

# The Dent-Liner™

*A Bulletin Dealing With Issues For Dental Health Professionals*

## **Qu-Resin: For Intraoral & Indirect Self-Curing Denture Repairs**



Peter T. Pontsa, RDT has over 40 years of experience in the dental profession. In 1991 he established Dent-Line of Canada Inc. and is currently president of this dental supply company. He is a leader in superior professional techniques in fixed and removable restorations and he shares this knowledge through articles and seminars which he regularly provides. Peter is a past president of the College of Dental Technologists of Ontario. He is also pleased to be involved as co-publisher of Spectrum Denturism.

### **Special Interest Articles:**

- **Qu-Resin: For Intraoral & Indirect Self-Curing Denture Repairs** 1
- **Bredent's CPS: Mechanical vs. Electric Torque Drivers** 2

### **Individual Highlights:**

- **Bredent's Zi-Polish** 2
- **Bredent's Ball Clips** 2
- **Announcements** 4
- **Trade News** 4

Due to the rapid growth of the aging population worldwide, there is a simultaneous increase of denture wearers. As a result we see that there is a significant problem with the occurrence of fractures of acrylic resin dentures, in spite of the advances in dental technology. Denture breakage is usually unintentional or mechanical in origin and is related to incorrect design, flawed manufacture and/or weak materials. Smith mentioned that denture failure depends on the circumstances of shape, the burden of built-in residual stresses and also the basic properties of the denture base. Farmer listed various clinical factors such as incorrectly shaped mandibular occlusal plane, high frenal attachment, incorrect occlusal design, profound occlusal loading and deficient modification of the denture base thickness, as the principal reason for the denture breaking. The definitive outcome of denture repair is to reach the initial shape and strength of the denture with the least amount of time and funds. Numerous procedures and materials have been used to restore broken dentures. Broken acrylic resin dentures are repaired with self-curing acrylic resins, heat curing and lately with visible light curing resin. Patients have benefited from self-curing resin repairs that offer the convenience of being quick and cost-effective. Regrettably the repaired dentures could drop some of their initial transverse strength. In addition breakage of repaired dentures frequently takes place at the seam of old and new denture materials other than through the repair itself. Repair

joint length can also be a contributing factor to repair strength. Almost certainly if the repair junction that was used was longer than 3 mm a pure cohesive break of the repair resin might happen instead of a mixed fracture. A "Study on Management of Dentures After Prosthetic Treatment: Influence of Repair Surface Design on the Transverse Strength of Repaired Acrylic Denture Resin" found that dentures repaired with a 45° downward bevel joint showed higher values than dentures of other repair designs. Midline fracture was most common in upper dentures and it was a poor fit that was the main cause and in the lower ones it was usually by having been dropped. The existence of serious incisal notches denote a point of weakness in that they may behave as stressed areas and become a cause of midline fracture of the maxillary denture. Poor fit was the main cause of denture fracture as the denture flexes in the mouth during function about the midline. Consequently movement of the denture throughout mastication will instigate fracture because of the succession of repetitive small loadings which advances to material fatigue and breakage. The force essential to produce a fracture ranged from 100 to 800 lbs. which is a great deal higher than that which denture wearers are capable of creating. Beyli and Van Fraunhofer (1981) discovered that poor fit was the main universal reason of denture breakage in 12 out of 15 dental laboratories taking part in the survey. Their conclusions have indicated that

**continued on page 3**

## **Bredent's CPS: Mechanical vs Electric Torque Drivers**

The fracture of implant screws has been discussed in many studies. Tightening of these screws in implant supported restorations has been reported to be challenging in that if the torque utilized is too little, screws will loosen. If excessive torque is applied then the screw is likely to fracture. Consequently the mechanical precision of the torque driver or ratchet is paramount for a positive outcome. Most dental implants presently in use are manufactured with an interior mechanical fixation utilizing an

internal Cad / Cam screw. Nonetheless due to the inherent features of this thread design, if components are not assembled with the implants' required torsion value, the abutment or the screw will come loose. As soon as the abutment or screw is loose it will run the risk of failure since all the operating loads will be applied diametrically to the thread itself.

**continued on page 2**

**Bredent's CPS: Mechanical vs Electric Torque Drivers cont'd...**

To avert the threaded screw from coming loose, the abutment is assembled into the implant with a proper torsional value to resist the fracture of the joined assembly throughout normal functional loading. The assembly of the abutment and screw is accomplished by using a torsional screw driver or ratchet. As a method to control the applied torque value the manufacturers developed several spring actuated mechanical break-away neck, hand held torque wrenches. In addition to providing the assembled implant prosthetic joint with the accepted torque value for eliminating joint separation, these break-away torque wrenches are used to avoid stripping or severing the screw head or overloading the implant during assembly. Even though these instruments achieve the recognized standards of practice the recurring wear of the inner moving parts of the break-away head, because of its mechanical design, causes these instruments to drift out of calibration overtime and use. In fact information accompanying most of the viable instruments say the ratchets must be calibrated at least once a year as part of the maintenance program. Because the instruments use a mechanical spring to apply the appropriate torque value, sterilizing the ratchets with steam autoclaving is the reason for corrosion of the spring. This was found to be the case in a study by Gutierrez, Nicholls, Libman, and Buston called "Accuracy of the Implant Torque Wrench Following Time in Clinical Studies". Once locked these wrenches are unable to control the application force applying the torque value. In addition based on the appropriate force value required to

