Winter 2007
Volume 11, Issue 1

The Dent-Liner™

A Bulletin Dealing With Issues For Dental Health Professionals

Is the Denture Pour Technique Practical?

The denture pour technique has been around for thirty years or so in various forms. Recently many manufacturers in both Europe and North America have reintroduced the method indicating that improvements have been made to the original methodology. Many years ago when this technique was first introduced it was found that the method resulted in such poor quality dentures that they became more widely used as transitional dentures. The methyl-methacrylates back then distorted and warped and were not colour stable. So what has happened since the early concepts and what has changed to make the denture pour technique a viable lab procedure today? The extremely high standards in the science of dental materials that has developed in countries like Germany may be the answer. The use of this technique has become quite popular in Germany for the last number of years because of its quality and consistency.

Because of companies like Bredent, the auto polymerizing methyl-methacrylates have undergone a remarkable quality and durability development. These dental manufacturing companies selected raw materials that would benefit from their processing methods and provide end users with predictable accuracy of fit. Modern manufacturing systems guarantee consistent quality and are in accordance with DIN EN 1567 certificates of compliance. Not only were they improved overall, the materials underwent studies and testing by independent researchers, who published unbiased results. The procedure has many merits that would be ideal for dental laboratories and denture clinics because the denture pour technique is easy, precise and economical. By assessing the injection type system or the conventional packing procedure against the pour technique, we can appreciate that stone or plaster for investing is not a prerequisite. Also not needed are a boil out system, a hydraulic press, metal flasks or clamps.

Since the pour technique requires an agar type duplicating gel, it is very simple to deflask the denture. These dentures come out of the duplicating gel absolutely clean and require no complex grinding or finishing of the surface. The Opti-Cast pouring resin from Bredent is a high density resin which reduces accumulation of plaque and bacteria on the smooth polished surfaces. A study conducted in 2000, “Roughness of Denture Materials: A Comparative Study” tested denture base resins as well as hard and soft relining materials. The roughness exhibited by all the materials tested, indicated a possibility for plaque accumulation. However smoother surfaces produced by the pouring technique have resulted in less plaque and bacterial adherence over conventional methods. Bredent’s Opti-Cast pourable resin is of proven permanent colour stability and is cadmium free.

Research published in the “International Journal of Prosthodontics” and aptly named “Colour Changes of Base Materials After Disinfection and Sterilization Immersion” discusses colour stability. Their findings in 1997 indicate that by following recommended disinfection times, no observable colour changes should be expected. Another measure of comparison is dimensional stability of the pour technique versus conventional methods like packing and injection. The trio of Sadamori, Ishii and Hamada are responsible for research published in 1997 called “Influence of Thickness of the Linear Dimensional Change, Warpage and Water Uptake of Denture Bases”. Their findings suggest the processing method and denture base resin thickness are important factors in the dimensional change of acrylic resin dentures. Further to that, overall dimensional denture base changes are the result of localized conditions. We have found that the very low polymerization shrinkage in the Opti-Cast pour technique does not distort the denture ***continued on page 2***

Peter T. Pontsa, RDT is president of Dent-Line of Canada Inc. with over 39 years of experience in the dental profession as a laboratory owner and a technician. 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. He is also a past president of the College of Dental Technologists of Ontario. Currently he is a member of the Academy of Dental Technology and is also editor of Spectrum Denturism.

Special Interest Articles:

Individual Highlights:

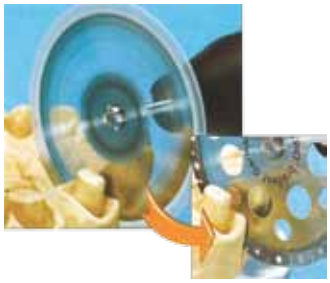
Is the Denture Pour Technique Practical? cont'd...

Bredent's Opti-Cast Pourable Resin

Bredent's Flask System

Bredent's Bre-Gel BG1

Bredent's Super Snaps provide additional retention levels.



Giflex is available in diameters of 25mm, 30mm, 37mm and 45mm.

to the same extent as conventional injection or packing. During heat curing dimensional changes occur which can affect the position of the pin to the incisal table of the articulator, causing an open bite that will require occlusal adjustments. Because the pour technique does not distort the denture to the same extent of conventional methods, the occlusal space does not change.

When using a pourable denture technique, what type of tooth is suitable? Are resin teeth better than cross linked denture teeth? The research paper entitled "Bonding Durability of Conventional Resinous Denture Teeth and Highly Cross Linked Denture Teeth to a Pour Type Denture Base Resin" indicates there is no significant difference in bond strength between these different teeth. Testing showed cohesive breaks, rather than tooth acrylic interface breaks, indicating a similar chemical coupling of the polymer molecules to the resin base.

