

## AESTHETIC CONTROVERSIES IN IMPLANT DENTISTRY

Ahead of the World Congress of Implant Aesthetics, to be held by Warwick Dentistry later this year, one of the event's keynote speakers, Carles Subira, discusses some current controversies in implant dentistry



*Carles Subira MD DDS PhD has a MD degree (1981- 1986) from the Autònoma University School of Medicine of Barcelona. Later he graduated in dentistry (1989) at the University of Barcelona and gained a PhD degree in dentistry (1996). In 1997 he is Diplomate in Clinical Periodontics by the University of Göteborg. Since 2001 he has been the co-founder and director of the MS degree programme in Adult Comprehensive Dentistry at the University of Barcelona. He is also associate director and implant surgery professional at Mataró's Public Hospital in Barcelona.*

**R**eplacement of missing teeth with dental implants is one of the most rapidly increasing treatment modalities for edentulous patients. The advancement in our understanding of tissue healing,

as well as continuous improvement in technology, has extended the indication of dental implants to a wide portion of the

### CASE STUDY PART 1

**Diagnosis:** A 65-year-old male presented with terminal maxillary periodontitis with functional and aesthetic problems.

The patient's chief complaint is related to functional and aesthetic problems: the fixed bridge placed in the second quadrant shows grade III mobility. The patient is not satisfied with the aesthetic appearance of the bridge, mainly the anterior aspect. The large diastema between the maxillary central incisors is provoked by periodontal disease (Figure 1-2). Medically, the patient has high cholesterol levels and is on 10 mg/day Simvastatin. He is a moderate smoker (10 cigarettes daily).



Figure 1: Initial presentation, August 2008



Figure 2: Advanced periodontitis with a skeletal open-bite. Functional, health and aesthetic problems (bleeding on probing, pockets upper 6 mm and mobility grade II in upper central incisors, lateral incisors, left canine and first and second premolars, mobility III 2nd quadrant bridge, diastema between 1.1 and 2.1)

CONT

CASE STUDY PART 2

**Treatment plan:** the patient didn't favour the treatment option given by his local dentist which was advanced periodontal therapy followed by orthodontic therapy to close the diastema. Our treatment plan included complete rehabilitation with dental implants.

**Pre-surgery:** treatment started with a phase of oral hygiene enhancement which consists of instructions of oral hygiene techniques and motivation, gingival scaling and root planning.

It was followed by extractions of the maxillary teeth except 1.5, 1.3, 2.3 and 2.5 maintained for provisional fixed short dental arch prosthesis. After extractions, some of the areas were regenerated with

Bio-oss and Biogide (Geistlich).

Four months later a radiological splint was fabricated as well as a maxillary TC prior to surgical phase (Figures 3-6).

**Surgical phase:** eight implants (AVINENT external connection) and provisional fixed prosthesis was loaded (Figures 7,8).

**Restorative phase:** six uniblock and two angled abutments were used (implants placed in 1.7 and 2.7) to correct implant angulation and to move away the gap between bone and implant. An open tray technique was used to obtain the definitive cast. Pattern-resin was used to splint the abutments (Figures 9, 10).



Figure 3: Radiological splint inserted on the cast.



Figure 4: Radiological splint inserted in the patient's mouth

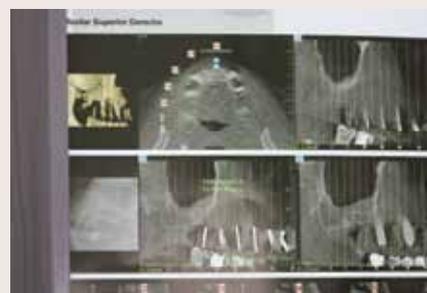


Figure 5: Right maxillary TC



Figure 6: Left maxillary TC



Figure 7: OPG. Four months after maxillary extraction (except 1.5, 1.3, 2.3 and 2.5 for a provisional fixed short dental arch prosthesis) and partial bone regeneration (Bio-oss and Biogide). Eight maxillary implants were inserted and immediate loading with a provisional fixed prosthesis



Figure 8: Provisional full-arch prosthesis



Figure 9: Eight maxillary implants



Figure 10: Splinted impression abutments for open tray

population, ensuring successful long-term and highly predictable treatment outcomes. Despite these achievements over recent years, treatments with dental implants are

not yet free of complications. In many cases such complications can have significant consequences for the patient. The visual appearance of the reconstruction becomes

an important factor for clinical success in aesthetic sites.

