

Minimally invasive implant placement with internal sinus floor elevation

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The surgical oral rehabilitation of elderly patients with pre-existing conditions, sometimes exacerbated by an insufficient bone supply, requires a minimally invasive procedure that avoids inflicting strain on the patients. Even if the amount of available bone in the maxillary sinus region is limited, denture retention in senior patients can be significantly improved by a simple and uncomplicated procedure. MIMI—which stands for “minimally invasive method of implantation”—in combination with an internal direct maxillary sinus lift, shortens treatment times and causes virtually no postoperative discomfort. This article presents the MIMI procedure as exemplified by a case report.

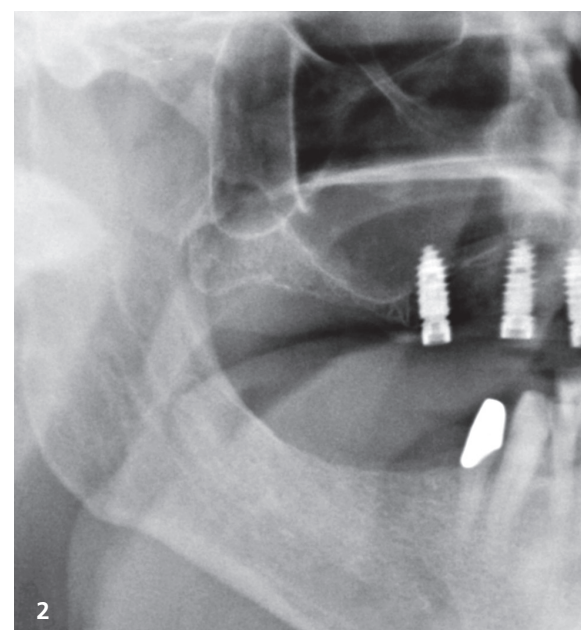
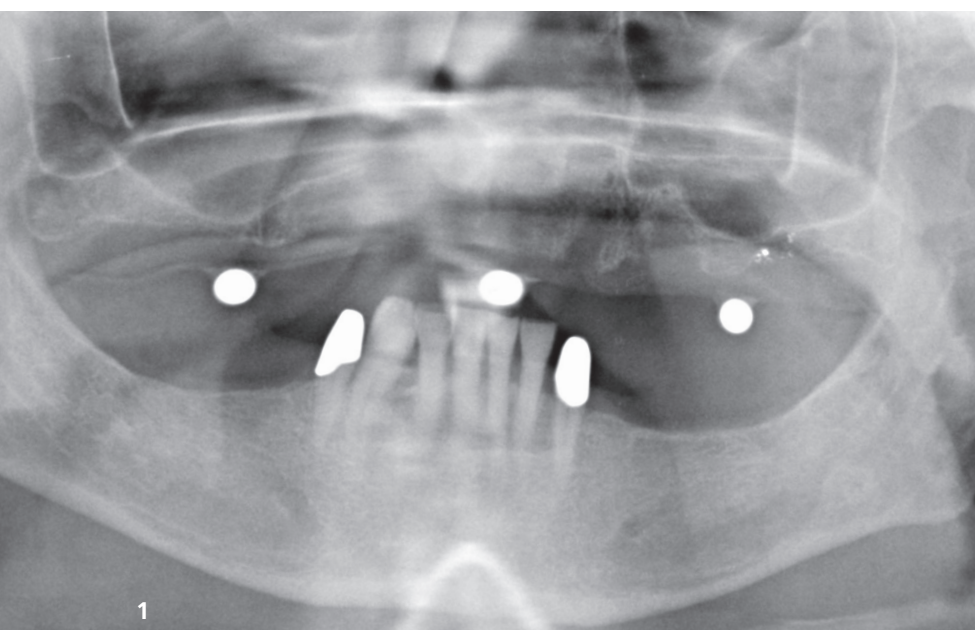
Baseline situation

An 88-year-old male patient presented with a maxillary telescopic denture whose retention was insufficient. The patient wanted a new restoration. The two remaining abutment teeth showed massive widening of the periodontal space and grade 3 mobility and were not considered salvageable, so their extraction was indicated. The patient did not want to accept any further decline in denture retention after tooth extraction and opted for a prosthesis supported by six implants and retained with ball attachments. The patient suffered from multiple afflictions, including diabetes. He was taking various medica-

tions, including the ASA 100 thrombocyte aggregation inhibitor.