Another key issue between pourable and heat cured denture base acrylics is residual monomer levels. Some research has shown higher residual monomer levels in self-curing resins over heat cured denture base resins. As a result, residual monomers may cause tissue irritation. A published study investigated two self-curing acrylic denture base resins; one was a packing type and the other a pourable type. The researchers used gas-liquid chromatography to measure the residual monomer. Their research indicated that the thick sections had lower values than the thin sections. The pourable acrylics resin showed lower values than did the self-curing compression type. Manufacturers have also indicated higher values of residual monomers up to 45 hours after polymerization, however after 28 days the residual monomer content is less in the self-curing resin as opposed to heat cure. More supporting evidence published in "Effect of Polymerization Temperature and Time on the Residual Monomer Content of Denture Base Polymers", shows that by increasing the polymerization temperature for self-curing acrylics from 30°C to 60°C, the residual monomer content of the resin decreases from an average of 4.6 wt% to 3.3 wt%.

The Bredent Opti-Cast system optimizes the combination of powder to liquid which in combination with a higher polymerisation temperature minimizes the residual monomer and therefore produces a bio-compatible denture. In order to best maximize the pour technique the denture wax-up should be finished like the final denture. Functional areas should be free of wax and the model trimmed to provide easy removal. The waxed up denture and model are soaked for 10 minutes to eliminate air from the model. The model is then placed on the base plate and the flask is closed. Bre-Gel I is a ***continued on page 3***

Product Show Case; Bredent Super Snap Attachments

Bredent's Research and Development Department has developed higher retention inserts called the Super Snap. During normal usage the original three normal snaps are usually sufficient to provide plenty of retention. However current research has revealed that there can be many variables in providing adequate retention for different patients. During parafunction, there are extreme conditions that can prematurely wear the ball retention, the retention inserts or both. The series of higher retention inserts called SUPER SNAPS can provide extra retention when these conditions occur. This new development will allow existing restorations to function indefinitely without premature replacement cost to the patient. **For your complimentary Super Snap Attachment Chart, contact Dent-line of Canada at 1-800-250-5111.**

Featured Product; Bredent Giflex Diamond Discs

The Bredent Giflex diamond coated separating disc is ideally suited for cutting out dies from the die stone arch. There is a significant saving of time and effort due to a more rapid and precise separation of the dies from the master model as opposed to using the customary hand saw. The perforations within the disc become transparent at speed, which makes it possible to have a clear view during the cutting procedure. The Giflex-TR allows rapid removal of grinding dust, so that jamming of the disc is avoided. The disc is manufactured in four different diameters so that different depths of die stone can be separated. **To enquire, call Dent-Line of Canada at 1-800-250-5111 for more information and pricing.**

Is the Denture Pour Technique Practical? cont'd...

The flask is positioned over the model for the most favourable sprue location.

Melt the Bre-Gel I in the microwave for 3 minutes at 600 to 800 watts.

Cool the Bre-Gel in a cold water bath to the dispensing temperature of 40° to 45° C.

Pour the Bre-Gel into the flask until the vents are slightly over filled.

The model is carefully deflasked using compressed air.

The denture out-line is faithfully reproduced in precise detail.

The set up grinding bur, Part No. 34001010 adds retention.

Thinly apply the denture separator, Isoplast, Part. No. 54001019.

low viscous agar duplicating gel suitable for microwaves. It is bubble free due to its excellent flow characteristics. After melting the Bre-Gel, cool it down to the dispensing temperature of 40 to 45°C. Slowly pour the gel into the flask between the model and the wall until the vents are slightly overfilled. Carefully place the flask in cool water for 45 minutes. The clear plastic flask offers maximum effectiveness and control because you can see what happens in the flask as you are filling it. After reaching the final set, an air gun is used for removing the model. The wax and teeth are removed and the teeth are cleaned using boiling water. The teeth should be roughened before placing them back in the mould to create additional retention. The model is separated before it is placed back in the mould. The pouring canals and vents are neatly punched using the punching tube. The flask is then closed in the correct position using the centering snap. The Opti-Cast denture base material is mixed and poured into the pouring canals. The resin is polymerized in a pressure pot for 30 minutes at 40 to 50°C with pressure from 25 to 30 lbs. After polymerization the denture can be removed, trimmed and polished according to the normal standards of practice. In conclusion, by discussing some pros and cons about the pour technique such as colour stability, distortions, warpage and residual monomers, we can appreciate that there is a place for the Denture Pour Technique in our clinics and labs where we can offer a better and more quickly made denture to patients who prefer an efficient and economical alternative.

