

USER REPORT

Production of temporary and definite supra-construction with minimal soft tissue manipulation.

The main focus of implantology has always been oral rehabilitation, to regain chewing function and for aesthetic result. A patient who has chosen to have implants considers the aesthetic aspect as well as the restoration of function.

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This is wholly dependent on implant positioning – ideally the implant should be the extension of the supra-construction to be anchored on it (GARBER). Therefore the positioning is not based on the existing defect but on the results obtained from the analysis of the wax-up; it is then decided which drill templates to use in intraoperative surgery. Guidelines for the harmonisation of soft tissue and laughter lines, gingival lines and the aesthetic view should be considered. Hard and soft tissue defects are to be considered through the application of appropriate operative techniques (augmentation procedures; soft tissue management).

Due to ever increasing aesthetic demands, practical knowledge gained in the past has to be put into practice. Excluding any contraindications and after extensive diagnosis (planning with wax-ups, taking implant measurements, drill templates etc.) the implant is inserted. After osseointegration the appropriate supraconstruction is placed on the implant. Studies by ABRAHAMSON have shown that when implants are exposed the mucosa and epithelial seam are modified; the crestal bone edge is never reached. With regard to wound-healing there is an interaction between the titanium dioxide in the implant body (respectively the abutment) and the apical surface of the binding tissue on the epithelial seam, i.e. the implant surface is not regarded as being a wound. Recently, for reasons of aesthetics, the original use of pure titanium abutments using the Branemark protocol has changed to attain a more aesthetic result with direct build-ups.

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These are made either individually or on a production line and consist of burnout ceramics, dental ceramics or aluminium oxide. Studies by ABRAHAMSON (1998) have shown that pure titanium or aluminium oxide abutments are similar way to what has already been described above. An attachment is formed from the epithelial seam as well as a 1-1.5 mm wide connective tissue epithelial layer below it. On top of abutments made of gold and dental ceramics respectively, no attachment was formed in a comparable meaning. In that case the result was a recession, leading to bone resorption. The attachment shaping described above takes place deep down on the implant surface and an increasing pocket results. The findings of a study (ABRAHAMSON;1997; = uncovering implants in beagles with five-fold on and off screwing of abutments) established that soft tissue manipulation leads to bone resorption. These findings result in the demand of the immediate final provision of implants with supra-construction or at the very least the minimising the frequency of soft tissue irritation by changing abutments and the healing screw.

BERGLUND and LINDHE (1996) proved in experiments that the attachment always forms on the implant surface at the height of the biological diameter. If the soft tissue is reduced, bone resorption occurs including the formation of seam epithelium (2mm) and connective tissue contact area (1 – 1.5mm) on the titanium surface.

Further aspects are becoming clear when the question of the loosening of screws in abutments is investigated. According to studies by BECKER in up to 38% of cases there is a loosening of screws within the first two years of loading. Implants, which are rotationally secured with an inner hex screw, can fracture at the implant neck. Results from a study by BERGLUND show that it is better to incorporate a final definitive supply straight away instead of a healing post (= minimising damage to mucosa). If healing posts are needed in spite of this, they should be made from pure titanium and constitute the final passage forming post.

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Taking these demands into consideration, KURREK et al. with the introduction of the single-stage Q-implant system (mono body) developed a pure titanium implant (manufacturer Triron; Karlsruhe), which does not require soft tissue manipulation during exposure. Even during the healing period, the attachment is formed on the implant surface. The problem of the risk of screw breaks between the main body and the abutment and the appearance of splits respectively, which can lead to the fracturing of the interface between the implant and the abutment if a screw is loosening, can be ruled out.

Materials and methods

Fixing the definitive supra-construction follows in the conventional way by cementing. Rotational security is ensured by four pre-fabricated slots, which have a 7 degree cone incline and are based on the design of the implant. If necessary the top of the implant can be ground down and shaped individually in the usual manner. Taking account of new findings, the KURREK team have developed a way of making a mould, which enables the person carrying out the treatment to make a mould for the definitive supra-structure during the session, in which the implant is being inserted. Due to the technique of the application of the moulding cap MultiCap+ in accord with the Q-implant[®], which is introduced hereafter, the immediate temporary provision for the formation of a harmonious connection tissue situation is furthermore made possible directly after the implantation operation.

