



Minimal Invasive Approaches to Maxillary Atrophy: Two Case Reports Featuring One-Piece Tissue Level Implants and Fixed Screw Retained Bridges

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Abstract

Atrophy of the maxilla poses significant challenges to dental rehabilitation, particularly in the context of dental implant placement. There exist numerous approaches to manage such scenarios, ranging from invasive techniques such as zygomatic implants, sinus grafting, and bone grafting, to more minimal invasive methods utilizing pterygoid implants and the transnasal approach. The latter techniques are particularly interesting due to their potential for early loading, where patients can receive a fixed rehabilitation within 2-3 weeks post-operatively. This article aims to present two case reports showcasing the clinical use of one-piece tissue level implants and fixed screw retained bridges in the management of maxillary atrophy.

Keywords: *Rehabilitation, full arch implant prosthesis, One-piece Implants, Pterygoid implants, transnasal approach, One Piece Tissue level implants,*

Introduction

The rehabilitation of an atrophied maxilla presents a complex, multi-faceted challenge for the dental professional^{1- 3}. A variety of strategies have been developed over the years, each with its unique set of benefits and drawbacks. The more invasive techniques, while often effective, involve a greater level of surgical trauma, higher cost, longer recovery times, and a higher risk of complications^{4- 7}. On the other hand, minimal invasive approaches offer several advantages, including shorter healing periods and less surgical morbidity, albeit with their own set of challenges^{8 -11}. Among these, the use of pterygoid implants and the transnasal approach, when applied with specific implants, may allow for early loading, providing patients with a functional, aesthetic, and stable oral rehabilitation within 2-3 weeks^{5,10}. This paper present two cases that illustrate the application and effectiveness of these minimally invasive strategies.

Case 1

This case presents a report of early loading on One Piece tissue level implants when Pterygoid and nasal approach were used.

The patient a lady of 53 had advanced periodontitis which made her come several times to the clinic for emergency treatment of pain. At a point patient wanted a permanent solution to this problem.

After consultation, plan was made as follows: to extract remaining teeth in the maxilla and mandible, the existing crowns on implants in the mandible were to be changed to have the same color for all the teeth (Vita B1) in the mouth Fig 1.

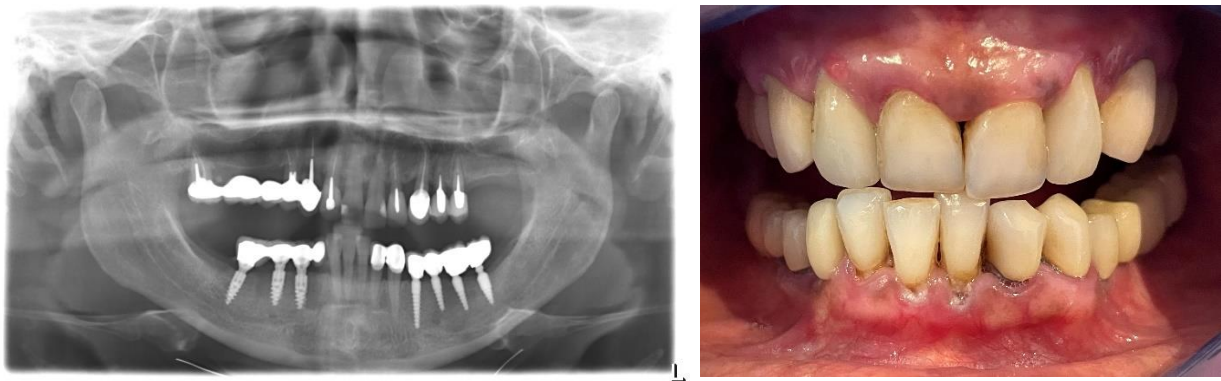


Figure 1 shows the panoramic radiograph and clinical photo at presentation.

Surgery was done in one session under local anesthesia, teeth in the maxilla and mandible were extracted and implants were placed.

In the maxilla Compressive Implants P 3.5/20 mm (ROOTT) were placed in the extraction sockets and at position 18 and 28 for high primary stability. The high primary stability is achieved due to the specific characteristics of these implants (Fig 2). The long thin part guides the implant during insertion while the larger part with compressive threads compresses the bone which results in bone corticalization.

The implants were inserted to bone level so that the head can be at tissue level. The same procedure was done in the anterior part of mandible.



