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Minimal invasive treatment option in the atrophied mandible

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Introduction

The absence of teeth has a negative impact on chewing performance and the swallowing threshold of edentulous patient.

Poor masticatory function decreases oral health quality of life and people concerned are usually unhappy. Rehabilitation of an edentulous jaw within short time improves patient masticatory function and general quality of life1.

This article aims to introduce a new implant system which allows in a very short time (about 2 weeks) to improve patients quality of life.

The implants used are a new generation of implants from the company TRATE /Switzerland) and the range of implants are called ROOTT M implants. The Implant system consists of several types of components specifically developed for different locations in the jaw2.

Implants characteristics:

There are one-piece implants, so called since no other components are needed except a fixation screw for attachment to prosthesis. These implants are a single component with a compression thread. The special compressive thread produces compression when inserted into the cancellous bone, thereby creating a layer of cortical bone around the implant which allows immediate loading with high primary stability. The absence of intrinsic micro gaps helps avoid peri -implantitis over time. The abutment direction on the implant can be adjusted up to 15 ° relative to the implant axis. The length of the implants ranges from 08 to 20 mm and thickness from 3mm to 5 mm. The implants have a resorbable blast media surface1-4.

The compressive one-piece implant can be used to restore single crowns and anterior cemented bridges, or multiple unit restorations with immediate loading in the upper and lower jaws with adequate bone tissue. It can also be used in combination with a conventional implant and it allows flap and flapless placement. The implants insertion is similar to that of crestal implants, with a recommended minimum torque of 35 N/cm.

Single piece implants (Compressive M) are less invasive and can be immediately loaded in case of good bone quality, or progressively loaded in case of less-than-ideal bone quality.

-Available systems

The one-piece implant offers a unique monobloc design that integrates both implant and superstructure, for a quick, simple one-stage procedure or two stage procedure. The advantage of the one-piece implant (by ROOTT) is that there is no connection between the implant body and the abutment. There is no risk of screw loosening or a screw fracture. There is also no 'pumping effect' that may induce bone loss around the implant neck.

The monobloc implant (Compressive M by ROOTT) has a tissue level connection instead of a bone level connection. This tissue level connection ensures that even if there is a pumping effect it will not induce bone resorption since it is far from the bone level.

Implants are specifically engineered for use in narrow ridges and tight spaces5. The implant body is tapered, it ensures a high implant stability which encourages an immediate loading process.

The ROOTT Implant system consists of several types of components specifically developed for different locations in the jaw2, 4, 6.

The implant system incorporates the whole range of treatment procedures and it encourages early loading which ensures that patient edentulism can be taken care of immediately with the restoration of function and aesthetics within a few days7.

The ROOTT system incorporates ranges of treatment options for management of edentulism, and it is a alternative to extensive surgical procedures in situations where there is substantial bone resorption3, 4, 6, 7.

-Presenting the problem of these people in general elderly people but beginning from 38-98

Mastication comfort in a atrophied mandible is a major problem for all concerned. Poor chewing function negatively impacted the oral health quality of life and prolonged edentulism often results in dimensional changes in bone and soft tissue. The severity of these changes depends on the duration of the edentulism and the patient's systemic and oral well-being1, 8.

Due to the complete loss of teeth, the individual loses various functions such as chewing and talking. There is of course also an aesthetic aspect. For these reasons, the patient tries to look for a solution. The insertion of a new prosthesis can therefore play an important role in improving chewing and oral health quality of life in the edentulous patients (young and elderly)8.

The occlusal force decreases under the influence of several factors. In the elderly, this is often a result of tooth loss, lack of a dental prosthesis, masticatory muscle sarcopenia, poor periodontal condition and orofacial pain9, 10.

The advantage of flapless and immediate loading

One-piece implants facilitate oral rehabilitation and accelerate tooth replacement procedure11, 12. The implant permits minimally invasive surgical techniques with a simpler treatment sequence at lower costs13. When compared to conventional implants, one piece implants are cost-effective, they eliminate the need for cover screws, healing abutments, subsequent separate implant attachments or separate implant abutments11, 13.