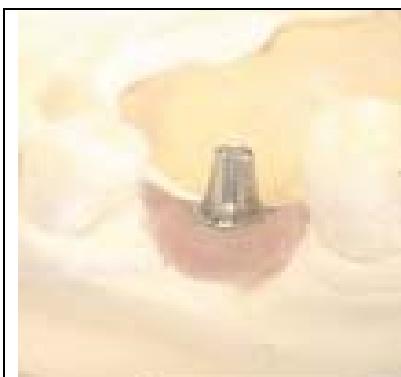


Illustration 6



Illustration 7

The exact fitting of the thermoplastic, high end, complete burnout MultiCap+ in the implant body is used in indirect casting, which is used in the usual way with Q Lab laboratory implants (see Illus.1). The MultiCap+ shaping cap has a perfect crown edge with ensured rotational security in the provisional as well as the definite supra-construction. The risk of bone resorption from soft tissue manipulation is reduced because of this.

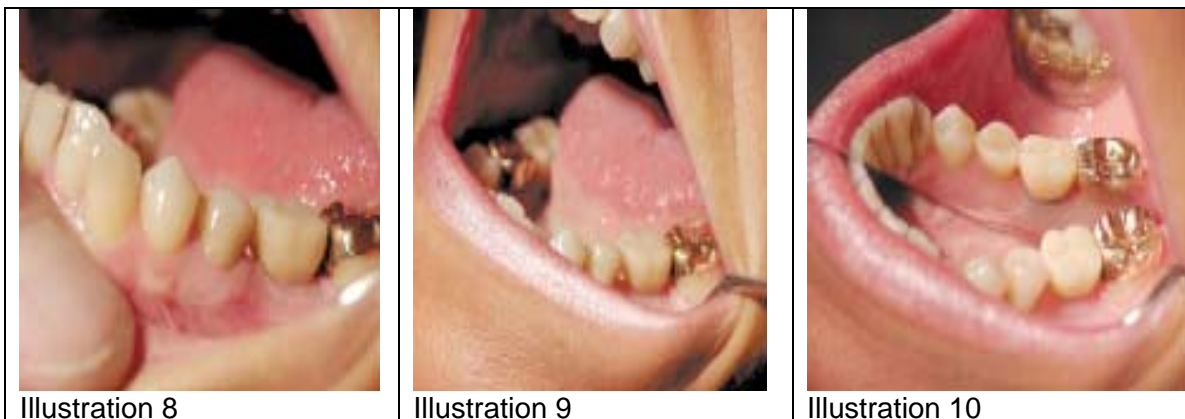
Case study

After pillar tooth 35 was fractured in the alio loco produced Maryland bridge from 35 to 37 a new provision was functionally and aesthetically necessary. Illustration 2 shows the preliminary stages of the implant plans for the fractured prosthesis, which was not sufficient in the 40-year-old female patient. After the crown and bridge were removed by EKR, the detached crown on pillar tooth 37 was fitted with a provisional and tooth 35 was built up using bonding technology with TETRIC ceramic composite (Vivadent/Lichtenstein), (Illust.3). After an exclusion diagnosis and special anamnesis with X-ray diagnostic we decided to insert a Q Implant (diameter 4.5mm, length = 12mm) in the 036 region (Illust 4).

Shaping of the implant in the 036 region was carried out using a polyether IMPRESSION MATERIAL (ESPE) with an individual tray; see illustrations 5a and 5b. The dental technician then made a model out of super-hard plaster in the usual manner using the laboratory implant analogue (Illust. 6). The identical MultiCap+ burn-out post provided means that an individual piece can be made for the supra-construction to be inserted. This is very time efficient and minimises our own and the patient's costs. The pre-fabricated shaping cap, which suits the conicity of the top of the implant, reduces the need for the material to be filed down. If necessary the body of the shaping cap can also be shortened as necessary. In these cases the MultiCap+ can also be used as transfer grinding help from the intra-oral situation to the laboratory analogue and vice versa. Illustration 7 shows the implant crown on the master model. After we had carried out an intra-oral try-in, the crown was cemented in (KETAC-cem by ESPE). The residual cement residues as well as the final polishing could be carried out in the usual manner.

The end result is shown in Illustrations 8-10. Simplifying the techniques outlined and using the Q Implant system can prevent additional work, such as implant healing posts; implant impression posts and casts; screwing in abutments etc and an implant reconstruction can be carried out in a time and cost-efficient manner.

Dental laboratory work: ZTMT. Szindula, Labor Experident.



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