Figure 2: Surgical procedure and implant placement in the maxilla

After surgery impressions were taken in the maxilla and mandible, temporary bridges were then made at chairside

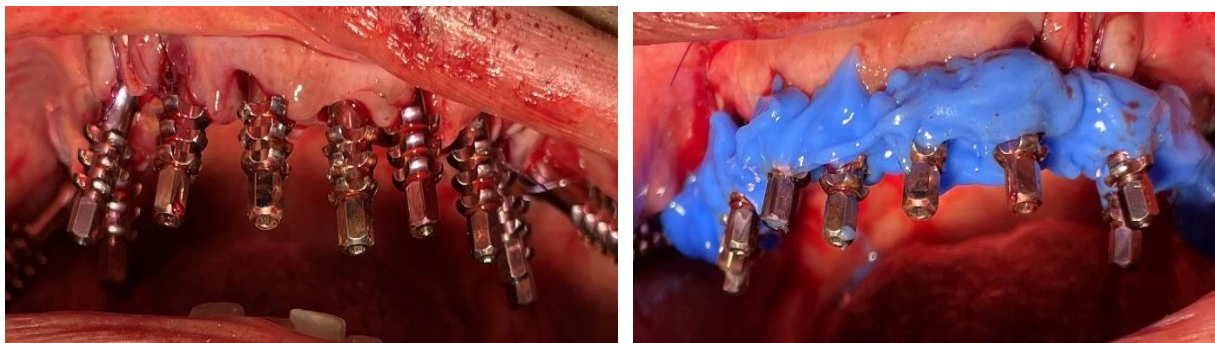


Figure 3: Impression procedure

On the second appointment the verification key was tried in, bite relation as well as aesthetical outcome were checked and validated. Ten days later frame was tried in Figure 4.

The metal ceramic bridges were placed in the mandible and maxilla 10 days after frame try-in.

The bridge in the maxilla is in 2 parts and screw retained, here angulated screw channels were used in order to get perfect fit. In the mandible the bridge is screw and cement retained.





Figure 4: Laboratory steps: frame try-in and metal-ceramic bridge

Three weeks after initial consultation, patient's mouth was rehabilitated with definitive metal ceramic bridges. This was made possible due to the achieved bicortical anchorage in the anterior part and a strong cortical anchorage at the pterygoid plates (75 N/cm) in the maxilla, these anchorage ensured high primary stability which encourages immediate loading. Fig 5

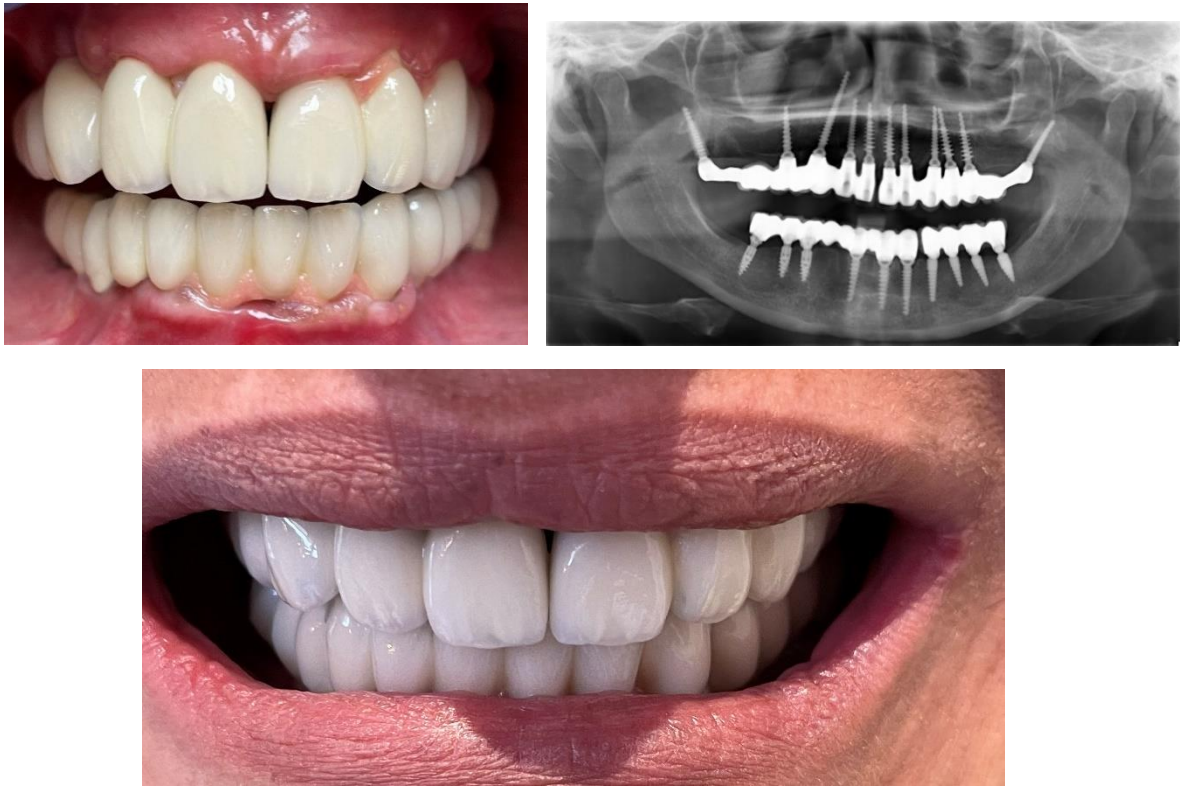


Figure 5: Clinical photograph and the panoramic radiograph of patient and after bridge delivery, day of placement

Case II

The patient, a lady of 56 years old came to clinic with periodontal problems, she desired a solution and oral rehabilitation in a minimal invasive way.

