Atraumatic extractions with Luxator Periotome

Instrument can help the dentist divide and conquer the forces retaining a tooth

By Dr. Simon Jones

The extraction of a tooth is probably the most traumatic event a patient can experience in the dental office; and if the extraction doesn’t go smoothly, things can become quite stressful for the dentist as well.

When the use of a simple surgical instrument can make the extraction process infinitely easier for both patient and dentist, I find it surprising not all dentists reach for a Directa Dental Luxator as their first instrument of choice.

To understand how best to remove a tooth, it helps to appreciate the structures and forces that are holding the tooth in position. It is only by overcoming these forces that the tooth can be removed.

First, consider the bone structure surrounding the roots. As the bone sits intimately against the root surface, any irregularities, undercut or curvatures of the root will provide mechanical resistance. To overcome this retention, the socket must be dilated until the path of removal of the root is unimpeded by bone.

The second factor resisting the removal of the tooth is the periodontal ligament, composed of collagen fibers. Like millions of little ropes, the cumulative strength of these fibers resists the strongest of biting forces. Imagine how much force would be required to overcome this combined strength in an attempt to simply pull out a tooth.

The third force to overcome is that of atmospheric pressure. Withdrawing a tooth from its socket will create a void or vacuum at the apex of the socket, and until this void is filled with blood or an ingress of air, then atmospheric pressure will effectively push on the tooth to keep it in position. Anyone who can remember back to the Magdeburg Hemispheres experiment in school physics will know that simple atmospheric pressure resists the force of two teams of horses pulling in opposite directions.

Little wonder then that simply using a combination of forceps and brute force can lead to unnecessary loss of alveolar bone, root fracture and a subsequently more stressful experience for both patient and dentist. Dealing with the facture of a maxillary tuberosity can certainly ruin your day!

The careful and considered use of a Luxator helps the dentist to divide and conquer the forces retaining a tooth, making the extraction process an infinitely more predictable and stress-free process.

The appropriate size of Luxator is chosen to match the diameter of the root, and the angle of the blade is chosen to give the best access. The tip of the Luxator is gently inserted into the gingival margin, with the blade angled slightly toward the root surface. This ensures that the Luxator enters the periodontal ligament between the crestal bone and the root.

Once in the periodontal ligament, the Luxator is worked down the length of the root with a side-to-side rocking motion and steady axial pressure (Fig. 2). This motion first severs the periodontal fibers, and then as the blade is introduced further, the socket is dilated to allow an easier path of removal. Finally, as the periodontal ligament is severed and the socket dilated, bleeding and air ingress overcome the vacuum that resists tooth removal.

The Luxator should be inserted around as much of the circumference of the root as possible to evenly dilate the socket. Once this has been achieved, the final delivery of the tooth may be performed with forceps, although this is often not required with single-rooted teeth.

When using a Luxator, the uniquely designed handle should sit neatly in the palm of your hand, cradled by your fingers and thumb, with the index finger extended toward the tip of the instrument (Fig. 3). This allows for precise control of the tip and prevents the risk of slipping. Excessive force should be avoided; the Luxator is a surgical instrument and should be used as such, not as an elevator.

To complement its range of Luxators, Directa now produces an elevator called the Luxator Forte. Having dilated the socket using a Luxator, if it is felt that greater dilating and elevation forces are required, then the stronger Luxator Forte should be used. The Luxator Forte is easily recognizable by its black handle (Fig. 4). This sequence of luxation, followed by elevation, generally means that forceps are only ever used for the final easy delivery of the tooth.

The Swedish dental company Directa not only invented the name Luxator but has developed this range of instruments to perfection. The use of high-grade, surgical-steel blades and a two-part moulding technique for the uniquely ergonomically designed handles provide a high-quality instrument that will give years of reliable service and will endure countless cycles of washing disinfection and autoclaving.

Having used Luxators for more than 20 years, I cannot imagine undertaking the extraction of any tooth without first severing the periodontal fibers with my trusty friend. It would be the equivalent of struggling to remove my boots without first undoing the laces.

Here at the AGD

For more information, stop by the Directa AB booth, No. 415. More information about Directa Products may be found at www.directadental.com or by contacting U.S. Sales Manager Frank Cortes at (203) 788-4224 or by e-mail at frank.cortes@directadental.com.