Procedure

The vertical bone height was measured on a panoramic radiograph (Fig. 1). The magnification factor was determined with three measuring spheres attached to a template. Six two-piece Champions (R) Evolution implants (4.0 × 10 mm, 3.5 × 10 mm or 3.5 × 8 mm) were placed between sites 15 and 25. For local anaesthesia, Ultracain D-S was distributed in small doses across the area to be implanted. The cortical navigated implantation procedure (CNIP)

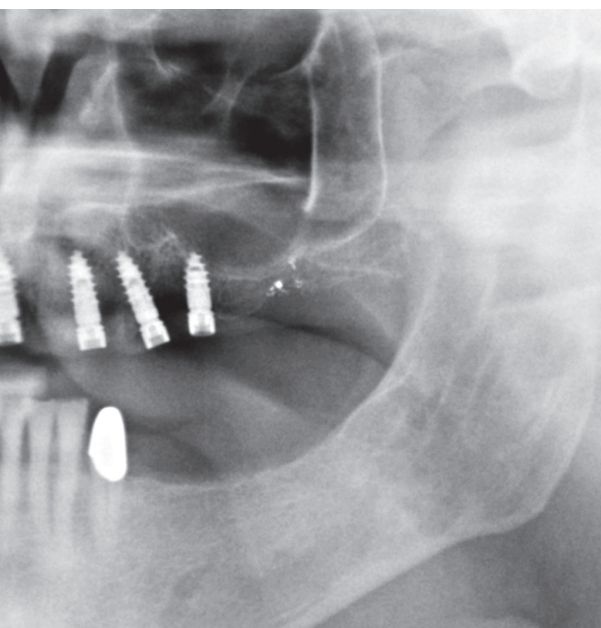


was minimally invasive, effected by transgingival low-speed drilling with guidance through the cortical bone.

Given the low drilling speed, irrigation with saline solution could be dispensed with. After each drilling step, the integrity of the bone walls of the resulting cavity was checked on all sides with a blunt probe of appropriate length (bone cavity test). An internal direct sinus lift was performed at site 14 using a conical triangular drill bit ($\varnothing$ 2.3 mm) to pre-drill to about 1 mm short of the floor of maxillary sinus. The remaining bone of the maxillary sinus floor was compacted with condensers.

The membrane was raised with another condenser ($\varnothing$ 3.0 mm) with a rounded tip. A collagen fleece (CollaWin) was inserted into the bone cavity and compacted with a very short round drill ($\varnothing$ 3.7 mm) rotating counter-clockwise. Bone stability was verified with condensers of ascending diameter, and the 4×10 mm implant was inserted with a primary stability of 30 Ncm. The margins of the implant shuttles that double as gingivaformers/healing abutments were placed level with the gingiva.

Following implant placement, a control panoramic radiograph was taken (Fig. 2). There was some blurring in the anterior region, so individual radiographs were taken for better visualization (Figs. 3a and b). The radiograph image of the first quadrant (Fig. 3a)



About ...



Dr Mahssa Arjmandi

Dr Arjmandi, you are an associate dentist at the practice of Dres. Weickum in Mannheim, Germany. What is it that you find so fascinating you about oral implantology?

