MINIMALLY INVASIVE, AFFORDABLE ALTERNATIVE

The four-year survival rates of mini-implants for stabilizing full dentures are 95 percent and higher. Will mini dental implants prove to be a low-cost therapy alternative, especially with low bone volume ? The DENTAL MAGAZINE asked.

| IM GESPRÄCH MIT PD DR. TORSTEN MUNDT

For a long time mini implants were reviled. Is a turnaround in sight?

MUNDT: Interest in mini-implants is increasing. The number of scientific conferences and articles in specialist journals that mini dental implants addresses is growing steadily. Likewise, the number of manufacturers has increased in recent years. But one is still skeptical, not only because of the fracture danger. That's what I experience at every congress when I talk about mini-implants.

How can this be explained?

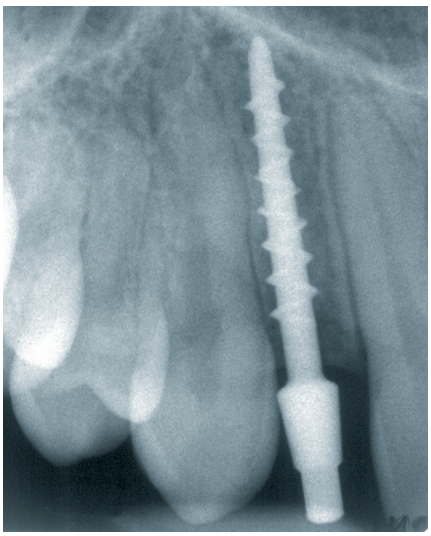
MUNDT: The reservations have different reasons. The currently available scientific base is thin. And the data for the lower jaw are better than those for the upper jaw. Some manufacturers, but also users understand mini dental implants as an ideal beginner system for newcomers. But it is not possible without experience. The use of the mini implants requires knowledge in the handling of the bone and basic anatomical knowledge of the intraoral hard and soft tissues. Ignorance and lack of experience are likely to result in failures that critics remember. Fractures are relatively rare and occur only in the thinnest mini-implants, <2 mm in diameter. Too high insertion torque can lead, for example, to breaks in the insertion. Late fractures may occur if screw threads are insufficiently covered by bone or if the indication limits are exceeded.

The turnaround is so ushered?

MUNDT: Definitely! Minimally invasive and inexpensive implant therapies are required more than ever. No more than ten percent of the population can (or do) want to pay for treatment options with standard implants, which we present at our implantology congresses. Mini dental implants are also a promising alternative when important natural pillars are lost. Because they can be optimally integrated into existing dentures. In principle, however, minis cannot and should not replace the therapy spectrum of standard implants, but in particular supplement them with narrow bone.

However, there are hardly any studies that exceed a period of three years ...

MUNDT: In fact, meaningful, prospective studies on one-piece mini-implants are still very rare - and if so, then with less than five years of observation. Long-term reports (> 5 years) usually come from practice owners without independent examiners, are retrospective and without consideration of the bone degradation. They



