Single-Phase Implantation of 24 Implants in Upper and Lower Jaw with Immediate Function Loading.

A 49-year-old patient required a complete renovation of the oral cavity with immediate prosthetic provision. Due to her prejudice against removable dentures, the patient decided on a single-phase implantation with fixed denture. The closing of the gaps by temporary solution during the period of the treatment was extremely important to the patient due to her professional work.

During the examination of the oral cavity the existing teeth proved to be unsuitable for bridges columns due to the loosening of the 2nd and 3rd degree as well as the pathologically caused deep bite. The advanced disease of the paradentium showed chronic symptoms. Neither superlative fistula nor reddening of the mucosa, which would have indicated an aggravation of the disease process, was found. X-ray images confirmed vertical and horizontal bone loss. The bones of the alveolar appendages were destroyed by chronic inflammation and thus the alveolar appendages showed irregular edges (Illustration 1).

After an in-depth diagnosis the implantological provision of the toothless upper and lower jaws was planned in a single operation as well as the creation of upper and lower temporary bridges immediately after the operation. The implantation of the super-structure with fixed replacement (cemented bridges) was planned for approximately four weeks later.

Taking into consideration the unfavourable anatomical, osteal situation with regard to quality (D3) and quantity (bone loss, irregular edge formation of the alveolar appendages), the duration of the treatment time planned from the implantation to the prosthetic provision with full functional load as well as the fulfilment of aesthetic and functional requirements with regard to the future denture, the case was classified as difficult. The experience of our own operations with single-phase implantations, taking into consideration the use of Q-implants (Trinon), and after the patient had been informed in detail with regard to the planned procedure, possible complications, but also alternative solutions and treatment possibilities, as well as the acceptance of the therapy plan on her part and her declaration of agreement, the realisation of the therapy plan was decided on. In the course of the week preceding the surgical operation, the patient received intensive instructions with regard to the appropriate hygiene during the individual phases of the surgical and prosthetic treatment. During the preparatory phase of the operation the teeth of the upper and lower jaws were extracted at the same time under local anaesthetic. In order to stabilise the temporary immediate prostheses the upper cupids were left in place, so that the patient would be able to continue her professional activities. In the lower jaw the teeth in the molar area were removed and only a bridge supported by the cupids was maintained until the implantological operation. After the extractions the alveoli were thoroughly scraped and cleaned of inflamed granulation, the sharp alveoli edges were partially straightened. A limited gingivectomy / gingivectomy of hypertrophied fragments of the edge of the gingival
neck were carried out as well and was stitched closed afterwards. After this operation Dalacin C (Upjohn), 0.3 g three times a day, and semi-liquid nourishment were prescribed. After the extractions the patient no longer complained of pain, the cause of which had been connected to the teeth and with improved general wellbeing she was able to have the implantation carried out. A week later the second interim prosthetics were prepared and with these the correct occlusion was determined. The operation was carried with the application of an analogy sedative, administered by an anaesthetist, Midanium (Polfa) 20 mg, Fentanyl (Polfa) 0.5 mg. On the one hand this served to facilitate easier working for the doctors and on the other hand it relieved the patient of the psychic pressure during the six-hour-operation, because it reduced the feeling of anxiety and ensured painlessness. The doctors on the other hand had the possibility of good cooperation with the patient during the operation. Two stomatologists, one anaesthetist and two assistants took part in the operation.