This procedure, when applicable, provides patients and doctors with another treatment approach. Several clinical papers reported excellent short- and long-term survival rates (of about 98.7% at 2 years) for implants placed using flapless or minimally invasive approaches with the option of delivering immediately a pre-fabricated temporary prosthesis14, 15.

Case report

Patient is a 66 years old man who lost his remaining teeth in the mandible due to chronic periodontitis (see Panoramic radiograph below). He presented at the clinic with a reason to get fixed teeth in the mandible. A clinical examination of the mouth showed a partial edentulous lower arch with resorbed ridge and periodontally compromised teeth (33 and 34). Radiographic examination using an orthopantomogram showed a partial edentulous lower jaw with moderate vertical bone resorption in the front and severe vertical resorption in the premolar and molar region (Figure 1).

Treatment Plan: From a prosthetic point of view, the patient desired a fixed prosthetic solution. In the lower jaw a flapless immediate loading treatment with a bar for overdenture retention was proposed. The patient agreed to this treatment plan.

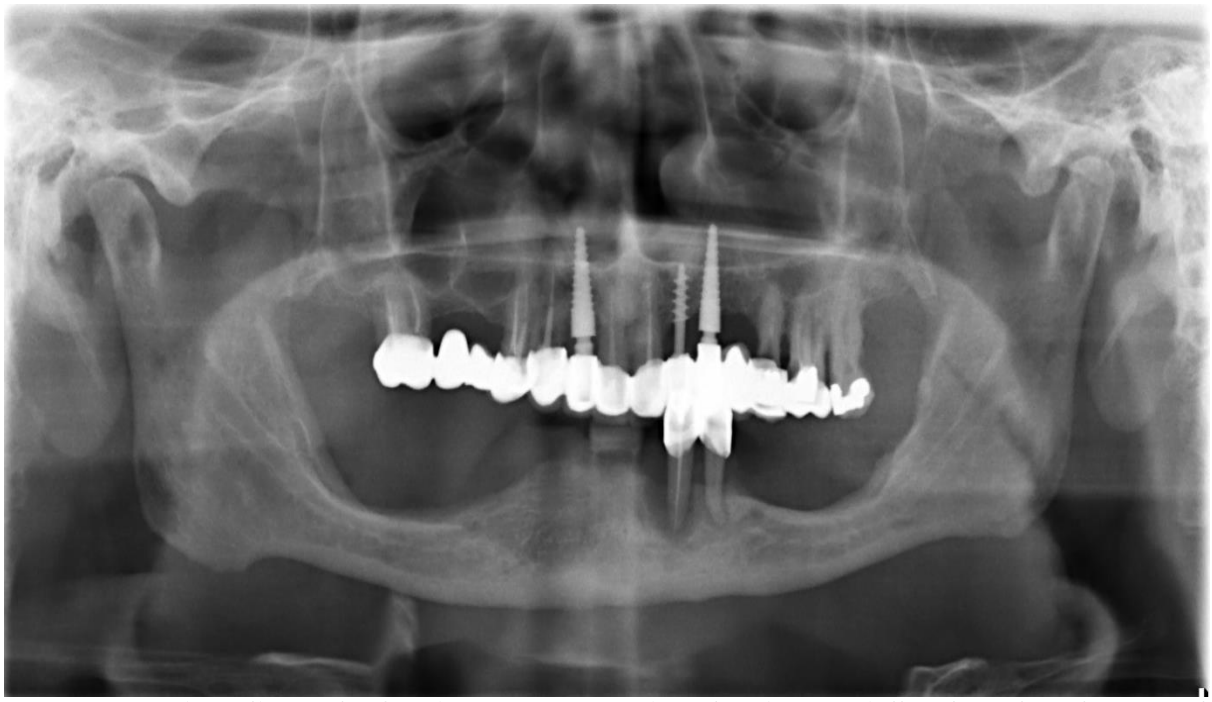

Figure 1: Panoramic radiograph of patient at presentation showing partially edentulous lower arch with resorbed alveolus and remaining lower teeth.

