Study introduces new surgical guide for placement of zygomatic implants

For more than 20 years, the use of zygomatic implants has been demonstrated to be a predictable and safe alternative treatment modality for complex dental restoration in the maxilla and has exhibited a high rate of success. By DTI

BOLOGNA, Italy/FORT LEE, N.J., US: Dental patients who show a deficiency of bone volume cannot be treated with root-form dental implants. Thus, new treatment modalities were sought for these patients. One of the therapies considered was the placement of zygomatic implants, which were introduced to the market over 20 years ago. A recent study has investigated a novel protocol for the placement of zygomatic implants using a specific surgical guide. The protocol relied on large field of view CT/CBCT scan for an accurate assessment of the maxillary arch to plan zygomatic implant receptor sites. A CT/CBCT-derived surgical guide of a novel design and an exact replica of the entire maxilla and zygomatic bone were fabricated using 3D printing technology. Four patients with completely edentulous maxillary arches received a total of ten zygomatic implants.

To evaluate whether the actual surgical placement of the zygomatic implants matched the computerised planning and simulation, the preoperative positions were compared with the postoperative positions by merging the pre- and postoperative scan data sets. The degree of accuracy of the superimposition was measured using sophisticated software. Apical, coronal and angular deviations were determined for each implant. Deviations from the computerised project to the actual implant positions ranged from 2 mm to 3 mm, and angular deviations ranged between 1.88° and 4.55°. The study found that the placement of zygomatic implants requires surgical experience owing to the close proximity of vital anatomical structures. It used methods of superimposition that illustrated satisfactory correspondence between inserted implants and the virtual plan. No adjacent vital anatomical structures were damaged. The novel surgical guide design afforded the surgeon visual control of the drilling protocol. Positioning the guide in close proximity to the entry point of the zygomatic body aided control of the drills up to the vicinity of the exit point, significantly limiting problems associated with angular deviation.

The researchers concluded, “Reducing errors and complications is essential for zygomatic implants to remain a viable treatment alternative, and further research on a guided approach to their placement is encouraged.”

The study, titled “Computer-guided approach for placement of zygomatic implants: Novel protocol and surgical guide”, was published in the June 2019 issue of Compendium.

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Straumann BLX implant
First human case study yields positive results for molar replacement

By Straumann

BASEL, Switzerland: Straumann is pleased to report the very positive results of the first human case study to track the condition and progress of a patient treated for a missing molar with the new Straumann BLX implant. Straumann BLX is a next-generation implant system that combines an innovative design for optimized stability with the company’s high-performance Roxolid® metal-alloy and SLActive surface and that offers new levels of confidence—for immediacy and beyond. Additionally, the improved usability in immediate protocols and simplified surgical and prosthetic workflows translate into higher treatment efficiency and shorter chair time for the patient.

Dr Eirik Aasland Salvesen, a periodontist at Oris Dental in Stavanger in Norway and executive director of the Oris Dental Academy, was the treating surgeon. One year ago, he placed a Straumann BLX implant into a healed mandibular first molar site and restored the implant prosthetically through an analogue workflow in the temporary phase and digital workflow for the final restoration.

The patient, a 67-year-old non-smoking man without any relevant medical history, was referred to the office with a missing tooth (#26) due to persistent apical periodontitis. The tooth had been extracted more than one year prior to the procedure and the molar site was well maintained and fully healed (Fig. 1). A CBCT scan showed that the patient had favourable bone availability (Fig. 2), on which basis a one-stage placement of a 5.5 × 10.0 mm Straumann BLX implant was planned. After surgically installing the implant (Figs. 3–7), Salvesen allowed the surrounding soft tissue to mature and heal for six weeks (Fig. 8). He then removed the healing abutment to begin the prosthetic procedures for a temporary crown (Figs. 9 & 10). A stone master cast was made in the laboratory, and a temporary screw-retained PMMA crown was manufactured over a Straumann wide base temporary abutment for the crown (Fig. 11) and placed on to the implant (Figs. 12–14).