About the author

Dr. Simon Jones is a leading U.K. dentist with a practice in Middlesbrough, northeast of England. He qualified in 1985 and has worked mainly in the British National Health Service since then. For the past six years, he also served as a vocational trainer for the Northern Deanery of Newcastle University Dental School.

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The AGD Annual Meeting attracts attendees from all over. Here, from left, are Juliana Blackington, Samantha Ripley, Patty Jo Pantillo, Jane Bowden and Karen Greatorex, all from Belfast, Md.

Danielle Piquette and Joe Graffius of Obtura Spartan (booth No. 538), offering ‘endodontic excellence since 1979.’

Clockwise from top left, Sponsorship and Advertising Manager of the Greater New York Dental Meeting Dr. Joseph Schachner, Executive Director of the Greater New York Dental Meeting Dr. Robert Edwab, Kersin Yam and Dana Soltis are all smiles at the booth, No. 407.

Stephen Arbakov, left, and Mike Van Nostran at the Ortho Organizers booth (No. 504).

Teresa Gee of Essential Dental Systems (booth No. 813). Many of the company’s patented instruments and systems are invented by endodontists.

Stop by the Army Healthcare Services booth (Nos. 422/424/426) and get more information from Dr. John Geary, left, and Dr. Katherine Martin.

Janet McGettigan, left, and Stephanie Weis of Garrison Dental Solutions (booth No. 707).

Dr. Bill Paveletz of VOCO America (booth No. 425), which offers dental materials such as Futurabond DC, Profluorid Varnish and Remin Pro.

Lelani Le of Glidewell Laboratories at the booth, Nos. 527/529.
Lynne Calliott, far right, of Shofu explains the advantages of BEAUTIFIL Flow Plus to two attendees at booth No. 517.

George Toto, left, and Jude Tinker of Directa AB (Booth No. 433), makers of the FenderWedge and the FenderMate.

Pick up these dental-themed, handpainted wine glasses and plates at the Professional Obsessions booth, No. 540.

Jason Rush of Philips Sonicare and Zoom Whitening with a few of the products that are available at the booth (No. 501), including fluorideRx and breathRx.

Find Mike Anthenelli, from left, Gerri Bowman and Andrew Fikse at the Patterson Dental booth (Nos. 815/817).

Orlando Navarro, left, and Adrian Lopez at the DoWell Dental Products booth, No. 716. Ask the company reps about the benefits of PiezoART.

James Ortmann of Hager Worldwide at the booth (No. 510).

Have a question? The folks at the information booth will be happy to help you out.

Photos by Anna Kataoka-Wlodarczyk
Dental Tribune
Two of Shofu’s most acclaimed products are now available in two new kits offering discounted pricing.

The new kits will contain six syringes of the flowable restorative BEAUTIFIL Flow Plus in either zero-flow or low-flow viscosities and a box of 50 0.1 ml unit dose bottles of BeautiBond™, the seventh-generation bonding agent. The new kits are expected to synergize sales of both products, while at the same time providing significant cost savings to customers already using both products.

BEAUTIFIL Flow Plus
BEAUTIFIL Flow Plus represents the next generation of restorative materials, with a syringe-delivery that provides void-free adaptation and strength and durability of leading packable composites.

High radiopacity that is 15 percent greater than enamel ensures the base and liner will never again be mistaken for secondary caries.

Viscosity and handling characteristics have been optimized for greater control while delivering smooth and virtually self-polishing results. Shofu’s proprietary S-PRG (surface pre-reacted glass) filler technology provides the only composite resin with sustained fluoride release and rechargeability.

BeautiBond
BeautiBond is a seventh-generation self-etch, prime and bond all-in-one product.

Unique dual-functioning monomers (phosphonic acid and carboxylic acid) work independently, achieving equal bond strength to dentin and enamel comparable to sixth-generation adhesives.

BeautiBond has a film thickness of only 5 µm, providing indistinguishable margins. Bonding requires only one thin application, no shaking or agitation required, and a 30-second application time.

