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CLINICAL REPORT

Immediate Placement and Restoration of Implant in Periapical Infected Site in the Maxillary Esthetic Zone: A Case Report

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Abstract Immediate placement and restoration of the implant is a widely used protocol, but loading of implants in the site which is periapically infected is still not very popular. Very few studies have been conducted and its still in debate. The conventional protocol of placing implant and waiting for it to osseointegrate is time consuming and compromises patients esthetics and psychological comfort. This report presents a case of immediate placement and restoration of implant in the region with periapical infection.

Keywords Immediate placement · Restoration · Dental implant · Periapical lesion

Introduction

The concept of placement of implants into the freshly extracted sockets was introduced in the late 1970s but the use and success regarding the same has been achieved in the last few years [1]. Soon after the extraction of a tooth, the bone undergoes resorption and changes are seen in the bone volume. By placing the implant immediately in the socket, this bone loss can be prevented up to a certain extent. The advantages of immediate placement and loading in the fresh extraction sites compared to conventional loading are compliance to both dentist and the patient, reduced appointments, shorter treatment time, faster esthetic and functional results and higher success rates. Despite all these advantages there is a risk of microbial intervention in cases with periapical lesion which can delay the process of osseointegration [2].

The placement of implant immediately after tooth extraction with periapical lesion is still a debate and requires more studies to be conducted. However, Douglas had stated that in sockets with 3–4 intact walls, minimal periodontal resorption and good primary stability, immediate implantation is a safe procedure [3]. There are several reports which state the success of implants in the regions with periapical infection. A report by Siegenthaler and Lindeboom suggested that the complication rates with implants placed in the infected sites compared to those of non-infected sites are almost the same [4]. Novaes Jr. and Novaes [5] in their study stated success by few pre and post operative measures including antibiotic administration, meticulous cleaning, and alveolar debridement. This case report describes the immediate placement and loading of implant in replacing teeth with periapical lesions in maxillary anterior zone.

Case Report

A 29 year old non-smoker male patient in good health conditions and without any chronic diseases reported to the Postgraduate department of Prosthodontics with the history of discoloration in relation to maxillary left central incisor (Fig. 1). On examination, an asymptomatic calcified canal was observed radiographically confirming a large periapical granuloma associated with the 21. Case was referred to the endodontist, but since the canal was calcified extraction was advised by the endodontist. Since the tooth was a cental incisor and the patient did not want to have a

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Fig. 1 Pre-operative intraoral view and RVG

Fig. 2 Extraction of the tooth with maxillary anterior forcep

removable prosthesis extraction of 21 following immediate implant placement was done under antibiotic coverage.

Diagnostic impressions were made and the casts were poured. Pre-operative radiographs orthopantomographs, IOPA and RVG with respect to 21 were taken. Oral antibiotics, amoxicillin 500 mg (tid) was started 2 days prior to the surgery.

Surgical Procedure

The surgical access was obtained with the use of periotome to relieve the periodontal fibers and the tooth was extracted with an anterior forceps with minimal tissue damage to preserve the gingiva as well as the bone (Fig. 2). The socket was debrided following the extraction and a small defect in the apical region of the socket was observed on the labial side. Hence, the osteotomy site (Fig. 3) was prepared on the palatal wall and an Ankylos B 11 implant (4.5 mm in diameter and 11 mm in length) was placed (Fig. 4). Since there was a periapical granuloma, no graft material is used in the socket to fill the gap between implant and socket as this could cause failure of the implant. It is also observed that grafting is not necessary when immediately loaded as the epithelium would not migrate into the socket instead form around the provisional

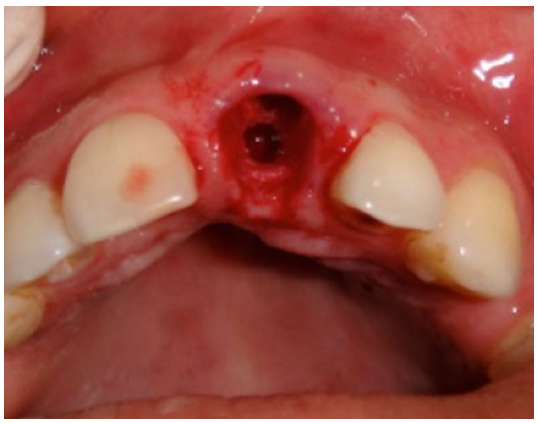

Fig. 3 Defect on the labial side and osteotomy on the palatal bone

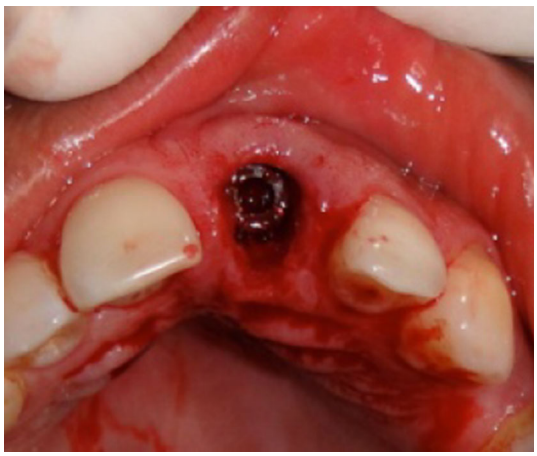

Fig. 4 Ankylos (4.5, 11 mm) implant placement

Fig. 5 Angulated abutment (3.0 mm, 15°) fixed

and maintaining the architecture of the gingival. Bone formation would take place in the gap between the socket and implant in a period of 2 months. An abutment height of 3 mm with 15° angulation was torqued according to

