Patients 80+
Case studies from geriatric dentistry

StecoTitanmagnetics®

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I’d love to eat a Wiener Schnitzel again!

A case study in gerodontology in day-to-day dental practice

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Up to what age are implants indicated? What treatment is available to a patient of advanced years with a full medical history? The following case, which draws on the author’s personal experience, demonstrates that a magnet-retained denture on implants can fulfil a patient’s long-cherished wish and significantly enhance their quality of life.

In training to become a dentist you learn a great deal about the theoretical principles of implantology, prosthetics and gerodontology. Lectures are given on the effects of edentulism in old age. In the theory sessions the pros and cons of the appropriate types of treatment available for geriatric patients are examined at great length.
My grandfather’s case showed me, however, that consideration of the patient‘s own wishes is largely overlooked in these sessions. My grandfather, who was born in 1914, had worn dentures ever since the age of 60. In fact I can never remember him without his dentures. As he got older, his mandibular ridge atrophied, resulting in an almost flat jaw

Fig.1: Patient during healing period before prosthetic provision.

Fig. 2: Titanmagnetics inserts are screwed in at 20 Ncm torque.

Fig. 3: K-Line Titanmagnetics inserts in situ.

ridge. As a result his denture started to become loose. He increasingly lost any pleasure in eating and no longer joined us for lunch, a meal of such importance in bringing family members together. This was because he was embarrassed by his inability to masticate properly owing to poor denture retention, causing him to leave his food untouched on his plate.

Shortly before completing my dental studies, I enrolled out of interest on an additional course in gerodontology. This led to regular lively discussions on dental topics between my mother (herself a dentist) and me over lunch and dinner. Implantology and the prosthetic retaining elements available featured prominently in these discussions. To my surprise my grandfather joined in the conversation after a while, saying how marvellous he thought the latest innovations in dentistry were and asking whether he could benefit from them as a patient. His dearest wish was “to be able to bite into a Wiener Schnitzel again”.

I was astounded by this initially. I had known my grandfather all my life and I had not realised until then just how desperately unhappy he was with the retention of his denture.

This is how my 95 year old grandfather became my patient: Patient: granddad, born in 1914, bilateral femoral fractures, bilateral macula degeneration, inoperable aortic aneurysm, paralysis of the bladder and occasional circulation-related dementia

Proposed treatment: two infraforaminal implants with a StecoTitanmagnetics K-Line retained complete denture. The advantage of this retaining element is that the prosthesis is almost self-centring, enabling the patient to quickly find the right position. Furthermore, these retaining elements do not have any undercuts and can therefore be easily cleaned either by the patient or nursing staff. However, in view of my grandfather's medical history, there were growing doubts about the proposed treatment. More and more family members as well as his friends asked him whether he really wanted to undergo such torture at his age. I was impressed by my grandfather's determination here: He wanted the treatment to go ahead. An appointment for the implant placement was therefore made for a date in May 2010.

Fig. 4: Individual impression tray blocked out for magnetic impression posts.

Fig. 5: Impression with denture magnets. Model analogues are magnetically attracted.

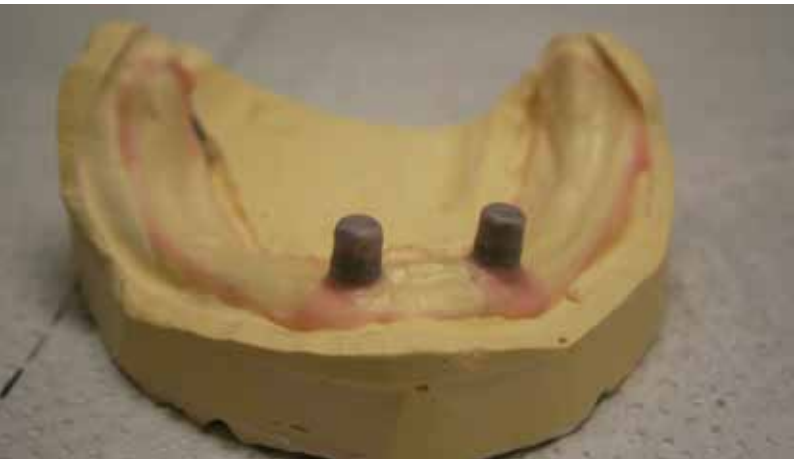

Fig. 6: Denture magnets on the working model are used as a spacer for the cast base.

Fig.7: Cast base for increased stability.

14 days before the planned surgery, my grandfather had another severe bout of dementia. Because of this my mother actually wanted to cancel the surgery on the day of the appointment. She was surprised, however, by my grandfather who welcomed her wearing his suit, saying to her “Let’s go!” On their way to the surgery, my grandfather realised that my mother had wanted to cancel the appointment and he addressed her doubts as follows: “You and I both have the same future.
You don‘t know when you will die and neither do I!” In saying these words he dispelled any doubts she had about the surgery due to his health or age.