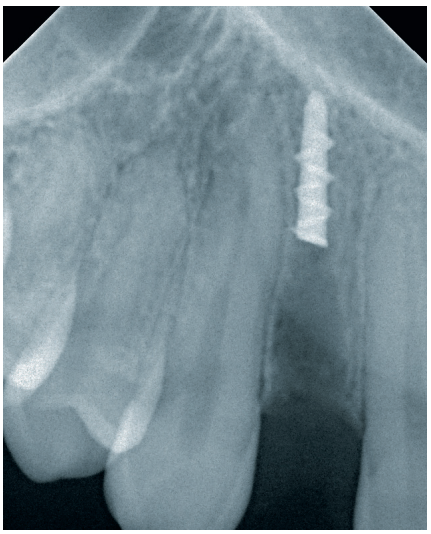
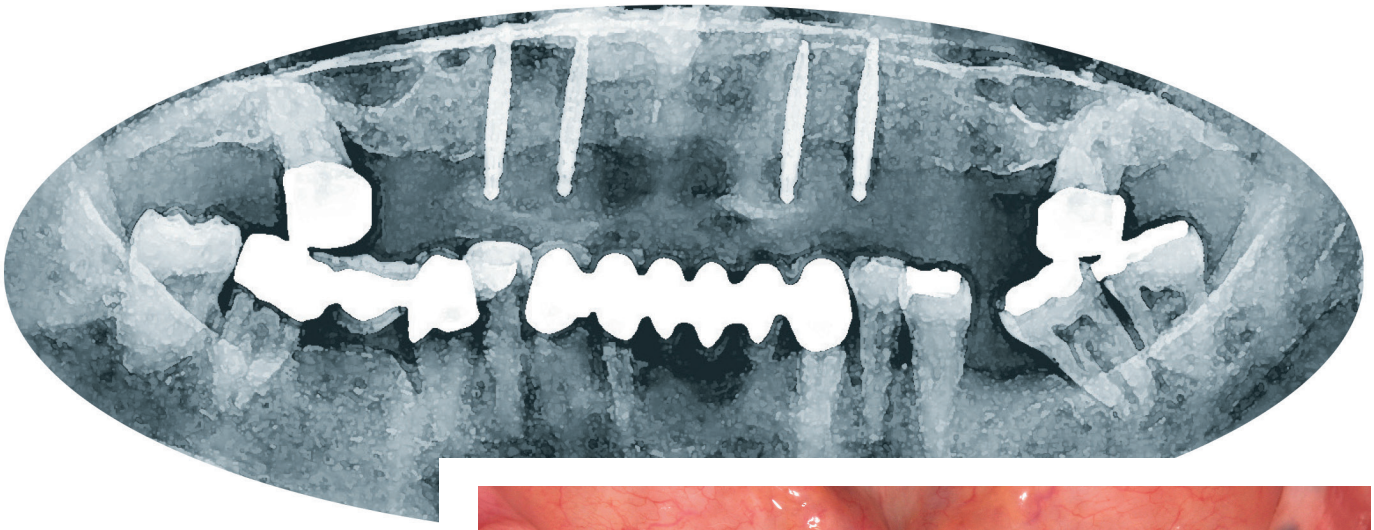
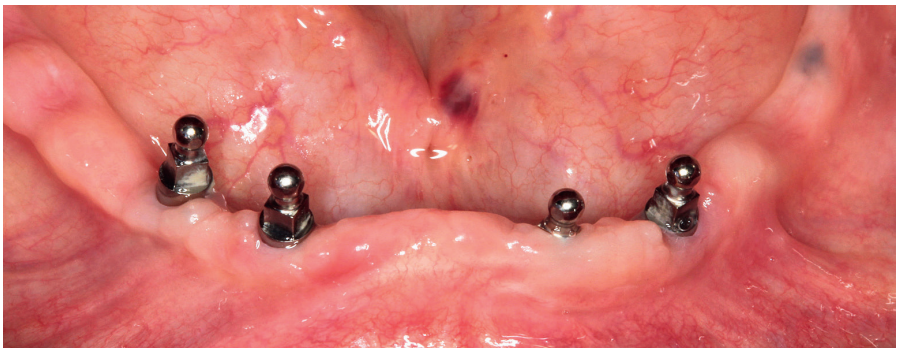


Fig. 1-3: Fractured, 2.5 mm thick bicortical screw four years after restoration with a single tooth restoration (58a) with a deep bite. The manufacturer (formerly Oraltronics, Bremen) recommended to use 2.5 mm bicortical screws only in blocked restorations. The gap was provided after wound healing with a single-wing adhesive bridge. The fragment was left.





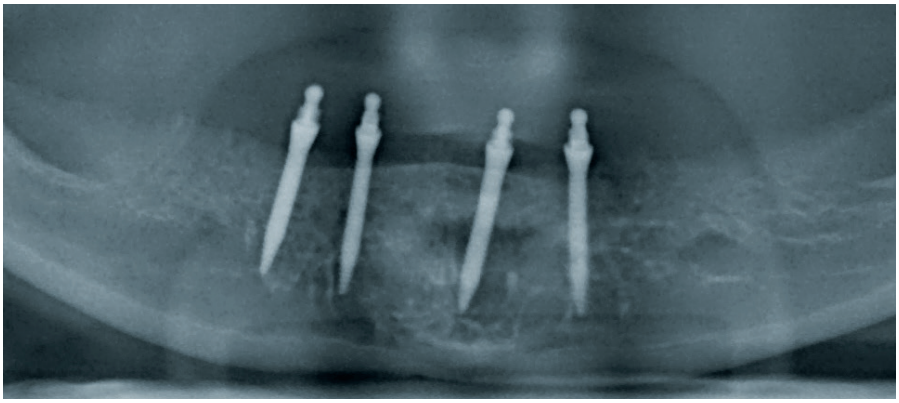


Fig. 4-5: Mini dental implant restoration in the lower jaw of a 60-year-old woman. For implants with standard diameter, the alveolar crest would either have to be extremely shortened or augmented vestibularly.

therefore have only a limited significance.

In Greifswald, however, retrospective research is also carried out ...