After 12 weeks, Salvesen removed the temporary crown, revealing that the soft tissue had healed very well (Fig. 15). He then began the digital workflow. For the final crown, a digital impression was taken with a Trios intra-oral scanner, using a Straumann Cares scan body. A monolithic zirconia crown was then seated passively on to the implant in a healed and preconditioned soft tissue environment (Figs. 16–19).

One year after the treatment, the patient reports complete satisfaction with both his chewing function and the overall aesthetics (Figs. 20 & 21). Radiographs confirm that the molar site was stable and healthy (Fig. 22). In this first human case, use of the Straumann BLX wide base implant delivered efficient and reliable performance, even in soft bone with early loading conditions.

The risks of previous routine treatments
For many years, conventional fixed bridges were considered routine treatment for replacing a missing single tooth, according to periodontist and oral surgeon Dr Christian Rado Jarry of Straumann’s Global Medical Affairs Department in Basel. “However,” Jarry noted, “this treatment increased the risk of iatrogenic endodontic damage during the invasive preparation of otherwise healthy, undisturbed teeth, which decreased the survival of these teeth over time.”

The use and success of dental implants for rehabilitating the partially edentulous posterior jaw is well established. In addition to its high success rate, it leaves the adjacent teeth undisturbed. That said, Jarry added, successful use of dental implants depends on optimal conditions of the peri-implant tissue. To determine implant dimensions, one must first do a 3D evaluation of the patient’s bone condition and availability, a key step for the long-term stability of hard and soft tissue.

About single molar restorations
The success of single molar restorations is influenced by factors such as the clinician’s skills, arch morphology, proximity of adjacent teeth, vertical access, anatomy and patient-related limitations. Salvesen noted that the use of wide implants has been proposed as a successful option, with survival rates similar to those of standard-diameter implants.

While osseointegration remains the basis for success, patients’ increasing preference for placement of a molar without the need for a bone graft and the ability to proceed straight to follow-up appointments has increased the risk of iatrogenic endodontic damage during preparation of otherwise healthy teeth.

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Dental implants are medically advisable for patients with Sjögren’s syndrome

By DTI

MALMO/GOTHENBURG, Sweden: Up until now it was not known whether dental implants were successful in patients affected by Sjögren’s syndrome. In fact, many professionals advise against them, as they believe these patients have a higher risk of implant failure. However, researchers at the universities of Malmo and Gothenburg in Sweden have found that dental implants are a viable option for people with Sjögren’s syndrome, even though these patients may experience a higher marginal bone loss around their implants than others.

Sjögren’s syndrome is a systemic disease characterised by the progressive destruction of some glands, particularly those around the eyes and mouth. “It is known to reduce the saliva flow, resulting in a dry and very sensitive oral mucosa. Patients may more rapidly lose their teeth caused by caries and periodontitis compared with patients who are not affected by this disease,” co-author Dr Ann Wennerberg from the Department of Prosthodontics at Sahlgrenska Academy at the University of Gothenburg told DTI.

“The very small amount of saliva results in a lack of necessary lubrication,” continued Wennerberg. She explained that this would cause the patient soreness and pain. “For patients with Sjögren’s syndrome removable dentures may be impossible to wear,” she added. As a result, many affected patients turn to dental implants.

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The researchers conducted the study in two parts. First, they reviewed a clinical series of 95 Sjögren’s patients who, together, had received 107 dental implants. Second, they conducted a review of published literature and assessed the cases of 186 patients who had received a total of 712 implants, of which 705 were followed up.

Through the clinical series, the researchers found that, out of 95 patients, two patients lost three implants, together, which led to a failure rate of 2.8 per cent. All failed implants were caused by a lack of osseointegration. The implants were followed for a mean period of 10 years. At the last follow-up, the mean marginal bone loss for patients was 0.25 mm. The researchers estimated the marginal bone loss after 30 years at 4.39 mm.