Two implants (Biomain) were therefore inserted infraforaminally that day. The old lower denture still served as a temporary denture but was reduced in the region of the implants to prevent any pressure being transferred to them **(Fig. 1)**.

We started with the prosthetic provision of the implants in August 2010 after a 3 month healing period. Two K-Line Titanmagnetics were screwed in under torque control **(Fig. 2 and Fig. 3)** and the denture magnets were then placed on top (the denture magnets are also impression posts). The impression was taken using an individual impression

tray **(Fig. 4)**. Bite was recorded in relation to the existing upper denture at the same treatment session.

The dentures were fabricated over the following weeks at the Wiedrich dental laboratory (Nestelbach near Ilz) **(Fig. 5)**. A cast base was incorporated into the lower denture to increase its stability **(Fig. 7)**. The denture magnets were placed on the working model with the resilience rings in between to make sufficient space for their subsequent intraoral retention **(Fig. 6)**.
The denture was finished in September **(Figs. 8 and 9)**. During the try-in it was decided to renew the upper denture as well. The denture magnets **(Figs. 10 and 11)** were incorporated into the prosthesis intraorally.

I noticed the first improvement as soon as the dentures had been inserted. My grandfather was able to speak clearly once again. We took him home and after all the stress, worries and doubts we had been through I could have received no greater reward than to see the immeasurable joy on his face when he opened the fridge and was able to sample everything in it. That is a moment I will never forget.

Fig. 8: Set-up of the lower denture on the model.

Fig. 9: Set-up of the upper and lower denture.

Fig. 10: K-Line Titanmagnetics denture magnets on the resilience rings before polymerisation into the denture.

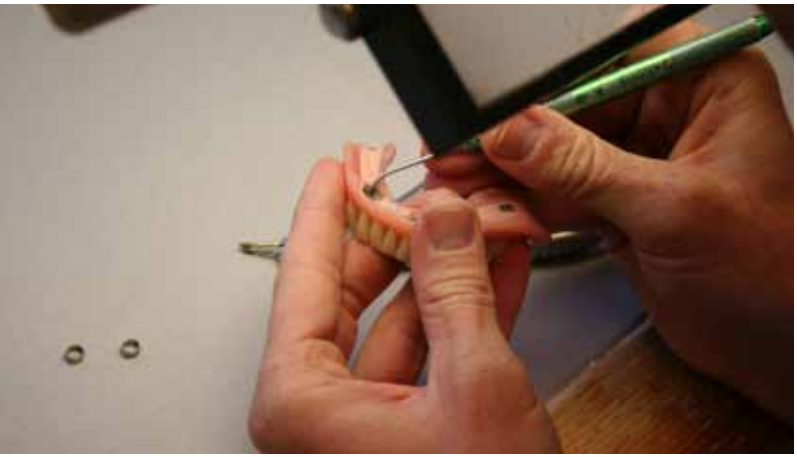

Fig. 11: Correcting the base after polymerisation.

In the weeks following the surgery I witnessed the effects of the new dentures at first hand. My grandfather ate lunch again - the days of making do with porridge were over. He was now able to use a knife and fork again. He was confident enough to go to restaurants again and was no longer embarrassed to eat in company. An added bonus was that he gained weight.

My grandfather had rediscovered his enjoyment of food. He continued to wear the dentures for a further two years until he passed away in August 2012 at the age of 98. In conclusion it must be said that opting for this procedure was not of course an easy decision, taking into account my grandfather's medical history and the problems of caring for him at home. But my grandfather treasured each day with his new denture – and knowing this has been a source of inspiration and motivation to me ever since in my work as a dentist.

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Patient relieved to find how easy denture was to place and remove

Conversion of a locator-retained complete denture to Titanmagnetics

Christian Möhlmann, Bargteheide

Complete lower dentures retained by two locators on implants offer a solution that is in widespread use. Usually, such restorations work very well. Unfortunately, not every patient can place and remove the denture unaided, especially if their state of health restricts what they are able to do for themselves.

My patient (born in 1933) first presented for treatment in early 2015 and has been under my care ever since. She had a full upper denture and residual dentition at 33-43 in her lower jaw. These teeth were severely periodontally damaged to such an extent that they had to be extracted. At that time, she did not wear any dentures in her lower jaw. As there was extended alveolar ridge atrophy, I planned to place a full denture retained by two locators on implants **(Fig. 1)**.

Fig. 1: Locator on implants in situ.

Fig. 2: Basal view of the denture with locator matrices.

