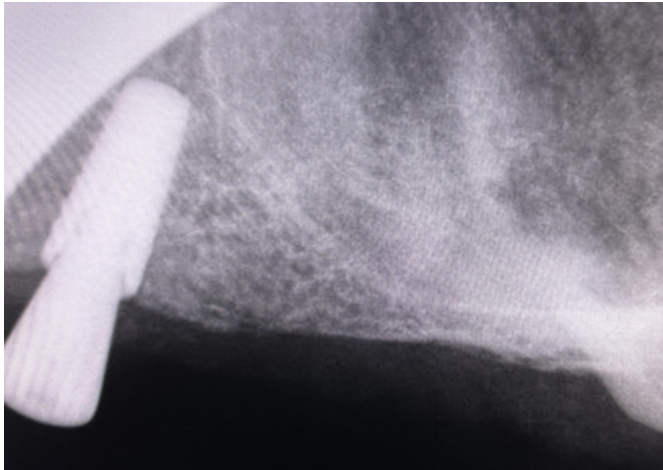


Figure 6. Post-operative periapical imaging of the surgical field

During the postoperative follow-up, recovery was uneventful. The patient reported pain in the upper left cheek area for the first day and swelling that started the next day. The stitches were removed on the 14th day after surgery. At a one-month follow-up, it was observed that the pain was gone and the closure of the wound areas was in proper form. After the surgery, the patient was successfully followed for 3 months and no problems were observed.

DISCUSSION

Maxillary sinusitis is a common and important complication after dental implant surgery. A review of the literature revealed numerous case reports. In this case report, the procedure and recovery process applied to a patient who applied to the clinic with the complaint of sinus pain, which partially decreased during use and then increased again, although he used different types of antibiotics and painkillers many times after the procedure, was reported.

Factors affecting maxillary sinus pneumatization and alveolar bone resorption include prosthetic rehabilitation, causes of tooth loss, and muscle activities.⁵ During the edentulous period, the amount of remaining bone decreases due to these factors. Dental implants planned for the area can be placed in one or two stages by elevating the sinus floor. For an appropriate treatment, it is important to carefully evaluate the sinus characteristics. Sinus physiology is affected by the variable anatomy of the sinus floor and conditions such as extension and perforation of the elevated membrane.

Additionally, postoperative hematoma and swelling may play a key role in the development of sinusitis by leading to decreased osteomeatal patency.⁶ In patients with chronic maxillary sinusitis, changes in the physiology of the chronically infected sinus due to damage to the Schneiderian membrane during the procedure may cause acute sinusitis in the post-procedure period.⁶ 10% of sinusitis cases are odontogenic in etiology, this rate increases to 40% in different reports. Common causes of odontogenic sinusitis vary; These include inflammatory cysts, odontogenic cysts, peri-implantitis and foreign bodies. Studies show that although the majority of odontogenic sinusitis sources are dental-related, an increasing number of cases tend to be caused by dental implants and augmentation procedures.

In a retrospective study (including 480 patients), implant-related etiology was reported to be 30%.⁷ In our study, implant-related sinusitis was present, and when we evaluated different studies, removal was indicated.⁸ It is recommended to use a Bichat fat pad as a large defect will appear after the removal of the implants, the vitality of the hard tissue will be impaired and the possibility of oro-antral fistula development is high.⁹ In this case, the existing gaps were closed with Bichat fat pad and autologous PRF. In cases where chronic symptoms are present in the sinus, removal of the implant and use of Bichat fat pad or palatal flap shifting techniques to prevent oroantral fistula development may increase success in long-term follow-up after the procedure. Even though the features of dental implants improve, complications are inevitable. Today, the relationship between dental implants and sinusitis needs to be understood and taken into consideration. The SCDDT treatment protocol recommended for sinusitis-related implants is compatible with our study.¹⁰ Effective treatment must be applied in a way that does not cause or cause inflammation in patients.

CONCLUSION

In this article, we present the 6-month follow-up of the patient who was treated by removing the implants and closing the gap with buccal fat tissue and autologous PRF as a result of persistent pain after surgery. In the presence of an inflammatory condition in the maxillary sinus, it may be necessary to pre-evaluate the area in detail before surgery, suppress the inflammation, or plan different dental procedures by protecting the area.

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