

USER REPORT

*Immediate loading and function on single
Stage implants*

Clinical Analysis of the Q-Implant® System

Modern dental medicine to a large degree takes into consideration the use of enossal tooth implants. The usual use of titanium implants is mainly based on the result of long-term studies with a good scientific method that was carried out with implants of the type designed by Branemark.

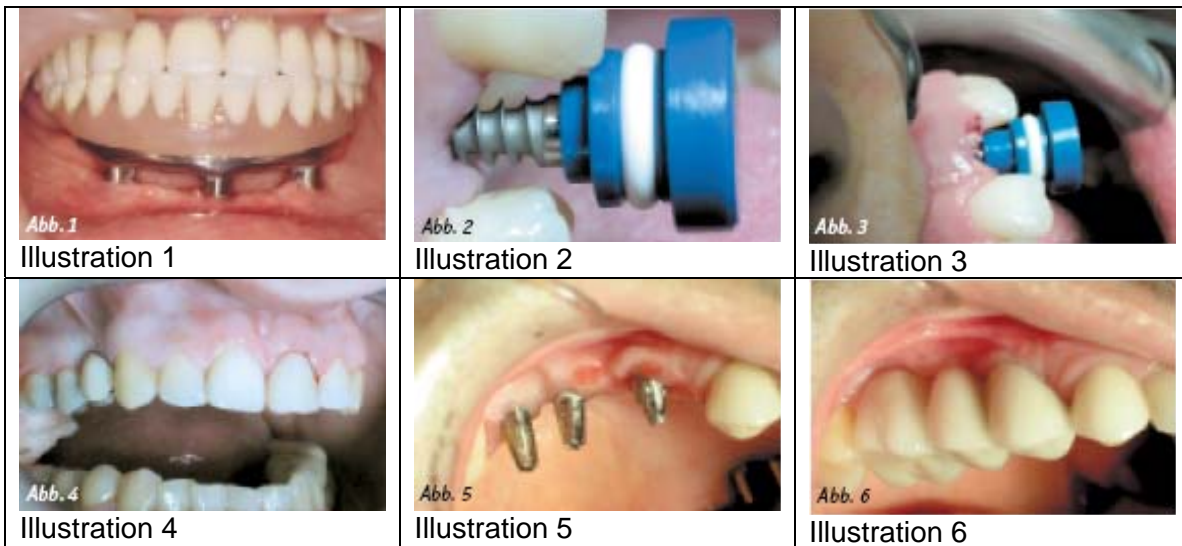
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Since the 1980's there have been numerous implants in the market that are based on the philosophy of Branemark System Implants or a similar design. On the basis of the results of the clinical studies that have been carried out and published by SCHNITMANETAL in the year 1990, HENRY and ROSENBERG in the year 1994 and many other authors, the conclusion had been that the systems that necessitate only one surgical treatment and that have the capability to immediately support loading, are those that meet the requirements and does the greatest justice to the desire of the patient for immediate functioning and in addition is the preference of many experts. In the year 1999 the author started with the immediate loading of implants in accordance with the protocol of the system Novum by Branemark. Even though the results showed 100% success after 60 months (only two cases were examined), we have not taken this selected technique into consideration with regard to our patients, because they do not meet all the specifications for success that are stipulated by ZARB and KOLL. In both cases the satisfaction of the patients with regard to function and aesthetics was insufficient. (Illustration 1). During the same year six patients with toothless lower jaws were treated. In these cases five Branemark implants were inserted in the symphysis in accordance with the protocol of SCHNITMANETAL and an impression was taken during the surgical treatment. The final, fixed prosthesis was inserted ten days after the operation on trans-epithelial multi units. In accordance with a follow-up study over a period of 60 months, a 100% record can be shown, even though in some cases the fastening screws of the prosthesis came slightly loose. Before the 'Branemark Era' implants were loaded immediately, because implants and abutment formed a unit (single stage implants). In most case a fibro-integration was achieved, which, however, did not provide a guarantee for permanent durability. Due to the use of medically approved titanium (the improved surface technologies as well as the latest insights with regard to the metallurgy of titanium and the physical characteristics during the design of new implants) as well as the fact that implants - as it has already been the case in the past - can be subjected to immediate loading or function, the achievement of a rigid bone-implant connection is not prevented, but real osteointegration is definitely achieved. In