Four one-piece implants were placed in the mandible (figure 2).

Figure 2: Surgical procedure and implant placement in the mandible

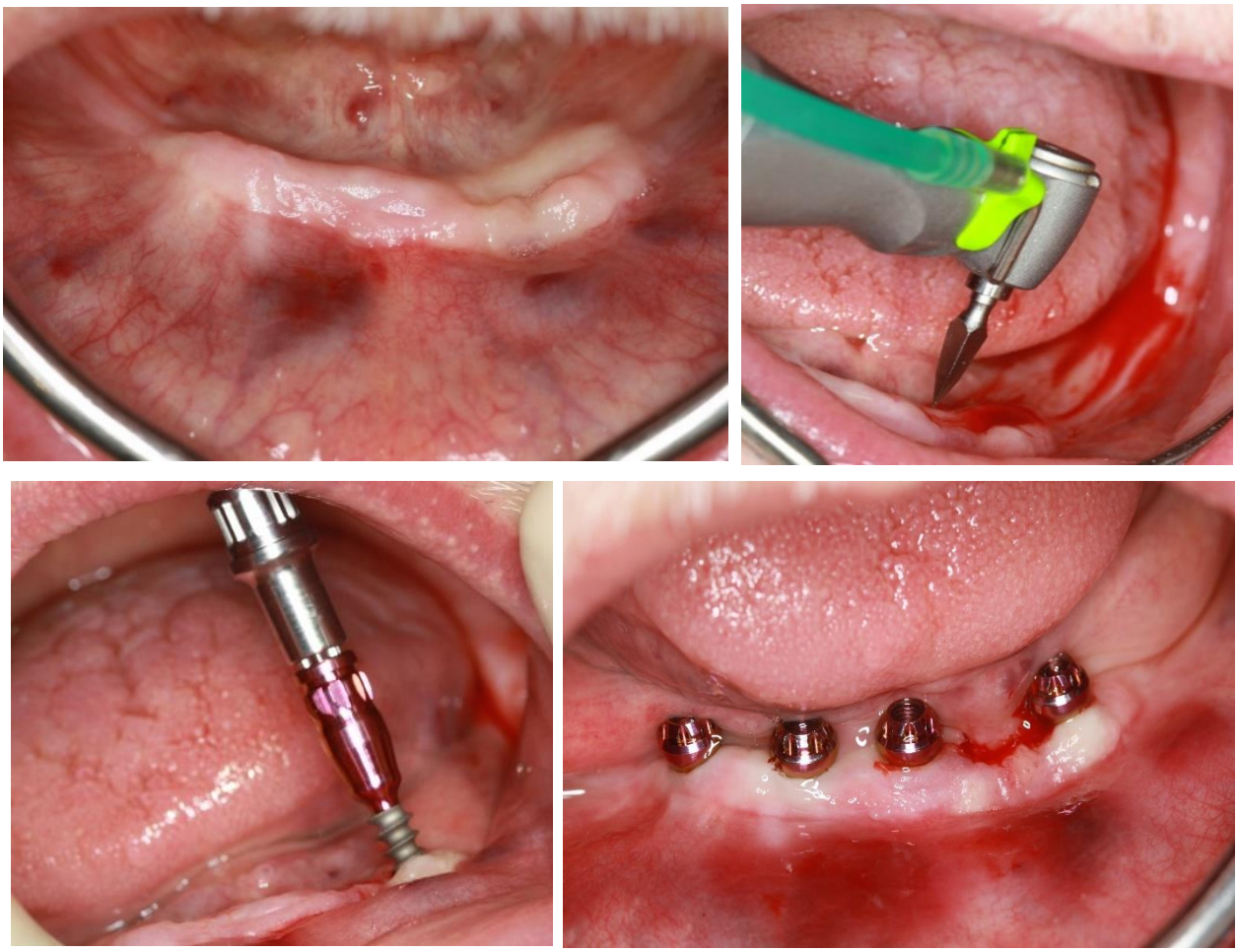

Figure 2: Surgical procedure and implant placement in the mandible

After an implant placement, bite registration was done. Then transfer copings were screwed on the implants in the mandible and an impression was taken with silicone immediately after the surgery.

