Implantology 101

Knowing what is known today about implant dentistry, it is surprising to me that dental schools are still teaching dentists to cut down healthy teeth in order to replace missing teeth with bridges (Figure 1). A mountain of evidence unequivocally supports that replacement of teeth with implants is the new standard of care. Research is clearly telling us that natural teeth bridging is to be avoided except in exceptional circumstances. Removing tissue structures from teeth significantly reduces their life expectancy (Figure 2). Endodontic tissue, periodontal tissue, and structural strength are all negatively and permanently compromised. Thanks to Dr. Per Ingvar Branemark's work with dental implants, today we can avoid bridging using natural teeth support.

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Cutting down teeth to replace missing teeth cannot continue as a routine choice. American and Canadian dentists are among the best trained and educated in the world, and as professionals with firm commitments to continuing education and patient well-being, they are well-prepared to make the implant procedure a part of their daily practice routine.

The 2 cases discussed in this article (Figures 3 to 15) depict low-risk, straightforward treatments that all family dentists should be performing for their patients on a routine basis. Each of these treatments were performed entirely in a general practice setting under local anesthesia in less than an hour of total clinical chair time. Technology used to treat these cases is specifically designed for today's efficient and tissue-conservative family dentists. The patient fees for these treatments are comparable to conventional bridge fees.

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CASE DISCUSSION

How do dentists select and determine which patients may be appropriate to begin the process of implant treatment implementation into the practice with minimal risk? I firmly believe it is important to start with single, followed by double missing teeth situations. Patients should be in good health: habits such as smoking and heavy use of alcohol, along with diseases that impede healing, are situations that negatively impact all dental treatments including implant therapy. These conditions, however, do not and should not prevent implant treatment.

Bone quality and quantity are critical to implant success and therefore must be assessed. This process is relatively easy to perform with tools available in every dental clinic. The bone quality is determined radiographically by looking at the density in a well-taken 1:1 periapical radiograph. The higher the density of bone, the better it is for implanting. Three-dimensional bone volume is determined by using a combination of 1:1 periapical radiographs and bone mapping through the soft tissue. Periapical radiographs are accurate and useful in determining mesial-distal and crestal-apical space available for implant placement. The buccal-lingual dimension of the bone can be obtained simply by bone sounding the intended implant site. This is accomplished by placing a rubber endodontic stopper at the end of an anesthetic needle or a sharpened periodontal probe and strategically probing a minimum of 5 sites on the buccal, crest, and lingual regions (Figure 16). A stone model is sectioned buccal-lingual at the intended surgical site. By subtracting the soft-tissue thickness (values obtained by sounding) from the outer surface of the model, one can determine how much buccal-lingual bone is available for implant placement. These dimensions can be used to create a 3-dimensional model that can be used in choosing the right length and width of implant for the specific surgical site (Figure 17).

An additional benefit of creating a sectioned stone model (model tomograph) depicting bone availability is that it can also be used to fabricate a very accurate 3-dimensional surgical stent. An adjustable tube system is incorporated into the plastic surgical stent to guide the surgery 3-dimensionally (Figure 18). The tube system (pilot tube within a final drill tube) is trimmed to stop the pilot drill and the final drill at a predetermined depth. This innovative 3-dimensional surgical stent provides a measure of surgical control and safety that dentists need to provide complete implant treatment. In most cases the surgery can be performed through a soft-tissue circular channel without the need for a flap procedure (Figure 19). By eliminating the flap procedure one can expect faster surgery, less pain, and faster healing because the blood supply is not disrupted from the gingival tissue to bone (Figure 20).
The implants used in these 2 cases are tapered and self-tapping like most implants, except for one major difference. The internal octagonal space does not utilize a traditional fastening screw to secure the post and core. This system instead uses a cement retention mechanism to secure the post and core. The post and core can be located in 8 different radial positions. This design's unique feature can accommodate many different paths of insertion for optimal prosthetic placement. The core portion can also be milled to accommodate many different types of prosthetics, such as porcelain-fused-to-metal, all-ceramic, and resin restorations.

Once the implant is surgically inserted and firmly in place, an immediate impression can be obtained at the time of surgery. By obtaining an impression at the time of surgery a reduction in treatment time of one appointment is possible. A healing cap along with soft-tissue emergence profiler is placed and trimmed not to interfere with the temporary prosthesis. The patient is dismissed and instructed to return in 2 to 3 months time (unless problems arise) for a 5-minute examination. During this examination we check for "progressive osseointegration." This is confirmed by (1) obtaining a periapical radiograph and observing intimate bone-to-implant surface contact; (2) visual lack of infection around the implant; and (3) physical stability by engaging the implant driver and checking for lack of movement and pain. A final shade selection is obtained, and the lab is instructed to fabricate the final prosthesis.

A final 30-minute appointment is made to seat the post core and crown with resin cement. This procedure is similar to classical techniques used to restore single-root endodontically treated teeth. Anesthetic is not necessary at the final appointment. The prosthesis is left slightly out of contact because of the lack of periodontal ligament around implants. This technique and technology are simple and familiar, and as dentists we understand the reliability and the versatility of this classical approach. Traditional screw retention technology is still the "weak link." When cement retention is used the weak link is eliminated. Branemarkian or traditional technology is plagued by screw loosening and breakage problems, resulting in increased post-restorative maintenance and chair time, and therefore higher costs.

CONCLUSION

This article describes some novel, streamlined methods and technologies that pave a path to a more sensible approach to implant therapy for dentists. Implant therapy can be safe, fast, profitable, affordable, and of course healthier compared to the traditional bridge.

Note: Anyone who wants to learn more about this technology and protocol can view Dr. Gordon J. Christensen's continuing education video on BASIC Dental Implants.

References:

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