Fig. 3: Lingual perforation of the denture base at position 43.

In mid 2015 the patient decided on an implant placement. Two Straumann implants (RN, length 12 mm, diameter 4.1mm) were inserted interforaminally in region 33-43 and fitted with two Straumann locators after a healing time of 4 months. The secondary locator parts were incorporated directly into the denture. The patient left the practice hoping for an improvement in the stability of the denture.

Unfortunately, as things turned out, she had considerable difficulty in placing and removing the denture in her day-to-day life because of a neurologically-related impairment in her ability to raise her arms. Placing the denture in the right position presented her with significant problems which were not resolved when retaining elements with reduced retention force were fitted. As the patient was able to manage other aspects of her daily routine unaided, her dissatisfaction with the new denture, which she no longer risked removing for cleaning, increased.

In my search for a solution I came across Titanmagnetics manufactured by the Steco company (Hamburg). I opted for the K-Line range of magnets. Their conical shape also allows lateral stability of the denture.

As the implants were placed in parallel as far as possible, the 10° cone did not present a problem. According to the manufacturer, a divergence or convergence of up to 15° is manageable. Magnets in the Titanmagnetics X-Line can be used for implants inclined at a steep angle. These can be used regardless of the insertion direction as they do not have a lateral guide.

To incorporate the magnets into the denture I first detached the loctor matrix housing from the denture **(Fig. 2)** and reduced the denture basally to create space for the magnets. As the conical magnets were somewhat bigger than the locator matrices, I had to create enough space for them to fit in and perforated the denture base lingually at position 43 **(Fig. 3)**. The locator superstructures were screwed out and the implant inner threads were rinsed and then filled with 1% chlorhexidine gluconate gel.

The Titanmagnetics were then screwed in under torque control using a special torque wrench adapter **(Fig. 4)**. This proved to be painful for the patient at position 33 as the gingiva was tucked in between the implant and abutment. I was able to move the gingiva under local anaesthesia when screwing in the magnets so that the magnets were sit-

Fig. 4: Screwing in StecoTitanmagnetics inserts under torque control.

Fig. 5: Denture magnet on the insert in situ.

Fig. 6: Positioning cuffs to cover the preimplant tissue.

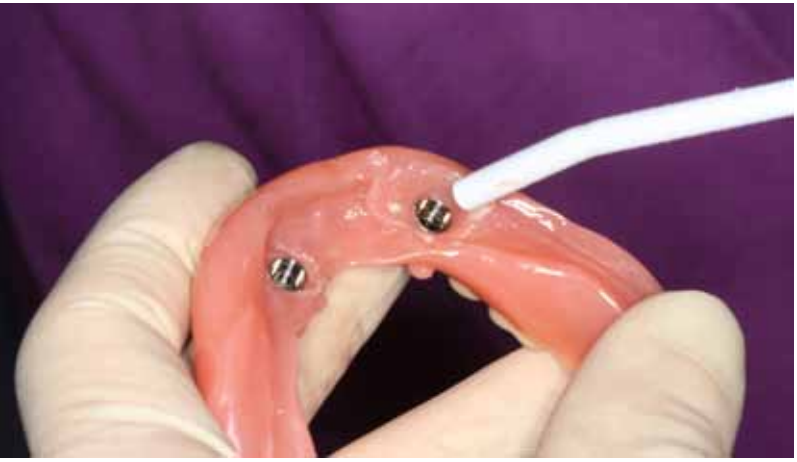

Fig. 7: Basal view of the denture with denture magnets incorporated.

ting securely on the implants

The denture magnets were placed on the inserts to check the passive denture position and occlusion **(Fig. 5)**. As the gingiva was only slightly resilient, I decided, when fitting the denture magnets, not to use the resilience rings which position the magnets at a distance of about 0.3 mm from each other. During polymerisation the area around the implants was protected by small silicone positioning cuffs **(Fig. 6)**.

I slightly corrected the excess of the silicone cuff at mesial position 33 to ensure the acrylic fully covered the denture magnets. After degreasing the denture magnets, I filled the denture base cavities with acrylic (Palapress Vario, Heraeus Kulzer) and positioned the denture in the mouth. I then removed the excess and added acrylic to correct minor defects. I had to enhance the denture base as it was perforated lingually **(Fig. 7)**.

After treatment had been completed, the patient was able to correctly position the denture in her mouth by herself. It was only necessary to roughly align the denture with the inserts. Magnetic attraction did the rest. The patient was visibly relieved to find how easy it was to place and remove her denture and said: “You’ve really taken a weight off my mind!” One week later the patient attended the surgery for a review and was very satisfied with her denture. This was the first time I had carried out this kind of treatment and I was pleasantly surprised by how easy the procedure was to carry out.

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