Five days after the try-in an appointment for prosthesis delivery was given. The patient was reviewed after 2 weeks. Thereafter, the patient was scheduled for follow-up at 3 months and then every 6 months.

Figure 3a: Transfer copings, transfer copings screwed on implants impression was taken with silicone impression with transfer copings and abutment screws.

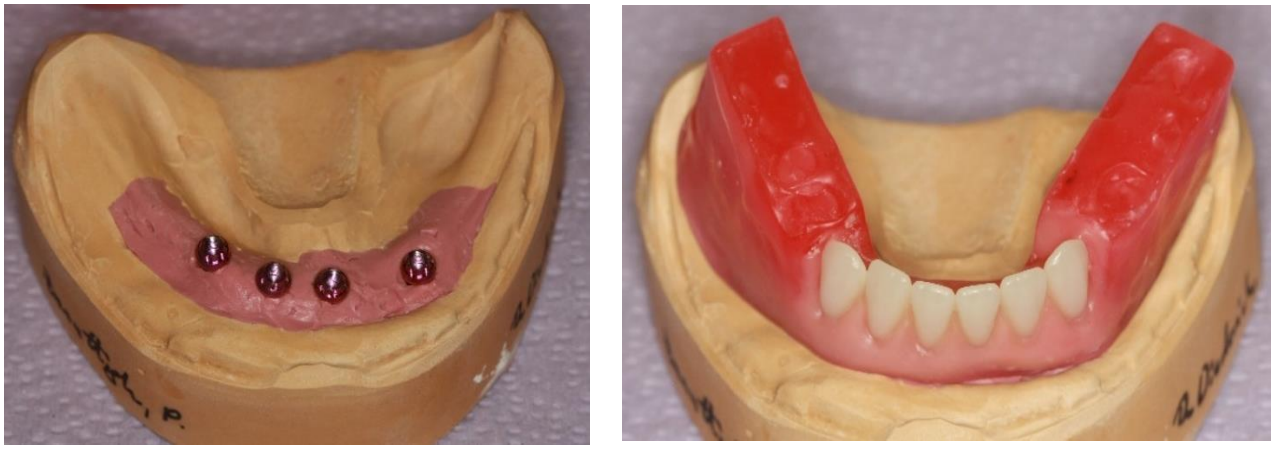

Figure 3b: Laboratory steps- Bite registration, impression taken procedure, plaster key and overdenture fabrication

Figure4: Panoramic radiograph of the patient and clinical photograph of the patient after prosthesis delivery

Two weeks after the surgery the bar was screwed and the prosthesis for the mandible was delivered. (Figure 4).

Conclusion

The one-piece implant (Compressive M ROOTT) is an implant for immediate loading , or for delayed load in case of weak insertion torque. One-piece implants are time efficient since there is no need for a second stage surgery, mucosal healing period which decreases patient exposure to additional pain and discomfort. The innovative geometries and advanced surface morphology of the implant offer high initial stability13, 16.

The one-piece implant provides a simple treatment sequence at a lower cost and it offers the possibility to treat elderly patients (but also younger) with a minimal invasive implant placement (Flapless implant surgery) technique. The Flapless implant placement technique otherwise called minimally invasive procedure can be performed free hand, by using guided surgery or custom fabricated surgical guides made of casts taken at the first patient visit.

One-piece implants make the rehabilitation of edentulous cases possible within a short period of time as seen in the case above.

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