Restoration of a screw retained single tooth restoration in the upper jaw with Thommen Titanium base abutment.

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**Initial situation (single X-ray)**

Tooth 16 had too strong caries and could not be saved. Tooth 16 was planned to be replaced with an implant.

61 year old man. Natural teeth were stained from overdue dental hygiene visit and use of chlorhexidine gluconate. Otherwise his dentition was in a state of good repair. Clinical situation before extraction tooth 16 with socket bone graft (with 7 Mt. healing time) and implant surgery (2 months of healing).

Used implant: Thommen, SPI, Element, MC, Inicell 6.0 mm diameter, 9.5 mm length. Element design chosen based on bone availability, surface area and root proximity. Single stage implant surgery using a standard gingival former of 3.2 mm. Implant stability was good (35 Ncms insertion torque) and the patient was not wearing an interim prosthesis so there was adequate room for a longer gingival former.
Healing phase

Gingiva former in situ.

Occlusal view 8 weeks after implant insertion and soft tissue modeling.

Note the well-established adaptation of soft tissue to the implant collar.

Lateral view of region 13-17.
Impression taking

Impression taking with a retentive impression coping for open tray technique. The open tray method allows a very accurate impression. Using a long Impression screw is recommendable.

Impression coping in place.

Impression with dualmix technique with vinylpolysiloxane material (Panasil, Kettenbach)
In the lab

Situation after master cast. Gingiva mask is important in order to design a suitable emergence profile. Space around and above the titanium base must be checked. The abutment was tightened with an abutment screw.
The picture shows that enough space is available.

The treatment team decided to produce a pressed ceramic IPS e.max crown. The big titanium base edge supports the crown optimally. There is no risk for a thin crown margin.

Occlusal view of finalized IPS e.max crown on the model after glaze firing. The crown is no yet bonded with the titanium base by an adhesive material. This step will be done by the dentist in dental office. Advantage of this method: try in of Titanium base and ceramic crown are possible. The crown may be adjusted back in the lab in case of any changes e.g. color.
Try in of the titanium base. Black marking onto Titanium base indicates the buccal side. It is for orientation and ease of delivery to mouth. Titanium base was tightened with an abutment screw.

Close up from buccal side.
Try in of full ceramic crown. Occlusal and approximately adjustments are required if necessary. Polishing follows afterwards. Crown and titanium base are then removed from the mouth.

Preparation and application of adhesive material

Titanium base is prepared for adhesive bonding. Titanium base is therefore tightened with an abutment screw on an implant analog PF Ø 6.0 mm. Black markings indicates buccal side. (Picture 1)

A PTFE pin will be used in order to bond the full ceramic crown on the titanium base. The PTFE pin can be cut to size. Perfectly fits screw channel. The PTFE pin must be inserted until the stop. Thommen recommends this pin always for this adhesion procedure because it’s easy to handle. The PTFE pin (Thommen cylindrical pin for laboratory, 70.0 mm in length) are available for screw channels platform sizes Ø 3.5 mm and Ø 4.0–6.0 mm. (Picture 2)
Last check before adhesive is used. Crown try in for path of insertion rehearsal. (Picture 3, 3a)

Adhesive material was mixed and lined lightly inside of the crown. The crown were placed on the abutment and verified if it is fully seated. Allow cement to set for 3-5 minutes depending on room temperature. PTEF pin and all cement from finish line and screw hole were subsequently removed. Rely X (3M ESPE) - resin reinforced glass ionomer were used. It is an adequate luting agent for this technique and ease of use. (Picture 4, 4a)
The completed crown were subsequently placed in patient’s mouth and tightened by an abutment screw to 25 Ncmsg.

A teflon tape was used to fill the screw channel. 2-3 mm space remains for filling material.

A composite resin filling were done to close the screw channel. Occlusion was checked and equilibrated if necessary. Final polish follows.
Final crown in place: View from occlusal…

….and view from buccal side.
X-ray control after final restoration