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Immediate, early and late loading of interforaminal implants by overdentures

Treatment and fabrication, components and a modified protocol

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Objectives

Six different prosthetical concepts
A1: Bar, immediate loading?
A2: Bar, late loading
B1: Syncone, immediate loading
B2: Syncone, late loading
C1: Tapered crowns, conventional technique
C2: Tapered crowns "new methods"

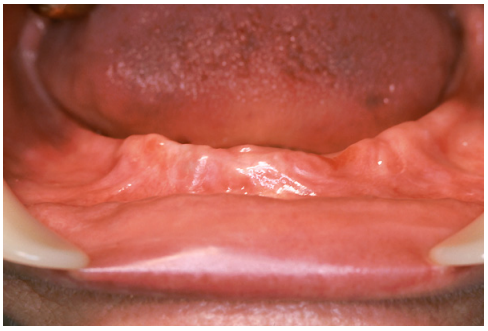

Fig. 1: Basical clinical situation: edentulous mandible

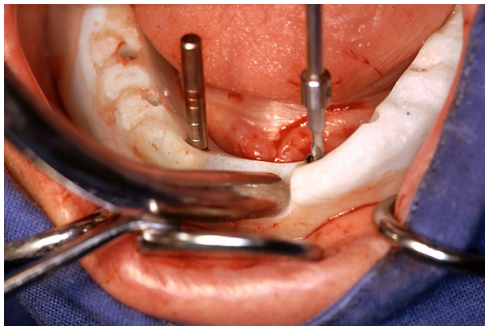

Fig. 2: Surgical intervention: four interforaminal implants in parallel position by drilling guide.

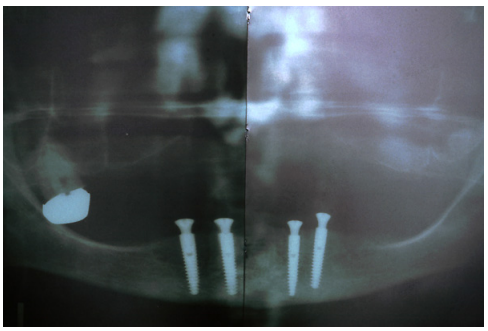

Fig. 3: The panoramic x-ray after a healing period of 3 months in case of late loading

Material and Methods

Prosthetical concept A1: bar - immediate loading?

Components and protocol
• impression during operation
• impression caps (standard)
• reduction of treatment time by: partial impression with intraorally joined impression-caps and fabrication of a partial cast of the anterior region
• standard abutment
• dolder-bar for bar attachment
• clips
• intraoral conjunction (intra op) of prosthesis and clip and bar
• later functional impression
• relinings
• completition in the lab
• conjunction with the existing prosthesis
• without metal framework

Characteristics
• primary rigid unit connection
• Intraoral completition after approx. 30 h
• high stability
• low comfort
• precise bite registration by
• support on implants or bar blank
• price-comfort-relation?

Fig. 4

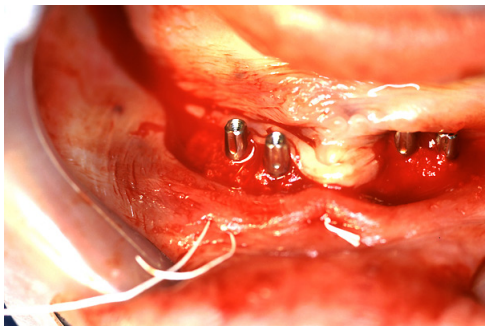

Fig. 5

Prosthetical concept A2: bar - late loading

Components and protocol
• implant reentry operation
• healing abutment
• cast fabrication
• standard abutment and impression caps
• balance basis abutment
• lab implant
• healing period of 3 months
• bar cap

Characteristics
• Conventional treatment because of no swelling, bleeding or sutures
• highest safety because of proofed osseointegration
• healing period approx. 3 months
• time of prosthetical treatment 2-3 weeks (german master lab)
• stable muco-gingival situation, no soon underlining

Fig. 6

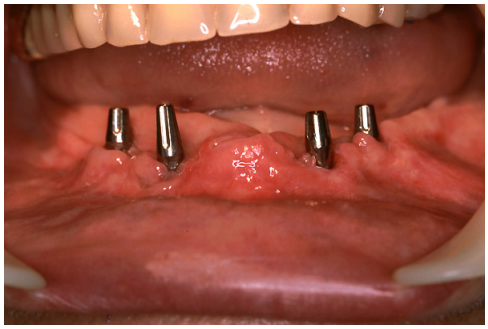

Fig. 7: The multi-tasking abutment (Standard) for late loading by bar retention

Prosthetical concept B1: Syncone® - immediate loading

Components and protocol

- conicle abutment
- conicle caps
- axis indexing device in case of prosthetical divergence
- intraoral polymerisation, during appointment
- completition in the lab (technician chairside)
- conjunction with the existing prosthesis