avoid opening of the assembled implant abutment joint, an out of hand deviation in the application of torque may cause the prosthesis to fracture or fail. These circumstances cause some apprehension for use of these types of ratchets over the long term when considering replacement costs, dependable function overtime, sterility requirements and overall reliability. Bredent's Cordless Electronic Prosthodontic Screwdriver is designed to overcome the previously described deficiencies in the earlier type of torque wrenches at an acceptable cost to the profession. An additional intention of the CPS unit is to supply a torsion application instrument that reliably applies the appropriate preselected torque value. Its further purpose is to offer a screwdriver that will not require consistent recalibration or have sterility issues and which meets the size requirements for use in oral cavities. The unit is easy to handle with a weight of just 345 grams! Bredent's CPS electric screwdriver houses a digital LED handle with a removable contra angle insert which can be removed and sterilized. It transfers an applied force to consistently deliver a preselected torque value to securely attach the abutment to the implant. The CPS has an ergonomic design, is lube free and offers the best hygiene practices because the working part is easily separated from the driver motor and is autoclavable and also can be thermo disinfected. It is built with the highest precision to torque values and has a torque range from 8 to 40 Ncm and can be set in 1 Ncm increments.

*continued on page 4*



**Bredent's new CPS - Cordless Professional Screwdriver**



**Bredent's New Ball Clip**



**Bredent's new Zi-Polish designed for Zirconia!**

**Featured Product: Bredent's Ball Clips**

Bredent's Ball Clips and holding pins can make color matching, staining, and applying opaque much easier than with conventional techniques. The plastic ball head is attached to the waxed up crown or bridge, and cast together. The ball clip has a locking function

that holds the cast ball firmly. There is a simple release of the clip for safe placement on the firing tray. It facilitates sand blasting and steam cleaning, a reliable hold when condensing porcelain and easy removal of crowns from the model. For more info call 1-800-250-5111.

**Featured Product: Bredent's Zi-Polish**

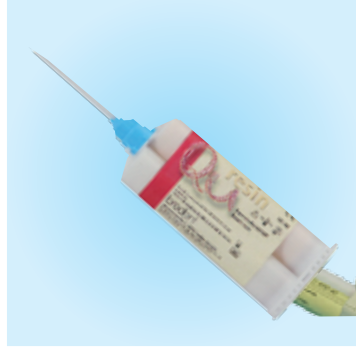
Bredent's Zi-Polish can save an enormous amount of time when it comes to polishing zirconium. Because of the nature of zirconium it is a problem processing such a hard material. In particular high luster polishing, which is quite difficult to carry out or requires a long time using polishing pastes currently on the market. Perfect high luster can be achieved very quickly with Zi-Polish because of its composition of bees wax and diamonds,

it allows simpler surface processing in an efficient manner. Because of its composition, the polish is taken up in the brush as it melts, allowing a slight to moderate pressure which minimizes heat generation, preventing the zirconium from becoming damaged. The natural binder does not cause discolorations on the polished zirconium surface. For further information call us at 1-800-250-5111.

Qu-Resin: For Intraoral & Indirect Self-Curing Denture Repairs cont'd...



Qu-Connector is applied to the repair and light-cured for 90 seconds.



Qu-Resin comes in pink or dentin for quick setting, self-curing denture repairs.



Lower partial is converted to a temporary full denture after abutment extractions.



The patients's ipression prior to extractions taken with alginate.



Position of extracted teeth are filled with the Qu-resin dentin.



The addition of the flange is applied directly in the cuspid area.



Material can be directly injected below small non supported areas.



Complete temporary denture utilising both pink and dentin Qu-resin.

insufficient thickness and flaws in the acrylic denture base such as voids within the material, porosity, deep scratches and left over processing stresses induced fracture. Beyi and Von Fraunhofer and Smith surmised from their study that sharp changes in contour, pin holes, inclusions and deep scratches may all cause extreme stress and will incline the denture to break. Fractures can also take place outside the mouth due to the patient accidentally dropping his or her denture. Takahashi stated that long term water and saliva sorption will decrease physical and mechanical properties and reduce the fatigue resistance of the acrylic resin. Self curing resin repairs offer a quick and cost-effective option to patients but regrettably the repaired units seem to lose 40% to 60% of their original transverse strength. Diverse safety measures can be prepared to diminish the occurrence of denture fracture by ensuring maximum denture retention, stability, harmonized loading of the occlusal surface and balanced articulation. Traditional repairs require a self curing acrylic that is processed in the dental laboratory utilizing standards of practice which includes model making and submersion in a pressure pot for 20 minutes. A new revolutionary material called Qu-Resin