many cases this facilitates the healing of the wounds in the soft tissue, its keratinisation as well as the formation of a gingival topography with interdental papillae, which leads to cosmetically and functionally pleasant results and which was very much appreciated by our patients. A high degree of patient compliance is the result. This article introduces clinical cases of implants with immediate loading, for which the implant system Q-Implant® of company TRINON Titanium Deutschland [Germany] was used, which utilises different types of mounting. We prefer this system due to its technical innovations, its high degree of primary stability, and the simplicity in the processing of the temporary and final prostheses (Illustration 2).

Material and Method

Q-1 implants of the company TRINON have a diameter of 3.5 mm for narrow jaw ridges and 4.5 mm for standard jaw ridges. The selected lengths were 10 mm to 18 mm in cases with an immediate extraction, if the pre-diagnosis indicated this. The instructions of the manufacturer for the processing of the implants were followed during the fixation of the temporary prosthesis as well as after three months during the definite prosthetic provision. The patients were treated in the private clinics of the authors in the years 2001 to 2003. All patients were examined and diagnosed in accordance with the regulations.



They showed all indispensable requirements for the indications for an enossal implant. In all cases strict pre- and post-surgical records were created that included the following: careful teeth hygiene two weeks before using chlorhexidine (0.12 %) in the form of rinsing of the mouth, twice a day (morning and evening), antibiotic prophylaxis, AINES etc.

Patient 1

Healthy youth, non-smoker, with preceding trauma on 14. She occasionally had slight clinical problems and showed changes of the colour of the gingival in the area of the aforementioned incisor. The atraumatic removal of the tooth was carried out under local anaesthetic. An implant with a diameter of 4.5 mm and a length of 14 mm (Illustration 3) was inserted during the same operation. In view of the short duration of the operation,

which is due to the simplicity of the system, the patient also wanted a solution including the immediate loading. This was carried out immediately, by using a non-invasive technique utilising a circular scalpel made of titanium (punch with a diameter of 3.0 mm) of company Trinon. The post-operative progress was extraordinary, no sign of swelling, pain, inflammations (Illustration 4).

Patient 2

Male, 36 years old, seven to ten cigarettes per day, in good general condition, good oral hygiene and good willingness with regard to co-operation. The indication is a partially toothed upper jaw of the type Kennedy III. Three implants with a diameter of 4.5 mm were inserted. After three months the 'heads of the implants' were ground due to a column divergence (Illustration 5). In this case the natural topography that had been achieved through these implants (Illustration 6) is important. After 19 months the satisfaction index is very good.

Patient 3

Male, 41 years old, non-smoker, with loss of 13 and gnathological situation of a prognathia (Illustration 7). An implant with a diameter of 3.5 mm and a length of 16 mm is inserted using non-invasive technique (Punch 3.0 mm). The achieved expansion can be seen in the remaining alveolar (Illustration 8). The abutment was adjusted to the occlusal situation (Illustration 9). It has to be noted that the adhesiveness of the temporary crown to the 'head' of the implant, while maintaining the gingival slot, was very good, even though the incision was considerable (Illustration 10).