Characteristics
- secondary rigid unit connection
- completition in at least 2 h with technician chairside
- high dependance on care and compliance during healing period
- less time for fabrication (finished before end of local anaesthesia)
- low price
- reassembly is suggestive

Fig. 8

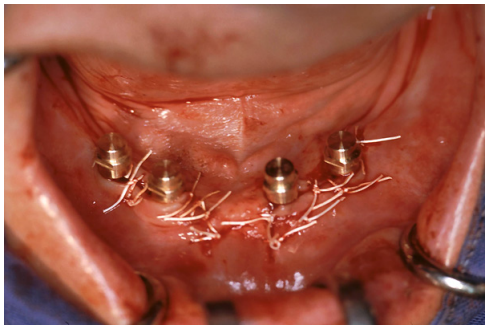

Fig. 9

Prosthetical concept B2: Syncone® - late loading

Components and protocol
- healing abutment
- time of healing 3-4 months in case of poor bone quality
- implant reentry operation
- impression: balance impression abutment for open tray or combination of standard and balance components for closed tray
- cast-fabrication
- lab implant
- standard abutment and impression caps
- temporary bite registration
- conicle abutment
- precise myocentric registration by fixation on standard abutments
- bonding of the components in the lab
- conicle caps
- metal framework of prothesis

Characteristics
- healing period of 3 months
- completition in approx. 2 weeks (german master lab)
- precise fitting of tapered abutments by
- precise, prefabricated compontents
- bonding of the conicle cap to the prothesis framework in the lab
- favourable price- performance ratio

Fig. 10

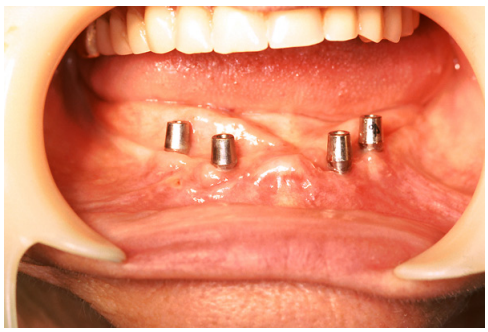

Fig. 11

Prosthetical concept C1: tapered crowns (conventional technique)

Components and protocol
- impression with standard components
- fabrication of the cast
- abutment: balance posterior
- accurate myocentric registration by fixation on standard abutments
- individual tapered crowns (precious alloy)
- connection of the abutment and the tapered crown by welding, soldering or bonding
- combination of the secondary crown with the non- precious alloy framework by soldering or welding or bonding

Characteristics
- conventional technique of individual wax up
- and metal casting
- precious alloy
- high precision
- high esthetical recommendations

Fig. 12 Fig. 13

Prosthetical concept C2: tapered crowns "new methods"

Components and protocol
- healing abutment
- impression
- cast fabrication
- innovative technology and materials
- individual components and choice of methods:
- circonoxyd-abutment (Cercon Balance)
- secondary crown made of non-precious alloy or titanium or
- precipitated gold

Characteristics
- biological advantages by crown or bar made of titanium
- lower plaque accumulation by neutral electrical potential, no influence on taste
- little cost reduction of material and lab
- high esthetical recommendations can be fullfilled
- circon abutment: natural colour of soft tissue when subgingival preparation shoulder
- secondary crown of precipitated gold: no wearing because of no friction; retention by
- adhesion
- maximum precision by precise fitting between tapered crowns and intraoral bonding to framework of prosthesis

Fig. 14

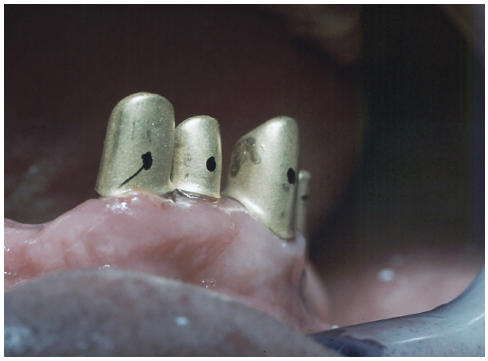

Fig. 15

Results

The immediate loading of implants by a definite overdenture is only possible under realistic practice conditions by the use of prefabricated tapered crowns (Syncone®). The temporary use of the standard abutments (and impression caps) is very helpfull as a multipurpose prosthetical device.

