CASE REPORT

Immediate Loaded Implant Supported Prosthesis with SynCone

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Abstract

The rehabilitation of the edentulous mandible by means of implant-supported overdentures is well-established and documented. The majority of systems that adopt this approach, however, require a high level of laboratory support. While esthetics and function are considered the primary benefit of the dental implant procedure, patients also desire reduced treatment times.

A case is presented describing the immediate loading of 4 interforaminally placed implants with the use of prefabricated telescopic copings that may be incorporated in the patients existing denture chairside to significantly reduce the dependence on complex laboratory procedures.

Keywords: Immediate loading, Implant overdenture, Edentulous mandible.

As early as 1979 Ledermann\(^1\) successfully demonstrated that four implants can be immediately loaded in the edentulous mandible and postoperatively splinted with a bar overdenture. The resilient space between the bar and the bar sleeve has the potential for distributing the functional load through the implants and the denture base to the mucosa and edentulous ridge. This treatment modality is clinically acceptable with a success rate of 88%. The disadvantage of Ledermann’s method is lengthy laboratory procedures which meant higher costs and longer treatment times.

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The Ankylos\(®\) SynCone\(®\), (Dentsply Friadent GmbH, Mannheim, Germany) offers the option of an immediately functional overdenture, chairside, while the patient is still anesthetized.\(^2\) The patient leaves the office with a fully functional esthetically pleasing prosthesis. The splinting of the implants, which is absolutely essential for immediate loading, is achieved via the prosthesis as a secondary factor. Splinting with the four tapered crowns stabilizes the prosthesis and prevents it from moving. The implants are immobilized in three-dimensions. The chewing loads with a solely implant-supported prosthesis are no longer distributed over the entire mucosa but are transmitted directly to the implants.

CASE REPORT

A 72-year-old lady sought treatment to improve the retention and chewing efficiency of her full lower denture (Fig. 1).

She was a nonsmoker and in good health. Her existing partial upper and full lower acrylic dentures were assessed to be satisfactory in terms of extension, occlusion, and esthetics. Further investigations by way of orthopantograph and ridge mapping confirmed that sufficient bone was present for implant therapy. Her existing lower denture was planned to be the overdenture.

TREATMENT PLAN

1. Placement of four interforaminal Ankylos A14 implants (3.5 mm in diameter, 14 mm in length)
2. Immediate abutment connection with Ankylos SynCone abutments
3. Immediate loading with the existing denture incorporating prefabricated telescopic copings (SynCone caps)
4. Recall and maintenance phase.

SURGICAL PROCEDURE

Under local infiltration anesthesia, a crestal incision was made leaving the median tissue bridge intact that provided a reference point of the patient’s midline. This also prevents wound dehiscence secondary to frenum and muscle pull. The exposed bone was flattened and smoothened as required (Fig. 2). With the aid of a surgical stent (Fig. 3), four interforaminal sites were prepared using a 2-mm diameter pilot drill.

Direction and depth were checked with parallel gauges (Fig. 4).
Following the drilling protocol prescribed by the implant system, four Ankylos A14 implants were placed slightly subcrestal (Fig. 5). The mental nerve and its foramen should be considered always.

The cover screws are removed and prefabricated SynCone abutments with 4 degree taper and transgingival heights (1.5, 3.0 and 4.5 mm) depending on the thickness of the mucosa are hand torque in (Fig. 6). The wound is now carefully adapted and sutured to prevent the ingress of saliva.

Now prefabricated SynCone caps of gold alloy are seated on top of the SynCone abutments.

Rubber cut dam collars are placed around the implants to prevent self cure acrylic from entering the fresh wound (Fig. 7). Holes were created in the denture to accommodate the SynCone copings (Fig. 8). With the denture in place over these SynCone copings, self cure acrylic resin in a doughy consistency is introduced into the holes in the denture and allowed to cure with the patient biting in centric relation. Once polymerization is complete the denture is removed; finishing and polishing is then done on the modified surfaces (Fig. 9). The denture now with the gold caps in place is reinserted and immediate functional loading is thus achieved.

The patient was prescribed Augmentin (amoxicillin/clavulanate potassium) 625 tid for 5 days, Fasigyn (tinidazole) 500 bid for two days, and analgesics. The patient was instructed to diligently use Colgate Periogard mouthwash (Chlorhexidine Gluconate Oral Rinse, 0.12%) 3-4 times a day for a month.

The patient was instructed to wear the denture continuously for one week and maintain a soft diet for two weeks. After the first week the denture was removed and sutures cut. The patient was instructed to wear the denture continuously for one more week. After these two weeks the dietary restrictions were lifted and patient was taught how to maintain proper oral and denture hygiene routines. With an extra soft bristled brush (Colgate Sensitive care) the patient was instructed to gently brush the mucosa and the abutments to make sure no food debris settled. The healing was monitored after one month and the gingivae had close contact with the abutments with excellent healing (Figs 10 and 11).

**DISCUSSION**

The Ankylos Implant is screw like, has a rough surface with a progressive thread design. This design increases the
primary stability and is ideally suited for immediate functional loading.

With the thread depth continuously increasing towards the apex, the load is transferred to the more flexible cancellous bone and less stresses on the cortical bone leading to increased primary stability at the crestal bone area.

The other characteristics of this implant are:
• Subcrestal placement of implant.
• Platform shift
• Implant to abutment connection is within the axis of the implant by a precise conical connection (friction locked and keyed morse tapered connection).

The exact fit between the SynCone abutments and SynCone gold copings in the denture prevents excessive
horizontal force on the implants. This prevents the micromovements to the implants which would otherwise hamper successful osseointegration.\textsuperscript{4,5} The 4 degree SynCone abutment taper and use of angled abutments means that this treatment concept can be applied in significantly nonparallel divergent implant placements.

Good bone quality with implant lengths of at least 11 mm is necessary for successful treatment outcomes.

Patient compliance towards oral hygiene is easy as implants are accessible.

**CONCLUSION**

Immediate functional loading is now possible with an overdenture supported by a comprehensive range of abutments and telescopic copings. An implant system that allows same day implant placement, overdenture delivery and connection to the implants is universally favored by patients. For this reason, the Ankylos SynCone concept is an attractive solution for many of today’s edentulous patients.

**REFERENCES**