**SUCCESS PARAMETERS**

Rehabilitation of edentulous areas with osseointegrated implants is one of the most predictable dental treatments, with survival rates above 90% in long-term follow-up studies.<sup>1-3</sup> Nevertheless, implant treatment is not free of complications and failures, and five to 10-year follow-up studies have reported early failures in between 0.7% and 7.4% of cases and late failures in 2.1% to 11.3% of cases. Complications can occur due to either biological or mechanical causes. Implant loss can be classified into 'early implant loss' (before functional loading) or 'late implant loss' (following functional loading).<sup>2</sup> The

## CASE STUDY PART 3

Final restoration was carried out through a Hybrid Fixed Prosthesis (Figures 11-13).

**Maintenance:** the patient had a review appointment at six months,

and after two years of oral rehabilitation, the function and aesthetics could be achieved as well as the patient satisfaction. (Figures 14, 15).



Figure 11: Laboratory cast



Figure 12: Laboratory definitive structure



Figure 13: Definitive full-arch structure



Figure 14: July 2012



Figure 15: July 2012

cause of these losses has been proposed to be surgical trauma, infection, overload and certain local and systemic conditions.<sup>4</sup>

Although the health and functionality of a reconstruction are considered the main success parameters, the visual appearance of the reconstruction becomes an important factor for success in aesthetic sites. Differences in the perception of aesthetics are inherent to its partially subjective nature. Nevertheless, in reconstructive dentistry, aesthetics have been defined as an appearance showing harmony between the natural and the reconstructed parts of the dentition.<sup>5,6</sup>

### BIOLOGICAL WIDTH

The dimension of the peri-implant mucosa has been demonstrated to resemble that of the gingiva at teeth and included a 2-mm-long epithelial portion and a connective tissue portion of about 1-1.5 mm long.<sup>7</sup> The entire contact length between the implant and the epithelial and the connective tissue portions is defined as 'the biological width'. Experimental studies have demonstrated that a minimum width of the peri-implant mucosa is required.

If the thickness of the peri-implant mucosa was reduced, bone resorption occurred to re-establish the mucosal dimension that was required for protection of the underlying tissues.<sup>8</sup> The long-term preservation of the healthy peri-implant tissues is of primary importance for ensuring the function and aesthetics.

Numerous studies have revealed that bone resorption around the implant neck does not start until the implant neck is uncovered and exposed to the oral cavity, which leads to bacterial contamination of the gap between the implant and the super structure.<sup>9-12</sup> This eventually leads to bone remodelling that continues until the biologic width has been created. Tarnow<sup>9,13</sup> has stated that, apart from the vertical component of re-establishing this width, there exists a horizontal component approximating 1-1.5 mm that maintains the health of the interproximal bone and, in turn, the papilla. The labial bone plate changes in height and thickness,<sup>14,15</sup> and to place an implant at the time of tooth extraction does not help to maintain the height of the labial bone plate<sup>16,17,18</sup> or the labial bone contour.<sup>19,20</sup> Since

the natural thickness of the connective tissue overlying the bone around implants at the labial aspect ranges from 2.8 to 3.8 mm,<sup>21-25</sup> the consequences of labial bone plate resorption after tooth extraction are mid-facial soft tissue recession and missing labial tissue volume, which lead to a compromised aesthetic result.<sup>25</sup>

The soft tissue thickness also changes after tooth extraction. By thickening the soft tissue with a soft tissue graft, the loss of bone volume in the labial area can be compensated for and maintained over time.<sup>26</sup>

The World Congress of Implant Aesthetics (WCIA) 2012 is open to all those interested in the field of dental implant aesthetics.

**Date:** 17-18 October 2012

**Registration fee:** £299 (£249 if registering before 1 July 2012)

**One-day registration fee:** £199 (£149 if registering before 1 July 2012)

**Closing date for registration:** 30 September 2012 (limited places available)

For further information or to book your place at the World Congress of Implant Aesthetics, please visit [www.warwick.ac.uk/go/dentistry](http://www.warwick.ac.uk/go/dentistry)

For a full list of references, or to ask a question or comment on this article please send an email to: [comments@ppdentistry.com](mailto:comments@ppdentistry.com)

