ER, CR: YSGG-LASER ASSISTED IMMEDIATE IMPLANT PLACEMENT IN INFECTED SOCKETS

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Background: Bone resorption of the alveolar process depends on the time period that has passed after tooth loss. It has been shown that early implantation may preserve the alveolar ridge. Procedures like GBR give very predictable results with implants placed in the freshly extracted sockets. The presence of active infection in the extraction site has been considered a contraindication to immediate implant insertion due to possible spreading of the infection to the peri-implant tissues, leading to implant failure or peri-implantitis. Recent findings suggest that immediate implantation into infected sockets is not associated with inferior implant survival rates compared to non-infected sockets, making it a valid treatment option to more conservative two-staged approaches. The use of an Er,Cr:YSGG laser in combination with mechanical cleaning prior to implantation has shown noticeable reduction the bacteria in the area. However, the number of patients in these case studies is very small.

Aim/Hypothesis: The aim of this case-series study is to describe a new ER, Cr:YSGG laser-based treatment procedure and Protocol for immediate implantation in infected sockets in a larger series of consecutive patients.

Material and Methods: Fifty-three consecutive patients were treated using the described method, aged 57.5±16 years. Reasons for extraction were endodontic, periodontal or endodontic-periodontal causes, root fracture and combined and trauma with subsequent infection. Pre-operative antibiotics were prescribed starting 1-2 days prior to surgery.

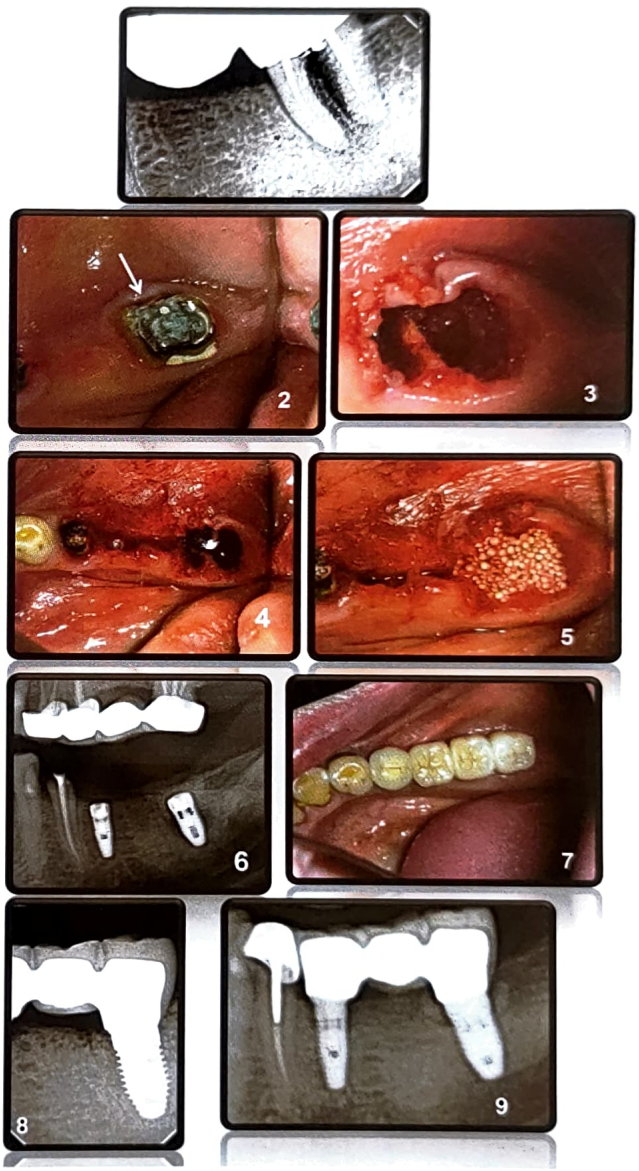
Extractions were achieved atraumatically without raising flaps. After thorough mechanical cleaning, the sockets were rinsed with 0.2% chlorhexidine digluconate followed by sterile saline. This was followed by LASER treatment of each socket as described in the section below.

Gaps between implant and the bone wall and small bone deficiencies were filled with a synthetic in situ hardening bone graft (easy-graft CRYSTAL, Sunstar GUIDOR, Etoy, Switzerland). Implants were restored after 3 months in the mandible and after 4 months in the maxilla.

Results: In total, 53 patients received 102 implants. Thereof, (49 were placed in the maxilla, and 53 implants in the mandible). Healing was uneventful in all patients, with minimal pain. 97 out of the 102 implants (95.1%) survived. The prosthetic restoration was delivered 136 ± 73 days (mean ± standard deviation; range: 37 – 400 days) after implant placement. Mean follow-up time was 535 ± 149 days (mean ± standard deviation).

Following the surgical Protocol cited here, for immediate implantation in infected sockets using laser decontamination of the infected site and an in situ hardening bone graft substitute for grafting of peri-implant defects.

