Avoiding critical anatomy through precise placement

David Burgess describes how using computer-guided dynamic navigation helped overcome the clinical challenges of implant placement in the lower posterior region

A 75-year-old male patient of the practice (Carbis Bay Dental Care, Cornwall) had endured a gap for five years, following removal of his lower left second molar. He was finding mastication increasingly difficult. The tooth required endodontic treatment in July 2011 (Figure 1), following an acute apical infection. However, root canal treatment failed to resolve the infection (Figure 2), and the tooth was extracted in October 2011. The patient had a history of deep vein thrombosis and was taking Warfarin, with an international normalised ratio (INR) of 2.5.

Planning for optimum implant positioning
As there was no tooth distal to the space, conventional fixed bridgework was not possible. The treatment options were either a unilateral single saddle lower partial denture or restoration of the space with two dental implants. The patient chose to have dental implant treatment as he did not wish to have any form of removable prosthesis.

The Navident dynamic navigation system was used to help guide the implant placement in this case.

What makes Navident stand out is how it precisely guides the surgeon to prepare and place the implant in a pre-determined position (Figure 3). This allows the author to achieve greater accuracy and certainty than before, using conventional protocols.

While there is no physical guide, a simple scanning template (Navistent) is used to support a reference marker, known as the fiducial, which is auto-registered by the Navident system.

In this case, the Navistent was fabricated, the fiducial marker attached and a CBCT scan taken two weeks prior to surgery (Figure 4).

The treatment plan was created immediately after the scan (Figure 5), with the patient present. He was able to see the proposed treatment displayed by the Navident software and appreciated that great care was being taken to achieve the optimum implant positioning, with minimal risk of potential complications (Figure 6).

The patient was extremely impressed with, and reassured by, this state-of-the-art technology.

Confidence from continuous feedback
Treatment was carried out under local anaesthesia. Prior to preparation of the implant sites, the simple Navident protocol for calibration and verification of the drill axis and drill tip was carried out.

A crestal incision was made, with a minimal flap reflected.

The software shows the drill position on the scan in real time, as it enters the jaw. This allows adjustments to be made, if necessary, while the site is being drilled.

Two Dentsply Implants Ankylos C/X 3.5mm diameter dental implants were placed subcortically in the lower left first and second molar sites, with implant lengths of 11mm and 9.5mm respectively.

Avoiding critical anatomy through precise placement
In this case, the author was able to achieve the best buccal and lingual position of the implants, and their relation to each other and to adjacent teeth (Figure 7). This would allow for optimal shape, position and occlusal function of the final restorations.

Ankylos Balance posterior sulcus formers were fitted and the incision was closed with simple interrupted sutures (Figure 8). There was no need for bone augmentation.

Two to three months after surgery, the implants will be restored with Atlantis custom-made CAD/CAM titanium abutments and screw-retained linked zirconia crowns.

The clinical outcome was excellent. The planned placement was restoratively driven and the implants were well positioned, with good primary stability.

Having used the Navident dynamic navigation system for more than a year, this author would not want to go back to preparing and placing dental implants without its 3D visual guidance.

The patient was comfortable and reassured, with no postoperative pain, swelling, bruising or paraesthesia.

He was delighted and, if he needs any implant treatment in the future, has explained that he will insist on dynamic navigation. IDT

What makes the Navident system stand out is how it precisely guides the surgeon.
Navident

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“What makes Navident stand out is it precisely guides the surgeon to prepare and place the implant. The software shows the drill position on the scan in real time, as it enters the jaw.”

David Burgess BDS DPDS MScConSed
Carbis Bay Dental Care, St Ives, Cornwall

Call 0845 602 4944 or email info@navident.co.uk

Hands-on dynamic navigation courses now available

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T: 0845 602 4944 E: info@thedentalimagingcompany.co.uk
www.thedentalimagingcompany.co.uk