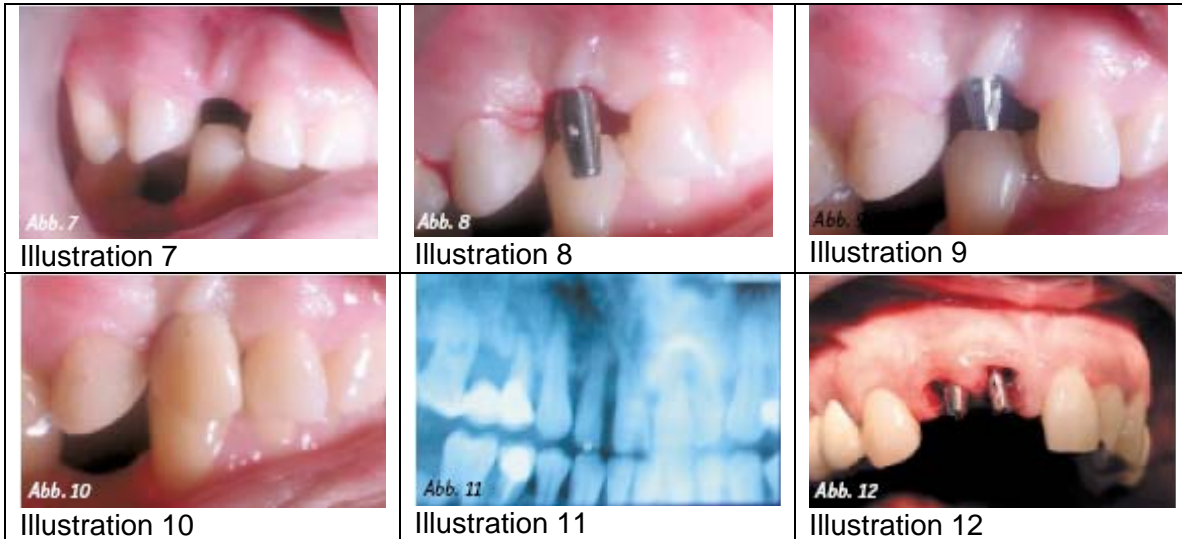
Patient 4

Doctor, 58 years old, smoker until three years ago, now non-smoker, in good general condition, in particular as a previously treated chronic periodontitis was diagnosed. The incisors 11/12 have degree III loosening (Illustration 11). The incisors were extracted and the extraction alveoli and the soft tissue were treated with a 1.5 W multi diode laser. During this operation two implants with a diameter of 4.5 mm and a length of 14 mm were inserted into the remaining alveoli, which were sterilised by the optical fibres of the multi diode laser (Illustration 12). Temporary crowns were mounted on the abutments of the implants. With regard to this the preservation of the gingival papillae three months after the insertion of the implants has to be emphasised (Illustration 13).