Time needed
A1: Early loading possible in approx. 30 hours
A2: Late loading; time of fabrication approx. 2-3 weeks in a german lab
B1: Immediate loading in 24 hours
B2: Late loading; time of fabrication approx. 1-2 weeks in a german lab
C1: Late loading, time of fabrication approx. 2-3 weeks in a german lab
C2: Late loading, time of fabrication approx. 2-4 weeks in a german lab

Prosthetical loading by chewing forces after the implantation
immediate - in 24 hours
early - in 3 days
late - after 6 weeks

The cooperation with an import-lab makes no sense for the immediate and the early loading. For this one should cooperate with the local german lab. Labs from distant areas are not compatible because of longer distribute on time.

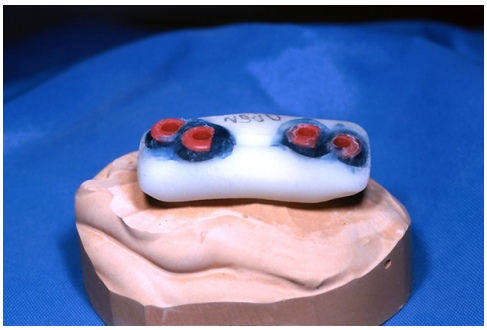

Fig. 16: **A1 Bar - early loading**
The impression caps had been temporaryly adapted on standard abutments. They have been mounted intraorally and by a light curing tray composite as a scaffold they have been glued by a low shrinkage acrylic resin. This material combination (Structure-Espe, Seefeld, Germany; Sinfony-Heraeus Kulzer, Weinheim, Germany) works as a impression tray and a position transfer device simultaneously.

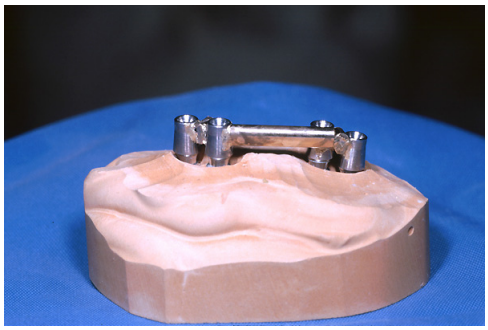

Fig. 17: **A1 Bar - early loading**
The Dolder bar attachment on a partial cast. This "immediate" cast was made by a very fast-setting plaster mix.

Fig. 18: The first bite registration by "chewing impression" using silicone putty material based on temporarily screwed standard abutments.

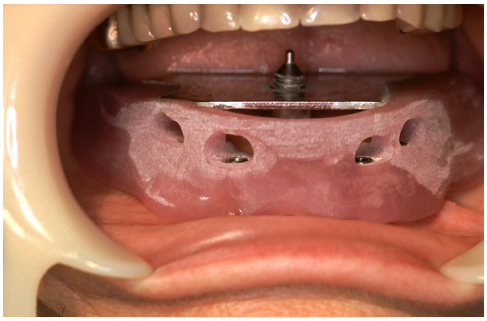

Fig. 19: **A 2 Bar - late loading**
The mandibular registration device for the myo-centric has been placed on standard abutments to improve the precision by stable and non-resilient fixation.

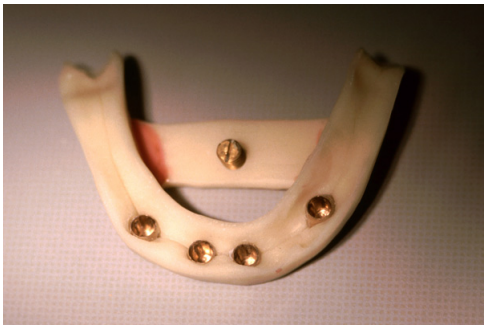

Fig. 20: **B 2 Syncone - late loading**
The registration device for the myo-centric has been fabricated chairside. The tapered abutments of the Syncone®-components can be joined temporarily for absolute stable seat and a precise registration.

Fig. 21: **B1 Syncone® - immediate loading**
The intraoral conjunction of the prefabricated conicle crowns with the existing overdenture has been prepared.

Conclusions

The shortened protocol by modified use of components and methods can spare time and reduce costs.

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