

# Immediate functional loading of the edentulous mandible

## Tapered implants & overdentures

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### \_Abstract

The aim of this case report is to demonstrate the concept of immediate functional loading in the mandible using unsplinted implants to support a locator attachment-supported overdenture.

The patient was treated by placing four tapered implants in the anterior mandible. The implants were immediately loaded using individual unsplinted locators to support a removable overdenture. The patient was followed for 24 months. To date, none of the implants has lost osseointegration. The radiographic bone levels remain stable. The patient has been able to maintain healthy soft tissue around all individual implants and indicated that she is comfortable and is able to function well with her overdenture. This preliminary report presents a case in which individual immediately functionally loaded unsplinted implants maintained osseointegration when used to retain a removable locator overdenture.

### \_Introduction

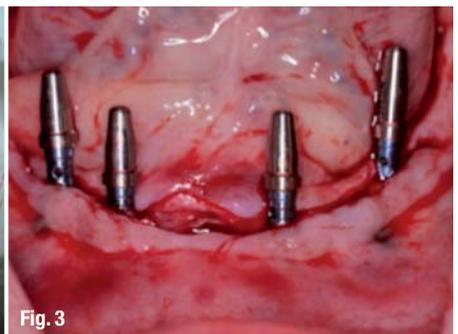
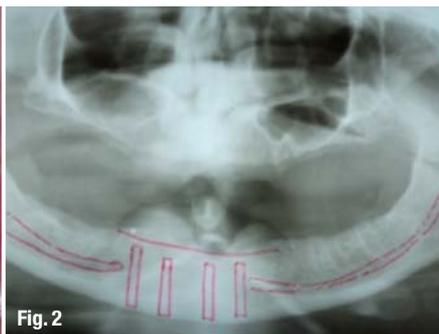
Patients with an edentulous mandible may not be able to consume a normally textured diet. As they continue to lose alveolar bone height, the dislodgement pressure by the perioral musculature on the prosthesis becomes greater than its retentive aspects. This can cause discomfort, sores and trauma to the mental nerve. The placement of endosseous implants into the anterior mandible is an excellent therapy for reconstruction. It helps to restore edentulous patients to a normally textured diet, normal nutritional intake, better health and improved self-confidence.<sup>1-3</sup>

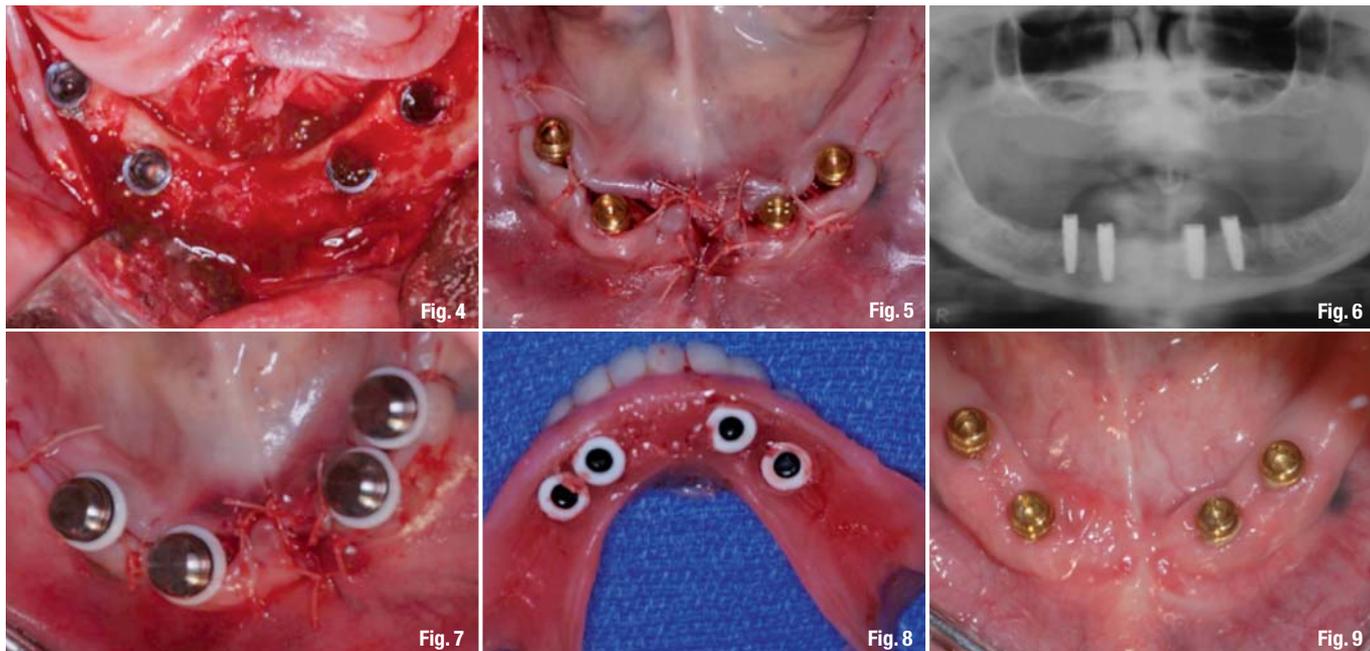
A locator-supported overdenture is a well-documented modality of treatment. The conventional method of treatment is to place the implants in a submerged two-stage approach. After allowing the implants to osseointegrate for three months, the implants are uncovered and the locators are delivered to support the overdenture. The concept of immediate functional loading has been documented in the

Fig. 1\_Mandible at the time of implant placement with moderate bone resorption.