In consideration of the great extent of this operation and the limitation with regard to time, it was decided to remove the remaining four cuspids inter-operatively and also not to use implantation templates. In view of this one worked in accordance with the ‘free hand principle’. During the initial phase of the operation the teeth of the upper jaw were extracted and afterwards the edges of the alveolar appendages were straightened by milling, in order to create the implantation surfaces. The involution of the edges of the alveolar appendages of the upper jaw in the area of the cuspids had led to bone deformation, which had created an uneven basis for the placement of the implants. So it was decided to insert implants in the positions 13, 23 - distal of the alveoli 13, 23 -, in order to achieve the impression of cuspids that are leaning towards each other with regard to the subsequent prosthetic provision. Around 16, 17 as well as 25, 26 the bone mass were insufficient in front and in the back and could not be considered for an implantation. In the remaining sections implants of maximum length and width were inserted that made efficient use of the available bone material. In the lower jaw the implantation started with the removal of the teeth. Here, too, the edges of the alveolar appendages were straightened by milling, in order to create appropriate implantation surfaces. In the area 43, 44 two implants were inserted. However, the attempt to circumvent to alveolar of the removed cuspids as well as the entry of the nerve through the foramen mentalis proved to be a mistake, because due to that attempt the points of the two implants came too close together (Illustration 2). After the RVG produced on the basis of that, the removal of the implant position 44 (Illustration 3) was decided on. The further part of the operation progressed according to plan. After the operation the administering of the antibiotic Dalacin C (Upjohn), 0.3 g three times a day, was received and rinsing with Corsodyl (Smithkline Beecham), cold compresses and semi-liquid nourishment was recommended as well. In total 25 implants were inserted, of which one had been removed due to the mentioned too great proximity to another. Implants with a length of 8, 10, 12 and 14 mm as well as a thickness of 3.5 and 4.5 mm were inserted. The specific construction of the Q-implants (Trinon) allowed the insertion of such a great number in the case of relatively little bone mass. At the same time a very good primary stability was achieved. In addition to this the implant heads can be very well ground, which ensures the implantation in the desired direction.

During the control visit on the day after the operation, a swelling of the soft tissue was found, which, however, was of minor extent. The patient felt really good. With the framework of that session the temporary bridges were inserted (ProvitempK. Lisico),
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Illustration 1: Panorama X-ray image before the treatment. - Illustration 2: Panorama X-ray image, executed after the insertion of 25 implants in upper and lower jaw. - Illustration 3: Panorama X-ray image after the removal of the implant Position 44.


Which were worn by the patient for the next three weeks until the completion of the final dentures. Three days after the operation the antibiotics were discontinued. The patient did not have any fever, the healing process progressed as planned, no pain had occurred. One week after the implantation the implant heads were ground under plenty of water-cooling, in order to achieve their parallelism. Steps were ground into the implants of 3.5 mm in diameter, in order to mark crown limits. The implant heads were ground in accordance with the same principles as that of teeth, while it has to be noted that the area to be ground was rather extensive.

Before taking impressions, the grooves on the implant heads were blocked with composite material. Impregnum Penta Soft compound (3M ESPE), prepared in a Pentamix 2 automate (3M ESPE), was used for the impressions. The bridges skeletons that were produced in a dental laboratory (Rexillium 3, Pentron) showed inaccuracies during the try-out, which were then adjusted in the laboratory, so that the bridge sections could be precisely inserted during the next try-out. The radical grinding of the implant heads led to the parallelism of the columns, which in turn made it possible to produce a circular bridge. Taking into consideration the physiological...
mobility of the lower jaw in the area of the molars a divided bridge was created between the implants of the positions 31 and 41.

The final prosthetic work with burnt-on porcelain (Synspar, Pentron) was corrected in the mouth of the patient during the try-outs and in the dental laboratory with additional registrations, in order to composite for the retraction of the edge of the gingival, which occurred in the course of the healing-in process (Illustration 4).

On teeth 36, 37 and 46 the retraction of the gingival resulted in the exposure of a part of the implant body of the implant heads with 4.5 mm diameter. Taking into consideration the deep laugh line, it was decided together with the patient to leave this unaesthetic cosmetic effect as it was, because neither the patient nor her surroundings were able to see it.

Four weeks after the implantation the bridges were finally fixed with cement, which met the expectations of the patient as well as those of the doctors with regard to function and cosmetic (Illustration 5). The patient was strictly instructed with regard to the appropriate oral hygiene in connection with the wearing of implant prostheses and the necessity of systematic visits to a stomatologist was emphasised. Except for one day - the day after the operation - the patient was working during the entire period of time of the treatment. This was only possible due to the unique characteristics of the Q-implant system: the ability to grind the implant heads and the immediately loading thanks to the special construction of the implant thread.

Finally, it should be emphasised that the patient as well as the doctors were satisfied with the final effect of the successfully completed case presented here (Illustration 6 and 7).

Correspondence address:

Dr. Elżbieta und Dr. Arkadiusz Krezluk
ul. B. Glowackiego 16
97-200 Tomaszów Maz./Polen
Tel.: +48-44/7 26 05 63
Fax: +48-44/7 26 06 50
E-Mail: artaentimplantsystem@interia.pl