Patient 5

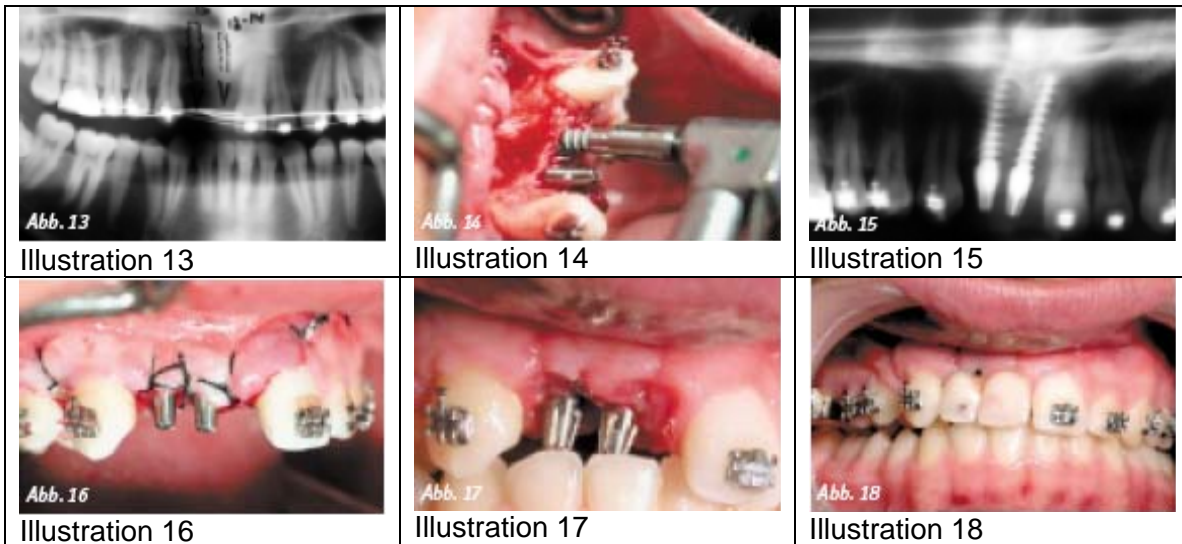
Youth, 18 years old, non-smoker. At the age of nine he contracted a radicular cyst of the 12, which partially resorbed the 11, so that both teeth together were extracted with the cystectomy (Illustration 14). This was followed by an orthodontic treatment. He is in good general condition and due to his bad psychic experiences in the past wants the least invasive treatment. After the possibility of the immediate loading and a single operation had been explained to him, he was in favour of it. Two implants with a diameter of 3.5 mm and a length of 16 mm were inserted (Illustration 15). During this procedure a remaining atrophied jaw ridge as a result of the cystectomy can be observed, with which we reach the limits of the possibility of an implantation without prior inserts (which would make a prior primary integration of the same necessary in the case of an additional surgical intervention). We have broadened the vestibular cortical substance of the bone

by using an autologous bone graft and extracting the third molar. Within the same operation we have thus improved the aesthetic and the function of the vestibular soft tissue after the insertion of the implants (Illustration 16). Particular mention deserves the good healing of the wounds in the soft tissue of the jaw, which formed papilla constructions as early as seven days after the operation (Illustration).



Discussion

The goal of the clinical evidence was to eliminate the period of time without loading or function, which our patients still had to endure until a few years ago and to achieve predictable, permanent and successful results. We started our treatments of the immediate loading on the basis of the clinical studies of authors such as SCHNITMANN HENRY and ROENBERG, BALSCHI and WOLFINGER. We followed the path shown in the publication of RANDOW in the year 1999, who introduced a similar behaviour of implants, which were loaded on the day of the operation. This was in contrast to a period of four months without loading or function, including a second operation for the re-opening. We inserted our first implants of TRINON as interim implants in the case of patients, for whom we would otherwise have used implants, with regard to which we have extensive experience and predictability, in comparison with the result published by RANDOW in the year 1999. The high degree of satisfaction shown by our patients has step by step encouraged us to use the selection with immediate loading for a high percentage of the cases (up to 80 %). The primary stability is certainly easily achieved in the case of alveoli ridges with a density of D1, D2, but also in the case of softer bone conditions (D3, D4). The system of the implants of TRINON, which in its conical characteristic is similar to that of a natural root (which allows for better adjusted elasticity gradients with immediate loading), the angle of intervention, the conical abutment with four slots and grooves respectively, which are meant for the receipt of the transport plug and the insertion keys as well as for the stabilisation of the prosthesis (it is an anti-rotation system), made it possible for us to allow the immediate loading even in the case of bones with lower density as well as in the case of existing atrophied ridges. Until then we had solved this through regenerative techniques or autogenic inserts, while generally the immediate loading was contra-indicated and a second operation necessary.



Final Conclusions

On the basis of the material introduced in this article we can conclude the following:

- Excellent primary stability for any type of alveolar bones
- Rigid connection between the implants using the anti-rotary slots
- Large bone expansion capacity, which prevents operations with great loss of blood
- Greater predictability for treatments with immediate loading, with a success rate of 96.1 % after 40 months in the case of our study
- Greater satisfaction indices from the patients, because only one operation was necessary.

The list of literature can be requested from the editorial office.

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