After intra oral examination and radiological reviews (panoramic radiograph and cone beam computer tomography scan) It was observed that the width and height of alveolar bone is not enough for classic implant placement, as a result the choice of appropriate implant is important fig 6.

With bone width of 5 to 6 mm One piece Tissue level implants (ROOTT, TRATE AG) were the implants of choice.



Figure 6 shows the panoramic radiograph of the patient at presentation

On the first appointment all teeth in the maxilla were extracted, and implants were placed, under local anesthesia. Pterygoid Implants C 3.5/20 mm were placed in position 18 and 28 to get a high primary stability, same implants were used at the extraction's sockets and in the rest of the maxilla figure 7.



Figure 7: Surgical procedure and implant placement in the maxilla

After the surgery the impression was taken immediately with screwed transfers and a temporary bridge was made at chairside. Fig 8

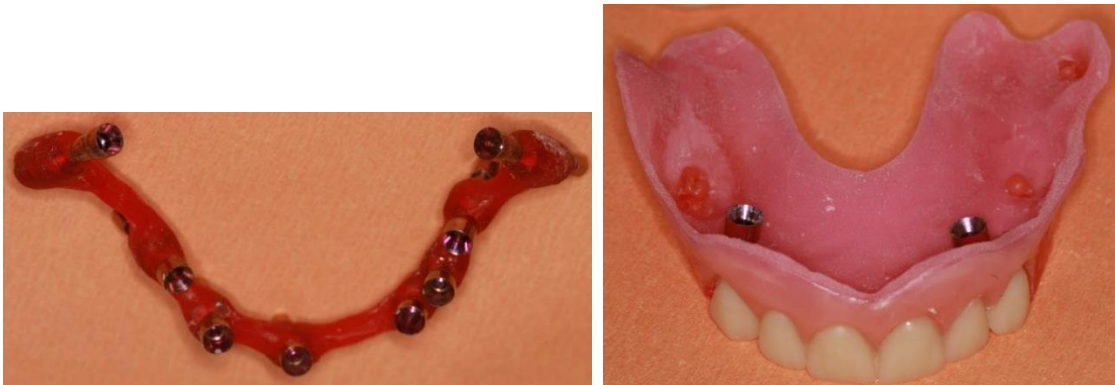
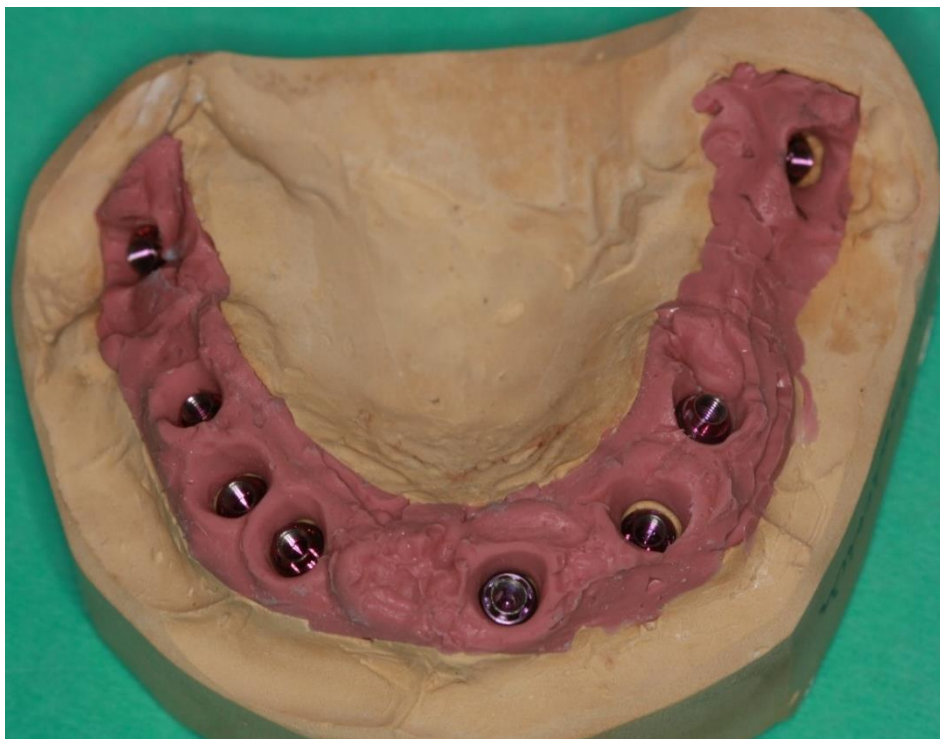


Figure 8: Laboratory steps - screwed transfers and aesthetical trial.