For more information on the new kits, call Shofu at (800) 827-4638, visit www.shofu.com or stop by the Shofu booth, No. 517.
By Michael C. DiTolla, DDS, FAGD

This article illustrates advancements by Glidewell Laboratories to improve the esthetic properties of BruxZir® Solid Zirconia restorations. As the lab’s research and development department refines its processes, improving the material’s translucency, the esthetics continue to improve.

First appointment
Our goal is to replace the PFM crowns on teeth #8 and #9 (Fig. 1) with BruxZir Solid Zirconia crowns.

First, we take the shade before the teeth become dehydrated. I use the VITA Easyshade® Compact (Vident, Brea, Calif.), which displays the shade in both VITA Classical and VITA 3D-Master® shades. After taking the shade, I hold the select-ed 2M1 3D-Master shade tab to the tooth, along with the 1M1 3D-Master shade tab for contrast. Next, we photograph the shade tabs in the mouth. This is probably the most important part of communicating shade to the technician.

I use an Ultracut syringe to place PFG gel (Steven’s Pharmacy; Costa Mesa, Calif.) into the sulci of teeth #8 and #9. Next, I use a STA Single Tooth Anesthesia System® device (Milestone Scientific; Livings-ton, N.J.) to anesthetize teeth #8 and #9. The Razor® Carbide bur (Axis Dental) exposes the margin (Fig. 3). Now we can see how the top cord on tooth #9 overlaps. To make the margin visually obvious, I place a second cord (Ultrapak cord #2E) before refining the preparation.

We syringe medium body impression material around the preparations for the impression. The temporaries are then replaced.

Second appointment
After two weeks, we remove the temps and clean the preps with a KaVo SONICflex scaler. After trimming the gingival margin with the diode laser, I use my NV MicroLaser™ to expose the gingival margin. The facial anatomy on the crowns makes them look like real teeth. Because BruxZir crowns are approved, and we place a layer of desensitizer on the teeth (GS™ All-Purpose Desensitizer [Clini-cian’s Choice, New Milford, Conn.]) I use a Warm Air Tooth Dryer (A-dec, Newberg, Ore.) after applying both coats of the GS, while my assistant places Z-PRIME™ Plus (Bisco, Schaumburg, Ill.) inside the crowns. We then load the crowns with a resin-modified glass ionomer cement (RelyX™ Luting Plus Automix [3M/ ESPE]) and seat them, using a pinewood stick (Almore International, Portland, Ore.) to ensure they are fully seated and the same length.

This “after” picture (Fig. 4), the amazing thing is there isn’t any porcelain on these BruxZir crowns, they are solid zir-conia. This is why they are stronger than all other restorative materials, except cast gold.

Also, the facial anatomy on the crowns makes them look like real teeth. Because that anatomy is built into the CAD/CAM database, Glidewell Laboratories can deliver it every time — provided the clini-cian gives the lab enough reduction.

While I’m not suggesting you suddenly switch all of your anterior restorations to BruxZir crowns, you may want to consider using it for patients with para-functional habits or old PFMs, where an esthetic improvement is essentially guaranteed.

Here at the AGD
For more information on BruxZir crowns or to see them for yourself, stop by the Glidewell Laboratories booth, Nos. 5275-59.

EXHIBITORS

Fig 1 Photos/Provided by Glidewell Laboratories

Fig 2

Fig 3

Fig 4

Photo essay: BruxZir Solid Zirconia meets an anterior esthetic challenge
From intraoral scan to final custom implant restoration

By Perry E. Jones, DDS, FAGD

This case demonstrates the optical scanning of Inclusive® Scanning Abutments (Glidewell Laboratories, Newport Beach, Calif.) utilizing the iTero® digital scanning system (Align Technology, San Jose, Calif.) with software version 4.0. Digital data was sent to the laboratory CAD/CAM planning to fabricate custom all-ceramic implant abutments and a four-unit fixed prosthesis. The abutments and fixed prosthesis were fabricated using advanced computer-aided milling technology.

Dental history

The patient was a 52-year-old healthy Hispanic male who sustained a traumatic avulsion and lost his maxillary incisors in an automobile accident. Following healing, a four-tooth transitional removable partial denture was constructed. He was seen by the oral and maxillofacial surgery service of Virginia Commonwealth University for dental implant therapy.

Treatment plan

The patient was informed of the alternatives, benefits and potential complications of various treatment options before deciding to pursue implant restoration of his missing teeth.

