



British Institute
of Dental & Surgical
Technologists

CPD Article

ISSUE 19

Proud of our History, Looking Forward to the Future

Rapid restoration of function & confidence

Dr Kevin A Lochhead and Bruce Innes

The world of prosthetic oral appliances has been totally transformed since the first acrylic denture base was invented by a forerunner of Heraeus around half a century ago. Prosthodontic Specialist Dr Kevin Lochhead and Dental Technician Bruce Innes, of Edinburgh Dental Specialists, describe how advanced surgical techniques and the latest materials can rapidly restore a patient's oral function and confidence.

Patient wanted to avoid full dentures

A 75 year old male initially presented in 2006 with failing upper and lower arches. He suffered from gross periodontal problems in both arches, with only a few teeth remaining. Dr Kevin Lochhead explains that the patient was aware that the surviving teeth couldn't be saved. However, his goal was "to avoid upper and lower complete dentures. Instead he wanted fixed restorations, which do not have to be removed for cleaning."

Detailed clinical examination showed that the patient had a low smile line. His remaining lower teeth and existing upper partial denture were not aesthetically satisfactory. His upper

arch had four teeth remaining, which all required removal because they were compromised both restoratively and periodontally. The lower arch had nine remaining anterior teeth, which were similarly compromised. There was a lack of occlusal stability and greatly reduced functional ability.

The orthopantomogram showed significantly reduced posterior bone height in the upper arch. However, anteriorly, Dr Lochhead observed, "There was sufficient bone for implant placement between the first premolar spaces. In the lower arch, there was good bone height and width above the inferior alveolar nerve. There was no evidence of temporomandibular joint problems." Fixed and removable restorative options were presented to the patient, who requested fixed prostheses for both upper and lower arches. The treatment plan comprised two phases, to restore the upper arch to completion followed by the lower arch.

Upper arch bridge secured on four anterior implants

During the first surgical appointment the four remaining teeth in the upper arch were removed and six dental implants were placed (Nobel Biocare Replace 16 mm length). On completion of this

procedure, the patient volunteered to remain edentulous for three days. Meanwhile, impressions were taken and a provisional bridge was fabricated and secured on the anterior four implants. The bridge was made on site at Edinburgh Dental Specialists' own laboratory.

Established in 1993, EDS aims to deliver comprehensive dental care of the highest standard and provide a first-class, warm and welcoming service. The practice has its own dental laboratory with state-of-the-art equipment and computerised technology. Dr Lochhead summarises the advantages of having the lab on site: "Our integrated team of specialists and technologists meet every day to communicate the treatment being provided and how to achieve the best result. Like the specialist practitioners, the technologists are involved with complicated and challenging aesthetic dental restorations every day."

Following a four-month healing period, the posterior implants were exposed and the definitive restoration of the upper arch was carried out. This culminated in provision of a screw-retained titanium and resin hybrid bridge, using Heraeus Meliodent heat cured denture base



Image 1) Patient presentation with previous screw-retained titanium and resin hybrid upper arch bridge in place



Image 4) Opposing model containing implants



Image 7) Processed material with vent sprues after pressure curing



Image 2) Working impression with pick-up copings in place



Image 5) Two matrixes together showing vent holes for pouring acrylic



Image 8) Provisional bridge employing Heraeus Premium denture teeth and PalaXpress ultra, a cold curing denture base material with high impact features



Image 3) Putty matrix



Image 6) PalaXpress ultra colour tab for shade selection



Image 9) Provisional bridge in place, illustrating how without gum staining PalaXpress ultra mimics the natural soft tissue

and Schottlander Enigma teeth. "Further treatment was delayed for five years, owing to the patient's health and financial concerns", explained Dr Lochhead. "Thereafter, the upper arch was regularly reviewed, and stability of the bone levels around the implants was confirmed."