The transfer key was tried in on the second appointment to check the impression, an aesthetical trial was also done. After validation third appointment was fixed to try in the frame Fig 9.



Model



Figure 9: Laboratory steps: Frame try – in and metal ceramic bridge

A metal ceramic bridge was fabricated after frame try-in. Three weeks after the beginning of the treatment, the gum has healed nicely, bridge was screw-retained with angulated screw channels so as to get a perfect fit fig 10.



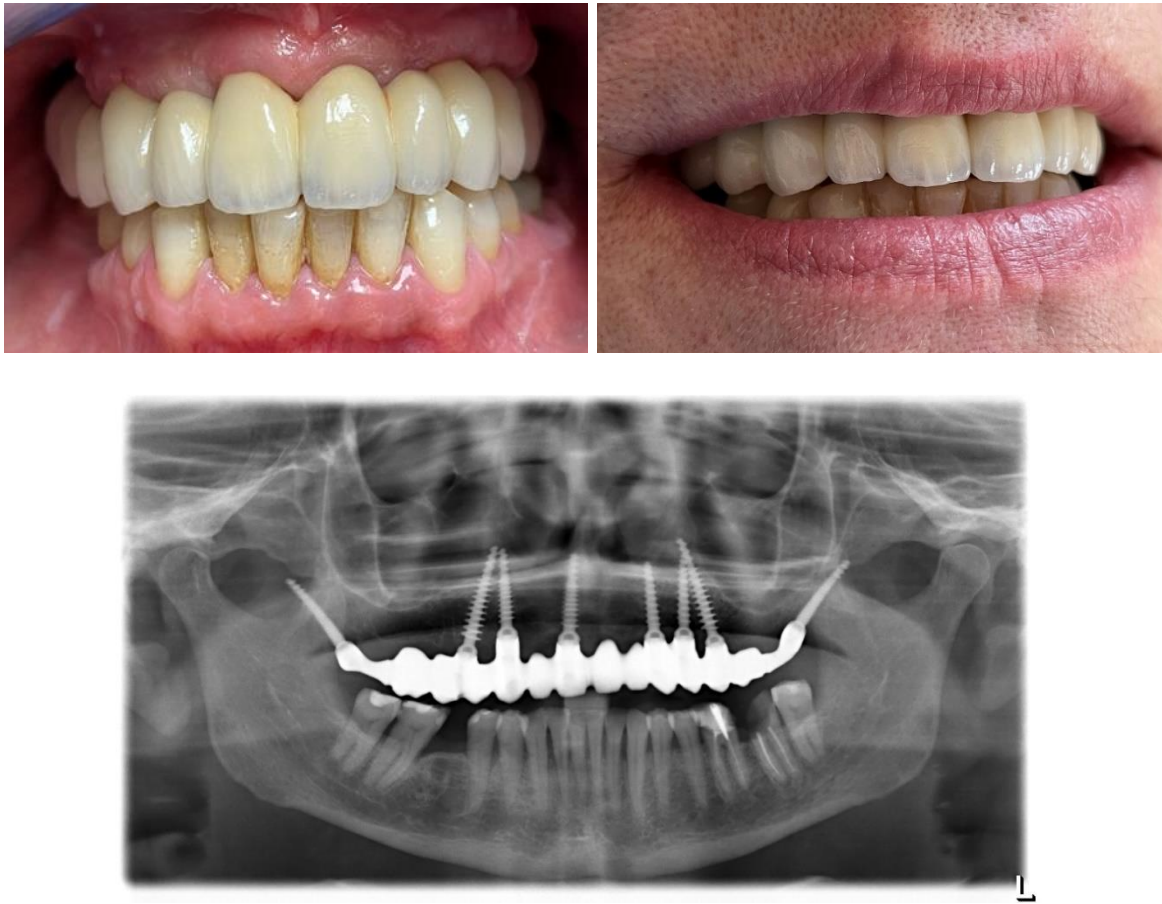


Figure 10: Clinical photograph and the panoramic radiograph of patient and after bridge delivery

Discussion

This article presents two case reports that showcase the clinical use of One-Piece tissue level implants and fixed screw retained bridges in the management of maxillary atrophy. Here a minimal invasive method of transnasal approach and Pterygoid implant placement show that an early loading with specific implants ensuring a high primary stability.

The transnasal approach with pterygoid implants techniques are particularly interesting due to their potential for early loading, where patients can receive a fixed rehabilitation within 2-3 weeks post-operatively.

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