Fig. 6 Temporization done

Fig. 7 Fit-in of the definitive prosthesis

manufacturers instruction (Fig. 5). Provisionalization was carried out on the same day using bis-acryl methacrylate (Protemp-4, 3 M-ESPE) (Fig. 6). No sutures were required following the placement and loading of implant.

Postoperative Management

After the surgical procedure the antibiotic therapy (amoxicillin 500 mg, 3 times/day) was continued for 5 more days. Anti-inflammatory and analgesics were prescribed for 3 days. The use of 0.2 % chlorhexidine was indicated for 7 days with no dilution. The patient was recalled after one week for the follow-up.

Follow-up

Following a 3 months healing period, patient was recalled for the definitive prosthesis. Radiographic evaluation did not reveal any lesion. Definitive prosthesis was fabricated and cemented (Fig. 7). At 1-year regular follow-up examination, the implant was fully osseointegrated with satisfactory functional and esthetic conditions without any lesion or periapical pathology (Fig. 8).

Discussion

The primary objective of implants is to restore the function and esthetics. In order to reduce the bone resorption and to maintain the esthetics, immediate placement and loading is the treatment option which has been put forward by several authors and is widely used. But placement into the extraction site with periapical lesion is still a questionnaire and many studies are being conducted on the same.

Casap et al. [6] conducted a study in which 30 implants were immediately placed into debrided infected sites in 20 patients and obtained 97.6 % success rate. One implant failed immediately after restoration.

Fabbro et al. [1] got excellent clinical results after immediate placement of implants following extraction along with PRGFs.

Many authors consider placement of an implant in a socket with periapical lesion as a contraindication, but several studies which were conducted do not show any significant difference compared to those with healthy sockets.

There was a slight gingival recession which was observed and it was masked with the gingival porcelain. If the underlying and surrounding bone is sound a more esthetic result can be obtained.

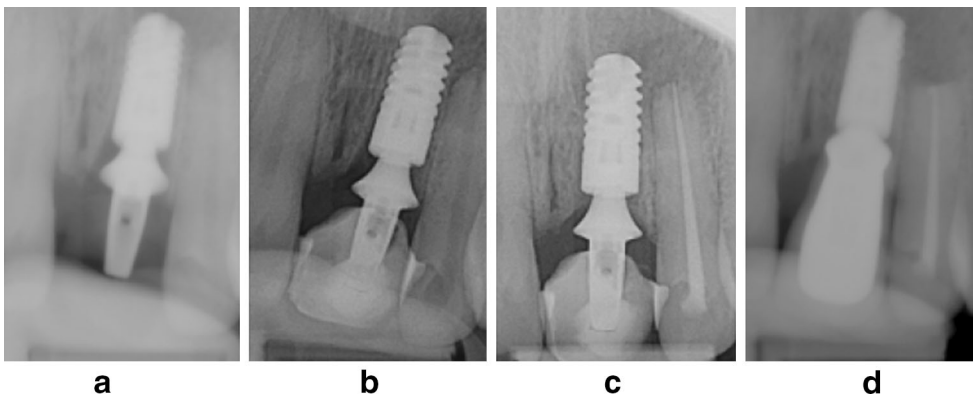

Fig. 8 RVG of implant in position: **a** post-op, **b** 1 month post-op, **c** 3 months post-op, **d** 12 months post-op

The causative factor for the endodontic lesions are mixed infections which are dominated by anaerobic bacteria's. Most commonly which are found are fusobacterium, prevotella, porphyromonas, actinomyces [6]. The meticulous debridement of the infected socket along with pre and post operative antibiotics helps in eradicating the presence of the microorganisms at the particular site, thus establishing favourable conditions for bone healing and osseointegration.

While this case report presented successful results by placing implant immediately in an infected site with periapical infection, other factors should be considered as well for the same. Proper case selection, differentiating and debridement of the granulation tissue, and skills to the proposed protocol contribute for the esthetic and functional outcome [5]. Thorough debridement of the socket after the extraction can play a major role in the success of the implant.

Conclusion

Immediate implant placement and loading represents a viable treatment option for infected sites when combined along with antibiotic regime and complete elimination of microbiota from the infection socket.

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