by Bredent GmbH now facilitates repairs in the laboratory or in the mouth. Qu-Resin has been developed for use as a denture repair resin to overcome some of the mechanical deficiencies of polymethylmethacrylate. Qu-Resin can achieve perfect bonding between PMMA based denture base and high impact acrylics and PMMA composite materials (acrylic teeth) with the use of a coupling agent called Qu-Resin connector. This quick setting self-curing, two component denture repair resin system comes in a cartridge and is based on a diacrylate and sets in 3 minutes. Dental Health Practitioners can perform chair side repairs of the denture and reduce the amount of time considerably both for the patient and themselves. Qu-Resin minimizes the waiting time for the patient and therefore provides high comfort by using this repair acrylic. Because the resin is available in dentin and pink it can be applied to many different situations and it has excellent processing and polishing properties. The areas to be repaired are roughened and blasted with 110 micron aluminous oxide, Qu-Connector is applied and light cured for 90 seconds.

**continued on page 4**

**NOTE:** The publication of these pictures were courtesy of bredent GmbH & Co. KG



The fitted denture has excellent trimming and polishing features.



No pressure pots are required to cure Qu-resin and it sets in only three minutes.

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## About Our Organization...

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## Bredent's CPS: Mechanical vs Electric Torque Drivers cont'd...

With the CPS screwdriver there is a time savings of approximately 50% over typical hand ratcheting. Because of the unique cordless design there is easy access to reach palatal screws and the battery runtime is adequate to place or remove 40 screws. The instrument driver assortment has 11 screwdrivers for the most popular implant systems such as Nobel, Strauman, Ankylos, Sulzer and others. The CPS electric screwdriver solves the problems of calibration requirements and allows the users to effectively apply the preselected torque value in a sterile, simple, easy to use and functionally reliable manner.

## Qu-Resin: For Intraoral & Indirect Self-Curing Denture Repairs

The Qu-Resin is then injected into the area of repair and in about 3 minutes the repair is ready for polishing. Whether applying it in the mouth or in the laboratory Qu-Resin offers a relatively easy and quick way of processing any denture repairs.

**Source; Peter T. Pontsa, RDT**

**References;**

## Announcements:

Dent-Line of Canada Inc. and Bredent are committed to provide superior quality products and have them reviewed by quality managements

## Trade Show News: Upcoming Events

The Eastern provinces will be the focus for the **Dent Atlantic Summit** that will be held from Friday April 30th to Saturday May 1st at the Lord Nelson Hotel & Suites 1515 South Park Street in Halifax. There will be a number of interesting seminars for dental technologists and denturists. Peter T. Pontsa RDT President of Dent-Line of Canada will be presenting *Attachments in Dentistry: Specifications and Use*. Please join us for a great educational experience and visit us our booth to see new products from Bredent and Renfert. The City of Calgary will be the new location for **Dent Tech West** that will take place from Friday May 7th to Saturday May 8th at the Coast Plaza Hotel

## Meet our team members and put faces to the names!

Dent-Line of Canada Inc. welcomes **Mr. Sean C. Semple B.A.** to the sales team. Sean comes with a background in Sociology and Psychology. He will be visiting our customers in Ontario and Quebec and acting as our in-house sales representative as well as assisting Peter T. Pontsa, RDT at conventions and exhibitions throughout the country. **Mrs. Natascha McCutcheon**, Dent-Line of Canada's customer service professional, has been with us for nearly two years. As a happily married mother of two boys, Natascha is no stranger to organization, hard work and conflict resolution. Her ten years in the Customer Service Industry and her unrelenting integrity ensure that she will not quit, until you the customer, are

**Source; Peter T. Pontsa, RDT**

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2. Smith DC. "The acrylic denture, mechanical evaluation, midline fracture"; Br dent J 1961;110:257-267.

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that the quality is consistent. So we are jointly pleased to announce that our ISO13485:1996 has been updated to ISO13485:2003.

And Conference Centre. There is a great lineup of speakers that will talk on many subjects. Peter T. Pontsa RDT will be speaking on *Attachments in Dentistry: Specifications and Use* and the Dent-Line booth will have some new and innovative products to see. The 36th annual **Technorama** will be held from Friday, April 9th to Saturday April 10th at the International Double Tree Hotel and Conference Centre. The suppliers will host a cheese and wine event on Friday night, and there will be various seminars both days. Hotel rooms have been set aside so book early and don't be disappointed. Join us at the Dent-Line of Canada booth to see what's new!

satisfied. **As proud members of the Dent-Line of Canada team, Sean and Natascha look forward to assisting you!**



Mr. Sean Semple  
Customer Sales & Service



Mrs. Natascha McCutcheon  
Customer Service &  
Administration