Conclusions and clinical implications: Implant survival was 95.1% in 53 consecutive patients who received 102 immediate im-



PATIENT #1

- Pre Operative X-Ray with Furcation Involvement. (Figure 1)
- Draining Fistua intra-orally (Figure2)
- Atraumatic Extraction with preservation of Interdental septum
- Nobel Replace Implant Insertion –post LASER protocol (Figures 3 and 4)
- Application Of Easy Graft Crystal as per Protocol (Figure 5)
- Post-Operative OPG and Prosthesis placement (Figures 6 and 7)
- 2 Year follow up Radiographs (Figure8)

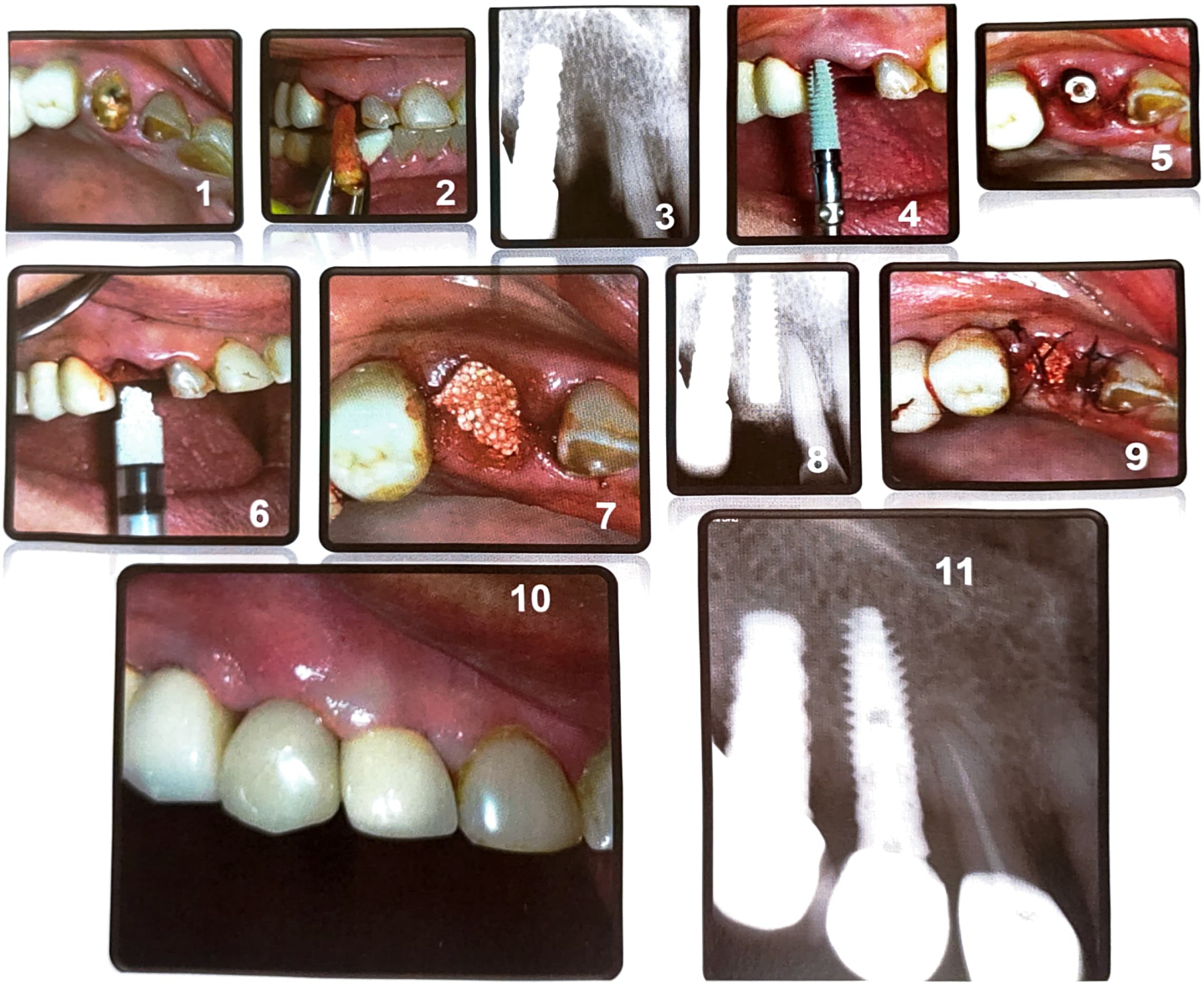
And 3 year follow up (Figure 9)

plants in previously infected sites. The presented technique with laser decontamination of the socket, grafting with an in situ hardening material and non-submerged healing showed a similar survival rate to immediate implants placed in non-infected sites. An improved healing with minimal discomfort, beneficial for bony healing around the implant as well as for efficient soft tissue closure, was demonstrated.

THE ER,CR:YSGG LASER PROTOCOL

A Waterlase MD unit was used for all treatments,(Biolase Technology, Irvine, CA) treatment was following:

1. An MZ-4 (14 mm) radial-firing tip was used for preparation of the socket using it in non-contact mode.
2. Laser system power settings were in the range set 1.0 to 2.5 Watts with Frequency Hz .
3. Water settings 15-40% and Air settings 30-50%, at 20 Hz Frequency .
4. The radial-firing tip was inserted into the socket apex and was moved coronally slowly, guiding the tip in a circular fashion. Application time was 40 to 90 seconds per socket, dwelling at the sites where sources of infection were identified during tooth removal.
5. Care was taken to treat and debride each "root socket" for multi-rooted teeth.



PATIENT #2

- Pre-Operative Clinical Situation with Fractured 13 (Figure1)
- Atraumatic extraction Clincal and Radiographic Images (Figures 2 and 3)
- Post- LASER protocol-Dentsply- Xive Implant Insertion , Easy • Graft-Crystal augmentaion and wound closure (Figures 4-9)
- Crown cementation on 13 Clinical view (Figure10)
- 2 Year Post-Operative radiograph (Figure11)