From the literature review, the researchers found that, out of the 705 implants—which were followed up for approximately six years—39 failed, resulting in a failure rate of 4.1 per cent. After conducting statistical analysis, researchers found that the probability of failure was 2.8 per cent.

When stratifying patients based on primary or secondary Sjögren’s syndrome, the researchers found that those with primary disease had a lower failure rate of implants of 2.5 per cent compared with patients with secondary Sjögren’s syndrome. These patients showed a failure rate of 6.5 per cent.

“The results show that a treatment with dental implants can be done with a good prognosis, in contrast to what has been feared. However, the results also demonstrate the marginal bone resorption to be higher than for patients without the syndrome. This is indicative for the need for regular control visits to the dentist and short intervals between appointments to a dental hygienist,” concluded Wennerberg.

The study, “Dental implants in patients with Sjögren’s syndrome: A case series and a systematic review”, was published in Issue 1/19 of EDI Journal.

Long-term study investigates risk factors for short dental implants

By DTI

ANKARA, Turkey: The use of standard dental implants has become a widely accepted treatment modality for the rehabilitation of complete and partial edentulism. However, in severe alveolar resorption, standard-length implant placement is not possible without additional surgical intervention. For such cases, the use of short implants is considered a major contribution to the field of implant dentistry. Now, a recent study has determined the risk factors for short dental implant survival.

The study, conducted by the Ankara Yildirim Beyazit University in Ankara, the Cumhuriyet University in Sivas in Turkey and a private dental practice in Ankara, aimed to identify different intrinsic and patient-related risk factors for long-term short dental implant success. Through a retrospective chart review of three centres, patient information regarding demographic variables, smoking habits, history of periodontitis and systemic diseases, and medications was collected. In addition, information was gathered relating to the parameters for short implant placement, including implant manufacturer, design, anatomical location, diameter and length, and type of placement.

For the statistical analysis, univariate regression models were used at implant and patient levels. A total of 460 short implants—ranging from 4.1 to 9.3 mm in length—planted in 399 patients and followed up for up to nine years were reviewed. Survival rates of the short implants were 95.86 per cent and 92.96 per cent and success rates were 90.00 per cent and 83.41 per cent for implant- and patient-based analysis, respectively.

Pen implantitis was reported as the cause of short dental implant failure in 17.51 per cent of the cases. Univariate regression models revealed that the female sex was strongly related to short implant success. In addition, smoking and a history of periodontitis were found to have a significant negative influence on short implant success at the implant and patient levels.

These results support the use of short implants as a predictable long-term treatment option, however, smoking and a history of periodontitis are suggested to be the potential risk factors for short implant success. According to the researchers, these outcomes are consistent with the findings of other long-term studies.

The study, titled “Risk factors associated with short dental implant success: A long-term retrospective evaluation of patients followed up for up to 9 years”, was published online in Brazilian Oral Research on 1 April 2019, ahead of inclusion in an issue.

An enthusiastic response from clinicians

In total, more than 100 clinicians have been working with BLX and have documented their results. A non-interventional multicentre clinical study, currently running, specifically details the new implant’s performance in the everyday practice setting.

“The related feedback is extremely positive,” said Dr George Raeber, Head of Global Product Management for the Straumann Dental Implant System. “An impressive amount of clinical data is already available as we begin to commercialise our new Straumann’s BLX. We sometimes prefer to go to market a little bit later, but with a rock-solid proposal.”

“While I work with immediacy,” said Salvesen, “I want products that provide me with peace of mind in demanding clinical situations. Straumann BLX implants with Roxolid and BLActive give me that confidence: BLX is exciting because it extends the treatment options we can offer with Straumann products. It’s a new era of implant treatment.”

Editorial note: The case study, titled “Pristine function and aesthetics: One-year follow-up of new implant system with a fully tapered implant system”, was published in Issue 1/19 of EDI Journal.
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