Fabrication of temporary bridge for the lower arch

During the first surgical appointment for treatment of the lower arch, all remaining teeth were removed and four dental implants were placed. At the time of implant placement, working impressions were taken and a provisional bridge was fitted the following day. The provisional bridge was fabricated using Heraeus

Premium denture teeth and the company's new PalaXpress ultra, a cold curing denture base material with high impact features.

Premium denture teeth have very life-like shapes and natural interaction with both daylight and artificial light. Three-dimensional multilayering produces a blended, translucent enamel appearance that is normally only found in natural teeth.

Premium denture teeth seem stronger and very durable. According to EDS Dental Technician, Bruce Innes, "They can be adjusted, reshaped and characterised without adversely affecting the aesthetics. They also polish nicely."

For immediate 'All-on-Four' implant supported dentures, EDS now uses only PalaXpress ultra. The high performance cold cure denture acrylic is recommended by Paulo Malo, who developed the technique to provide 'teeth in a day'. The latest generation of Europe's leading denture base system is strong, stable and durable, while remaining flexible. It has higher fracture resistance than conventional cold curing materials, lasting colour stability and certified biocompatibility. Bruce explains, "The main advantages are aesthetics, stability and durability. The process is simpler and quicker than heat curing. It can be completed while the patient is present, because it only takes twenty minutes to cure."

Natural vitality and accurate fit

In the case described by Dr Lochhead, follow-up appointments showed, "no deterioration or problems with the provisional bridgework". Bruce Innes adds, "We've not found any distortion or movement with dentures made from PalaXpress ultra. The acrylic is cured under pressure and at a low temperature of only 45-60 degrees centigrade. The resulting dentures are less likely to break because they are stronger and more resilient. The material is so strong there's no need to add fibreglass or wire mesh strengthening. It has a lovely translucency that gives a natural variety of shade usually only achieved using gum staining."

For the case featured in the preceding paragraphs, the definitive restoration of the lower arch was due to be carried out three to four months after the initial placement. The treatment plan was similar to the upper arch, using a titanium and resin full arch bridge, with cantilevered posterior units to the second premolar. However, the patient is currently satisfied with the temporary bridge and has decided not to proceed with the definitive restoration at this time.



Dr Kevin A Lochhead BDS(LOND) MFGDP(RCS Eng) is a specialist in Prosthodontics with a Diploma in General Dental Practice. His special interests lie in complex reconstruction, dental implants and cosmetic dentistry. For more than 15 years, Dr Lochhead has been running postgraduate courses and lecturing on dental implants, cosmetic and restorative dentistry.



Bruce Innes RDT manages the EDS prosthetics department, overseeing the fabrication of all resin and acrylic-based restorations. Bruce has had 15 years' experience and postgraduate training. His restorations are generally imperceptible from natural teeth.



British Institute
of Dental & Surgical
Technologists

British Institute of Dental
& Surgical Technologists

"To claim your verifiable CPD you will need to answer these questions and submit them either by email to secretary@bidst.org or by post to the BIDST Membership Office 44-46 Wollaton Road, Beeston Nottingham NG9 2NR. You will also need to keep a copy of the article together with your feedback sheet and certificate for revalidation".

Q1.)The 75 year old male initially presented in 2006 was suffering from what problem in both arches?

Q2.)What did the detailed clinical examination show?

Q3.)Following a four-month healing period, the posterior implants were exposed but what work was carried out on the upper arch?

Q4.)What are the aesthetic benefits of the Premium denture teeth?

Q5.)What are the advantages of using the high performance cold cure denture acrylic?

Q6.)The process is simpler and quicker than heat curing, how long does it take to cure?

Name:

GDC Number:

Address:

Postcode:

Telephone no: (in case of any queries)

Signed:

Date:



British Institute
of Dental & Surgical
Technologists

British Institute of Dental & Surgical Technologists

44-46 Wollaton Road,
Beeston,
Nottingham
NG9 2NR

Telephone: +44(0)115 968 3181

Fax: +44(0)115 925 4800

Website: www.bidst.org

Email: secretary@bidst.org