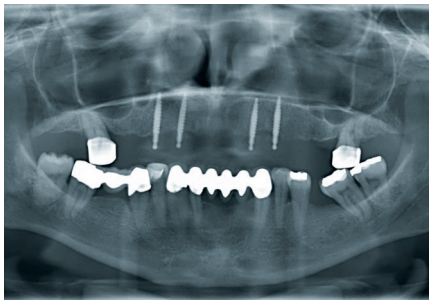
MUNDT: Right, we recently published a study that was also retrospective, but the investigation was carried out by an independent dentist (doctoral candidate) in nine German dental practices. At the time of the follow-up, X-rays were taken and compared with the postoperative images. The four-year survival rates of Mini Dental Implants (MDI) for stabilizing total dentures were just under 95 percent in the upper jaw and even higher in the lower jaw. We want to publish the bone degradation rates shortly. Furthermore, together with three dental practices, we have initiated a prospective multicenter study on strategic pillar augmentation at Greifswald University. The first patients have received mini-implants to stabilize their dentures and residual teeth and are now being monitored. Further prospective studies are also taking place at other universities in Bern, Montreal and Belgrade.

Especially in the upper jaw, failures seem to pile up. Why?

MUNDT: Two studies report on mini-implants for the stabilization of total maxillary prostheses. The results are downright disillusioning with loss rates of 15 to 47 percent and high bone breakdown rates.

What happened?

MUNDT: The implants were loaded immediately regardless of the bone quality in each case, that is, the matrices (Housings) were polymerized immediately after insertion into the prosthesis. The very high rate of loss of 47 percent in a total of nine patients probably resulted from the fact that the denture base in this therapy arm was palatally reduced right from the start. The manufacturer and many long-standing users recommend that in the upper jaw with poorer bone quality, so wide-mesh cancellous bone, thin cortex, low insertion torque, mini-implants may not be fully loaded immediately, but the dentures must first be fed softly underfoot. The reduction of the basis should - if at all - take place only after three to four months, ie after suc-



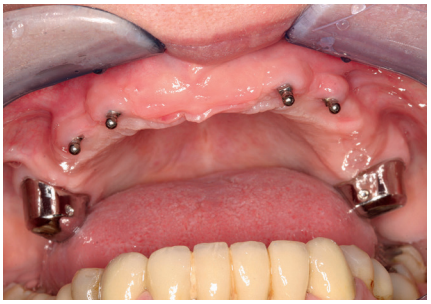


Fig. 6-8: In this 51-year-old patient, the mini-implants with a diameter of 2.4 mm (MDI, 3M) could be incorporated into the previously prepared prosthesis. A removable standard implant restoration would have been possible only in conjunction with extensive augmentation and would have cost quite apart from the longer duration of therapy three to four times.

cessful osseointegration.

Mini dental implants are one-piece implants. What do you have to pay attention to when inserting them ?

MUNDT: Mini dental implants have a self-tapping thread and therefore provide adequate primary stability for immediate restoration. Similar to wood screws, the preparation of the implant bed is incomplete in width and depth with a thin pilot drill. The preparation depth depends on the bone quality. The softer the bone, the flatter the pilot hole should be..

Are there any contraindications?

MUNDT: For very soft bone, Grade 4, "Styrofoam", mini dental implants are contraindicated. They are also not suitable in connection with augmentations, as they can not heal without stress. Even at the insertion position, the implant should be surrounded cervically on all sides by bone. This can only be guaranteed if the bone has sufficient thickness.

But thinner bone is not a contraindication?

MUNDT: No, with thin bones, however, it is recommended to form at least a small mucoperiosteal flap, a mini-flap, to keep track. If necessary, the bone can be crestally planed, but a portion of the cortex should be preserved as possible, so as not to endanger the primary stability.

Will the importance of the "little ones" increase over the next five years?

MUNDT: I think so! Due to their minimal invasiveness and low postoperative morbidity, they are an alternative for older patients and for patients with underlying diseases. Implant therapies are rejected not only because of the high costs, but also because of the fear of surgery. The often necessary augmentations discourage especially older patients. Looking at the age pyramid, it is likely that the need for minimally invasive and inexpensive alternatives to standard implants will increase. The hygiene friendliness and the simple handling speak for it. Because the manual and visual skills decrease with age. The quality of life of patients with total prostheses is increased, and not only us, but also the universities of Cairo, Belgrade and Montreal have shown clear indications. Mini dental implants as strategic pillars for better support of existing partial dentures are - as already mentioned - an extremely interesting therapy option. The ball anchor requires that the die can be easily activated by replacing a silicone ring. Due to the special retention mechanism, the ball patrix hardly shows any signs of wear as with other ball anchor systems.

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Your conclusion?

MUNDT: New users should first inform themselves and attend courses, the principles of the application and the indication guidelines. These courses are offered by the manufacturers. Diagnostics and knowledge of anatomy are also the basis for success in minis. Especially minimally invasive work means: more diagnostics, in many cases also with a three-dimensional imaging. We Greifswalder first watched an experienced user. Minis' first insertions were supervised so that the qualified colleague could intervene and correct. My tip: The first minis should put beginners in the toothless lower jaw interforaminal. Because there the anatomical conditions are clearest. And: Patients who receive minis to stabilize their total mandibular prostheses are the most grateful. DM