Source; Peter T, Pontsa, RDT

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The model is placed back in the gel mould.

The Opti-Cast pouring resin is poured slowly and carefully into the sprue canal.

The Opti-Cast resin is polymerized in the pressure pot for 30 minutes at 40 to 50°C at a psi of 30 lbs.

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About Our Organization...

The Dent-Liner; Vol. 11 No. 1
Publisher; Peter T. Pontsa RDT
Editor; A. van Breemen, BA

Subscription Rates:

Canada	**1 Year**	**$ 6.00**
USA	**1 Year**	**$ 8.00**
International	**1 Year**	**$16.00**

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Integrating the Brazing Procedure to Reduce Remakes

Occasionally a porcelain fused to metal bridge whether abutment or implant supported may not fit accurately. The bridge must be cut and the segmented units aligned and reunited in a passive fit. The brazing procedure is carried out in the porcelain furnace. This produces a coalescence of materials by heating them to the brazing temperature and by using a filler metal (solder) which has a liquidus at 820°C and below the solidus of the base metals. Bredent Super-Flux is a brazing paste consisting of white gold mixed with flux to provide protection from oxidization. It is composed of 65% gold, 13% silver, 13.5% zinc plus some nickel and indium. The joint clearance ranges between 0.02 to 0.05mm and will produce a sound, high strength joint when using a brazing paste. Super-Flux paste can be used to solder non-precious, chrome cobalt and gold since it is compatible for brazing metals with different coefficients of thermal expansion; it is however, not compatible with titanium. The amount the materials expand needs to be factored in when determining joint clearance. Super-Flux easily joins dissimilar metals since it provides strong joints because of its lower temperature requirement while still maintaining the integrity of the base metals. The skill level is easily acquired with the use of today's automated furnaces and a good solid joint is the result. The gold in the flux melts at a temperature of 820°C which enables the solder to flow very quickly and safely, especially inside a furnace. Also, if the technician has to re-solder, it is not necessary to clean or remove the old flux. After adding some new Super-Flux, it is possible to re-solder directly onto the old Super-Flux. When bridges fit precisely they will last many years giving the patient long-term peace of mind and satisfaction. Scientific research indicates that the longevity of implants are definitely correlated to the passivity of the restorations which is why brazing can be an advantage in achieving a successful passive fit. ***Source; Peter T. Pontsa, RDT***

Special Announcement: Donation to Collège Édouard-Monpetit

Dent-Line of Canada Inc. and Renfert USA are delighted to announce the donation of equipment and sundries to the College's Dental Technology Department this past October. The gifts consisted of a Renfert Twister Venturi Vacuum Invester, a Waxlectric II waxing unit with an assortment of tips, a Vario E three pot wax unit and Bredent sculpturing waxes. On hand for the contribution were Peter T. Pontsa, RDT, President, and Angela van Breemen, BA, Vice-President, both of Dent-Line of Canada Inc. Accepting the gifts from the school were professors, Raymond Haché, Stéphan Provencher and Julie Jacob, the current co-ordinator for the Dental Technology Program.

Pictured from Left to Right:
A. van Breemen, Elyse Bergeron, Audrey Poirier, Julie Jacob, Dimitrios Tsichlis, Stéphan Provencher, Tuleen Odeh, Marie-Claude Beaudet, Peter T. Pontsa

Special Announcement: Publication of Second Attachments Manual

Dent-Line of Canada is thrilled to announce the publication of their second **Attachments Quick Reference Manual.** The new manual has been updated with more attachments, auxiliary parts and products. The booklet has been expanded to twelve pages over the original. The manual has been segmented into various categories in order to help locate attachments and products by grouping, type and style. This resource manual will be of great help in determining case planning and also for ordering since all parts are numbered along side the product. To order your copy, call Dent-Line of Canada Inc. at 1-800-250-5111.

We expect to be receiving the **2007/2008 Bredent Catalogue** sometime in March which details all the excellent high quality products that Bredent has to offer - *products for technicians by technicians!* This catalogue will be available in either French or English.

Trade News: IDS in March of 2007 and Technorama in April of 2007

The **International Dental Show** will take place in Köln, Germany from March 19th to 25th. This is the largest dental show in the world and a must see if you have not attended before! Bredent and Renfert as well as many others will be present. We look forward to profiling the many new products which we will first see at the IDS in future Dent-Liners. **Technorama 2007** will be held Friday April 13th and 14th at the Double Tree International Plaza Hotel, 655 Dixon Rd., Toronto, Ontario, M9W 1J4. For hotel reservations contact the Double Tree at 1-800-668-3656.