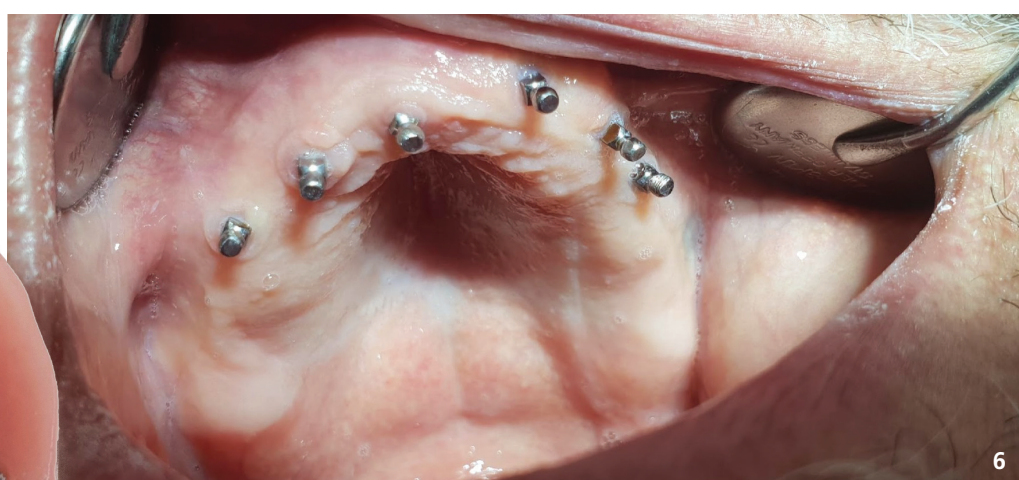
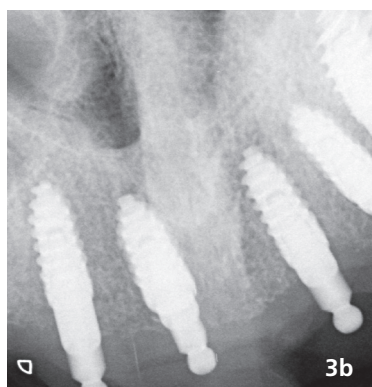
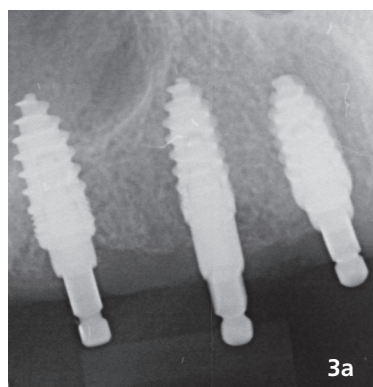
Oral implantology is a dental specialty that opens up a wealth of possibilities for patient care. Patients can be treated quickly, minimally invasively and with little pain—to the point where individual resilience and patient age hardly play a role once patients decide to improve their quality of life.

You have completed the curriculum “Expert in Oral Implantology and Implant Prosthetics”. What do you think was your greatest learning success?

Above all, the curriculum has helped me build more self-confidence. I had already planned and performed a few minor implantological treatments before attending the curriculum, but I would never have ventured into more complex rehabilitations. The curriculum was very much “hands-on”, and I was thoroughly familiarized with cases with different bone qualities, an inadequate bone supply and also narrow ridges. And what I learned about sinus lifts, for example, did not stay at the theoretical level. I was given the opportunity to assist fellow dentists with implant cases and to perform implantological treatments in my own practice, under their guidance. My greatest learning success was that the range of patients for whom I can recommend and offer implant treatment has increased—because I had had the opportunity to handle more and different anatomical situations.

What are the recurring challenges in your daily implant work?

Suboptimal bone conditions are probably the greatest day-to-day challenge, especially in patients with major bone defects due to previous inflammatory disease.



clearly documents the results of the sinus lift. Figure 4 shows the intraoral situation directly after implant placement, highlighting the advantages of the MIMI procedure.

Immediate result

The patient left the practice with six new implants and no wound in the oral cavity. Ibuprofen 600 was prescribed to be taken if and when needed. The patient reported needing only one tablet, on the day of placement. Due to the patient's multimorbidity and his diabetes, postoperative antibiotic prophylaxis was also prescribed (Augmentan 875/125 mg for five days). A temporary restoration was realized made by reworking the patient's telescopic denture. Around the implants, the prosthesis was relieved to the point where the implants would not be subject to any loads during the healing phase.

Follow-up

After ten weeks, an impression was taken for a conventional maxillary complete denture. The dental technician relieved the denture to accommodate the

MMT female components (matrices) in the implant region area of the denture. In the final step, the shuttles were removed, and the ball attachments were screwed in at approximately 20Ncm. The MMTs were attached to the ball attachments and connected to the finished denture with acrylic resin. The finishing steps were performed by the in-house laboratory (Fig. 5).

Once the denture had been delivered, the patient was shown how to handle and clean the restoration and implants. At the initial follow-up two days later, the patient was highly satisfied; only a minor pressure point had to be attended to. Figure 6 shows the implant situation at the eight-month follow-up. The patient has adapted well to caring for his new restoration, reporting a significant increase in terms of his quality of life. In particular, he once again enjoys his food and has with pleasure accepted invitations to meals with his family and friends.

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