The treatment plan included placement of two Replace® Select Straight RP 4.3 x 13 mm implants (Nobel Biocare; Yorba Linda, Calif.) with 5 mm healing abutments, followed by a six-month healing period and restoration with all-ceramic custom abutments and a four-unit, all-ceramic fixed prosthesis to restore the anterior incisors to form and function.

Surgical procedure

Using local anesthesia, two Replace Select Straight RP implant fixtures were placed in the area of teeth #7 and #10, using standard Nobel implant placement protocol. Placement angulation and depth were verified and deemed satisfactory. Standard RP 5 mm healing abutments were placed, and the fully reflected tissue flap was closed with interrupted sutures.

Restorative procedure

Following six months of healing post-implant placement, intraoral photos were taken to record and confirm the healthy remaining dentition. Osseous integration was confirmed with a panoramic X-ray, followed by resonance frequency analysis (RFA) using an Osstell® ISQ implant stability meter with SmartPeg™ attachment (Ostell USA, Linthicum, Md.), which displayed an implant stability quotient (ISQ) of 78 on a minimum-to-maximum scale of 1–100.

Counter rotation with a torque wrench confirmed no rotation to 35 Ncm. The implant fixtures were considered acceptable for restoration.

The 5 mm healing abutments were removed. Inclusive Scanning Abutments were placed on the implants, and the accompanying titanium screws were tightened (Fig. 1).

Using the iTero scanner with updated software (version 4.0), a full maxillary arch scan, full mandibular arch scan and centric bite in maximum intercuspation were completed. A three-dimensional digital record of the patient’s anatomy was created from these scans and electronically submitted to Glidewell Laboratories to be used in the CAD/CAM restoration process.

At Glidewell Laboratories, the virtual scan was registered to the scanning abutments, providing the dental technicians with the implant system, size, axis, position relative to the adjacent anatomy and locking feature orientation. A virtual zirconia abutment was designed using 3Shape’s DentalDesigner software (3Shape Inc., New Providence, N.J.) and the Glidewell Digital Abutment Library (Fig. 2). From this, the corresponding physical Inclusive All-Zirconia Custom Abutments (Glidewell Laboratories) were milled. Similarly, a BruxZir® Solid Zirconia four-unit fixed bridge (Glidewell Laboratories) was designed and milled using state-of-the-art CAD/CAM technology.

The custom zirconia abutments were trial-fitted in the patient’s mouth with slight tissue blanching noted (Fig. 3). In the same visit, the final four-unit all-ceramic milled BruxZir Solid Zirconia bridge was tried-in and examined for proper occlusion. There was “tight” anterior coupling for this case as evidenced by the history of provisional denture fracture. The occlusion was checked and presented as so precise that no adjustment was required.

The anterior view of the final prosthesis demonstrates optimal mesial-distal width: proportion, incisal edge proportion, pontic-tissue contact and excellent shade/esthetics (Fig. 4). Further, the occlusal view demonstrates an optimal incisal edge arch form. The soft-tissue lip position and speech phonetics appeared to be optimal.

Following the trial seating, the fixed bridge was removed, the zirconia abutment retention screws torqued to 35 Ncm, the abutment screws covered with cotton/Cavit™ Temporary Filling Material (3M™ ESPE™, St. Paul, Minn.), and the prosthesis cemented with GC Fuji PLUS* (GC America, Alsip, Ill.).

* Note: Cadent (Carlstadt, N.J.) was acquired by Align Technology (San Jose, Calif.) in May 2011.

References


Here at the ACD

For more information about the Inclusive Scanning Abutments, stop by the Glidewell Laboratories booth, Nos. 537/539.


DENTSPLY Caulk has patented its integrated brush unit-dose delivery system used for Calm-It™ Desensitizer. U.S. patent No. 7,959,370 was awarded to DENTSPLY for its all-in-one unit dose dispenser that includes an integrated application brush. The built-in brush makes application of the desensitizing material easier and faster. The steps are simple: snap open the unit dose vial, apply and gently air dry.

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For more information, contact your local DENTSPLY Caulk distributor, call (800) 532-2855, go to www.caulk.com or stop by the booth, No. 702.

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