Fig. 2\_Pre-op panoramic radiograph.

Fig. 3\_Guiding pins at the time of implant placement.





mandible and the maxilla: implants are connected rigidly and immediately after placement to avoid micro-motions, which can have a negative impact on the osseointegration process.<sup>4-8</sup>

A higher failure rate has been reported in only very few reports in the literature about immediate functional loading of individual implants to support a mandibular overdenture.<sup>9</sup> This case report demonstrates the use of tapered implants in the mandible to immediately load and support four separate implants by means of a locator-supported mandibular overdenture.

### Patient presentation

A 55-year-old female patient without any medical contra-indication for implant therapy presented with an ill-fitting, lower complete denture that she had been wearing for four years. The clinical and radiographic findings revealed slight to moderate mandibular ridge resorption with an ill-fitting lower denture (Figs. 1 & 2). The patient was given the option of placing four implants to support her existing lower

denture. The treatment plan was accepted and included an immediate functional loading by using a locator attachment-supported mandibular overdenture.

### Surgical treatment

At the surgical appointment, following the administration of local anaesthetic, a mid-crestal incision was performed and a full-thickness flap was reflected. In addition, osteotomies were prepared in type II bone. Bone taps were used to countersink the sites, after which four OSSEOTITE Tapered Certain implants (BIOMET 3i; 4 mm in diameter, 13 mm in length) were placed with the handpiece and hand ratchet. The implants were torqued to 35 N (Figs. 3 & 4).

### Prosthetic treatment

Immediately after implant surgery, the mandibular denture was seated in the patient's mouth and adjusted to provide clearance in the area of the locator(s). Four locators (4 mm in length) were torqued to 30 N (Figs. 5 & 6). Following the suture of the flap with

**Fig. 4** Four tapered implants at placement.

**Fig. 5** Flap was sutured around the locators using 4-0 vicryl suture.

**Fig. 6** Panoramic radiograph immediately after implant placement.

**Fig. 7** Occlusal view of the processing rings.

**Fig. 8** The processing rings were picked up directly in the mouth.

**Fig. 9** Occlusal view of the locators two weeks post-implant placement.

**Fig. 10** Buccal view of the locators two weeks post-implant placement.

**Fig. 11** The processing rings were removed ten weeks post-placement.

**Fig. 12** The blue retention rings were placed as the final rings.





Fig. 13



Fig. 14



Fig. 15



Fig. 16



Fig. 17



Fig. 18

**Fig. 13** Occlusal view of the overdenture in place at ten weeks post-placement.

**Fig. 14** Buccal view of the overdenture in place.

**Fig. 15** Occlusal view of the locators six months post-placement.

**Fig. 16** Buccal view of the locators six months post-placement.

**Fig. 17** Retorquing the locators to 30 N six months post-placement.

**Fig. 18** Retorquing the locators to 30 N six months post-placement.

4-0 vicryl, the processing rings were placed over the locators and were picked up directly in the mouth using hard self-curing acrylic (Rebase II, Tokuyama; Figs. 7 & 8). The patient was given post-operative instructions, including the use of 0.12% chlorhexidine gluconate (Peridex, Procter & Gamble) three times a day. She was furthermore prescribed 500 mg of amoxicillin (to be taken every six hours for seven days). The patient was then informed that the implant-supported overdenture was to be left in place for 48 hours. Two days later, she was seen for a follow-up visit and the healing process was uneventful. The black processing rings were switched to blue rings ten weeks after the placement (Figs. 9-14).

ment and all implants have maintained healthy soft tissue and a stable bone level.

### Clinical relevance

With a higher demand by patients for immediate implant placement and loading, the use of tapered implants can help achieve quick, economic and predictable results without having to use a rigid (bar) attachment, since they provide a high degree of primary stability.

*Editorial note: A complete list of references is available from the publisher.*

### Follow-up and maintenance

After six months, the patient returned for another follow-up visit and all four locators were torqued to 30 N (Figs. 15-21). It was determined that all four implants had achieved full integration. Currently, the patient is on a six-month recall to ensure the proper maintenance of the implants and the prosthesis. The last maintenance visit was 24 months post-place-

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Fig. 19



Fig. 20

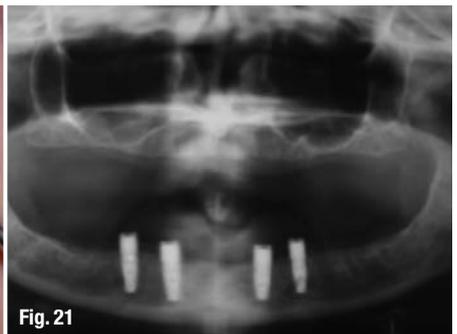


Fig. 21



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