

## Immediate Implantation and Alveolar Reconstruction of Compromised Socket with Biotec Implant GMBH (IAR)

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### Abstract

The successful use of osseointegrated implants in the newly extracted tooth socket has been documented in numerous longitudinal studies in recent years [1,2]. However, the extent to which these positive results apply to those teeth involved with periapical lesions and/or bone plates resorption remains unclear [1,3,4]. The aim of the present case study is to show that a good diagnosis and a precise preoperative assessment help to considerable extent in the survival of our dental implants and in the future peri-implant osteo-integration [5,6] and to evaluate the ridge reconstruction outcome with autogenous bone [6,7].

**Keywords:** Immediate Implantation; Ridge Reconstruction; Periapical Lesions; Maxillary Alveolar Ridge

### Introduction

An interesting case of 52 years old female with tooth #14 extraction with reconstruction of alveolar bone and immediate implant placement in one visit. The tooth was root canal filled with periapical lesion. The buccal plate showed dehiscence and resorption which needed to be replaced by autogenous bone that we found it covering an impacted #18. All the procedures were done at the same time including tooth extraction #14, Impacted tooth removal #18, Implant placement #14, and ridge reconstruction with bone grafting.

Clinical and radiographical examinations showed a mobile crown and a labial plate fenestration with cortical bone loss + an area of periapical radiolucency at #14 (Figure 1 and 2).



**Figure 1**



Figure 2

### Procedures

After a good pre-operative assessment, the decision was first to remove the crown of the tooth and then to remove the root with atraumatic extraction by the use of chisels and root forceps (Figure 3).



Figure 3

Before the extraction, an impression of the upper and lower teeth were done and we sent it to the lab for preparation of a Maryland bridge for replacement of the tooth # 14 (with 2 wings on #13 and # 15) immediately after the extraction (Figure 4).



Figure 4

Later on after completion of the extraction, a good enucleation of the soft tissue in the periapical area of the socket, and checking of the labial plate were done. There was labial bone loss at the middle third of the root (Figure 5).



Figure 5

The post extraction pictures showed that there was no labial bone and we needed to reconstruct this bone after placement of the implant, in order to give better stability and osteo-integration for our future implant, as well as for esthetic reasons.

We used a special device to determine the amount of bone present there and the diameter of the socket (Figure 6-8). These measures helped us to decide which size of implant we should use and the areas of bone loss.



Figure 6



Figure 7 and Figure 8

The Biotec implant GMBH size 4.2 mm x 11.5 mm was our choice.

We started to do the pilot drill inside the socket, initially vertical and then with an angulation of 15 degrees palatally, in order to use the palatal bone and get primary stability because there was a deficient labial plate (Figure 9-12).



Figure 9 and Figure 10



Figure 11 and Figure 12

The placement of the implant went perfect and we got primary stability, however, there was a space between the implant and the labial soft tissue (Figure 13 and 14). So, we decided to do bone grafting and augmentation into the area.

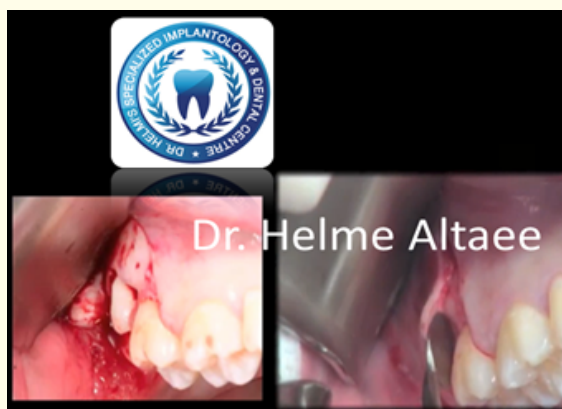


Figure 13 and Figure 14

The OPG x-ray and the CT scan showed that there was an impacted #18, which needed to be extracted (Figure 15 and 16). After anesthesia and removal of the impacted tooth, we used the labial bone that was covering the impacted tooth, as a graft for the missing alveolar plate in our socket (Figure 17-19). The autogenous bone was shaped according to the missing alveolar plates and was placed buccally to the implant (between the implant and the periosteum), which represents the future alveolar plate (Figure 20). We also got some chips of spongy bone from the extraction area along with bovine bone which, mixed together and placed in the empty space (Figure 21).



**Figure 15 and Figure 16**



**Figure 17**



**Figure 18**



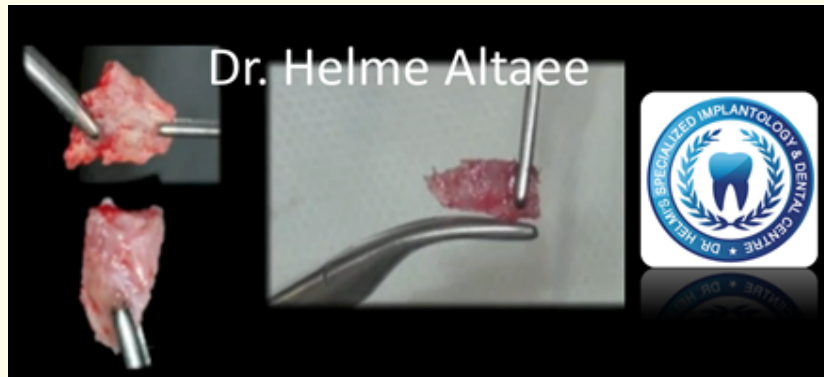


Figure 19



Figure 20 and Figure 21

Finally, the implant and the augmented bone were covered by Jason pericardium membrane. A 3/0 black silk suture was used to suture the area and the Maryland bridge was placed immediately after the surgical intervention (Figure 22-26).



Figure 22 and Figure 23



Figure 24



Figure 25: X ray immediately after implantation.



Figure 26

One week later, the sutures were removed and the area was irrigated and cleaned.

The Maryland Bridge was placed back and left there for exactly 12 weeks.

3 months later we continued the prosthetic protocol for the placement of the final prosthesis (Figure 27-33).



Figure 27



Figure 28



Figure 29





Figure 30



Figure 31

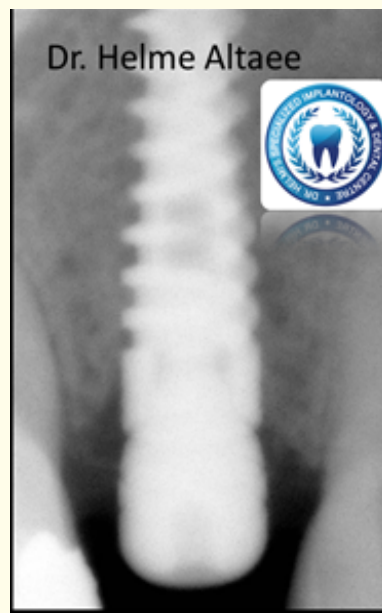


Figure 32



Figure 33 (Two years later)

### Conclusions

1. Early diagnosis of any and early treatment may ends in very acceptable results
2. Immediate implantation after tooth extraction can be achieved only after complete cleaning of the socket and the periapical area.
3. Autogenous bone graft still the best source of graft that we can get for ridge reconstruction.
4. Osteointegration with the use of autogenous bone graft gives faster and more firm results than with other types of grafts.
5. Biotec Implants was our right choice for this case according to the surface topography of the implant which helps in using this implant in soft bone or in a fresh socket.

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