Rarely can the relationship between dentist and dental lab become as strained as when both parties debate the quality of an impression. For something so mired in science and precision, it is amusing how subjective it can be. The situation can unravel quickly, feelings can get hurt, longtime partners in dental health can part ways, and patients end up waiting longer. We’ve all seen it and perhaps experienced it firsthand. Dentaltown Magazine asked four questions to leading dentists and dental laboratories about the current state of dental impressions, what they recommend, what the trends are and what corrections can be made to ensure doctor, lab and patient are all pleased in the end (at least until the next impression needs to be taken...).
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1. Put the following items in order from most important to least important for an excellent impression and explain your reasons: impression material type, impression tray selection, retraction method and prep design.

**Birchenough:** I think prep design is first. If you don’t have proper clean, smooth margins it’s hard to get an accurate die; also, careful preparation with the least damage to the gingival tissues as possible. Next is proper retraction to give a full, clean 360-degree view of the margin. Next would be material selection, although there are several good products on the market that probably work equally well. Tray selection is important for tongue retraction to keep it out of the way.

**Malcmacher:** Each of these is important. Impression material type is very important as some materials are more accurate than others. For particular cases such as complicated crown and bridge, partial dentures or implant cases, I would want to use polyether (Impregum) or a vinylpolyethersiloxane (EXAlance, GC America) as these are highly accurate. For all other standard cases, the use of any polyvinylsiloxane will do a good job.

For impression tray selection, trays that are adequate in size and are stable in the removal process are essential. Triple Trays are excellent for one restoration impressions, otherwise a custom tray is the impression tray of choice and these are easily made in office.

For retraction method, whether it is through the use of a diode laser (Ezlase, Biolase Technology) or through the use of retraction cords or pastes, a retraction method with hemostasis is truly essential for a great impression.

Prep design is the most overlooked reason why so many impressions fail. Some prep designs that include shoulders and chamfers are easier to impress than non-standard prep designs, it is as simple as that.

**Neilsen:** Both retraction method and prep design are most important. No retraction means no impression. Prep design is also important because a poor design (i.e., undercuts, sharp edges, thin margins) stresses the capability for the impression material.

**Olitzky:**
1. Prep design
2. Retraction
3. Impression material type
4. Tray selection

I think that all are very important and it’s tough to rank these four important aspects of getting excellent impressions, but here is an explanation to their importance in my office.

When at all possible, I place supra-gingival or equal-gingival margins over sub-gingival margins. Utilizing materials like e.max enables me to design more partial coverage restorations that have the majority of margin supra-gingival. Having good preparation design means the tooth is finished smooth with no sharp angles and the preparation has a definitive easy to read margin.

In areas where the preparation needs to be sub-gingival, retraction becomes the most important aspect of a good impression. I don’t expect the impression material to do the work for me. I have a laser (Odyssey 2.4 G diode laser, Ivoclar Vivadent) read-
ily available for tissue contouring in sub-gingival areas to help the impression material easily capture margins that would be normally obscured by tissue. In areas around the teeth where the margin is slightly sub-gingival and I would prefer not to use a laser, I use Expasyl (Kerr) to get gentle retraction and achieve hemostasis. I rarely need to use retraction cord in my practice.

Some impression materials seem to work in some people’s hands, but not in others. There is a lot of user preference. I have been using the same impression material in my office for six years (Virtual, Ivoclar Vivadent) and I can rely on it to capture great impressions for me. I used to stress about the perfect light body injection technique around crown preparations that would yield an impression without a void at the margin, but since I switched to Virtual, I can take a fast-set impression of a whole prepared arch in one try with no loss of marginal detail.

I prefer a custom tray when taking an impression of an entire prepared arch, but I use rigid stock plastic trays for the majority of my quadrant dentistry. For single units I am using good old Triple Trays (Premier). Remakes are very rare, but the majority would be on indirect restorations fabricated from impressions taken with quadrant trays like Triple Trays. We just started switching to metal quadrant trays which are much more rigid.

Pigliacelli:
1. Prep design
2. Retraction method
3. Impression material type
4. Impression tray selection (not really a question, only use half- to full-mouth impression trays, never use Triple Trays)

2. Is it worthwhile to routinely trim your own dies? Why?

Olitzky: I don’t think it is worthwhile to trim my own dies. I feel the lab I have chosen to trust for my patients’ mouths (Gold Dust Dental Lab) is qualified to handle the laboratory work. If I felt like I needed to trim my own dies, I would think that I must have one of two problems – either I am using a lab that does not have the quality control it needs to meet my expectations, or my preparations or impressions are too difficult to read. I would bet it would most likely be the latter. I would rather find the fix for one of the problems.

Neilsen: It’s worth it if the prep and impression will be difficult or the design is such that only the operator will understand the margin design. Otherwise if the impression is good, I would prefer to leave the trimming in the hands of someone who has seen and done thousands!

Pigliacelli: Depends on the lab. You should not have to trim your own dies. If the lab is unable to see the margins, how good is it to do the work?

Birchenough: I think a doctor’s time is better spent chairside with patients rather than ditching dies. If all the proper steps are done in the prep and impression stages then it is easy for a technician to read and properly ditch dies.

Malcmacher: If you have a great impression, a great prep design and a great relationship with a dental laboratory that you know and trust, then this is not worthwhile

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as it is not necessary. Trimming your own dies means to me that there is something wrong with your crown and bridge process as I have observed too many dentists usually trimming their dies when something is wrong rather than trying to improve quality. Improve your process and you will eliminate trimming your own dies.

3. If someone is having problems getting a great impression, what advice would you offer?

**Pigliacelli:** Start from scratch. Ask other dentists you respect what material they use. Ask your lab what the dentist with the least amount of remakes and best impressions use. Then research the suggested material and decide what works best for your practice.

**Birchenough:** Impression techniques could be improved by:
- Smooth, clean preps by finishing the margins with fine diamonds and white stones.
- Lasering any gingival tissue overhangs that cover the margin after the prep is completed.
- Using a dual-cord technique with a small diameter cord first (size 000 or 00) that is trimmed to fit exactly in the sulcus circumferentially followed by a larger diameter cord on top of the first cord (size 1 or 2). The larger cord is removed just before the impression material is expressed into the sulcus created by the cord, leaving the small cord in place.
- I like to use an impression material that has two viscosities, a low viscosity to use in a syringe that goes into the sulcus created by the removed cord and a thicker tray material that goes over the top of the syringed material.
- Control of bleeding is important, so I use hemostatic agents to create a relatively dry field before impressing (although not as critical with polyethers because they are somewhat hydrophilic).

**Malcmacher:** Go back to basics, the basics you have been taught work quite well. Stop blaming the tray, the impression material or the patient – let’s look in the mirror and evaluate our own impressions honestly.

**Neilsen:** Lessons on fluid control, tissue manipulation, retraction cord size, armamentarium (materials), assistant training and patient control.

**Olitzky:** It would depend on the type of problems he or she is encountering. Generally speaking, I would take a look at the details of the preparation design. Make sure the preparation is finished smoothed and has definitive margins. Utilize restorative materials like e.max, which enable supra-gingival and equal-gingival margins with aesthetic results. Don’t expect the impression material to do all the work for you. Utilize a diode or Er:Yag laser to contour the gingiva where it will prevent reproduction of accurate marginal detail in the impression.

4. What percent of crown and bridge impressions that pass through your lab is difficult to read or need to be retaken? What is the trend – up or down?

**Smith:** The act of taking an impression is by no means a perfect science. There are so many variables involved in the oral field where the dentist is operating. We certainly come across those that are difficult to read, and those that should be re-impressed. And while digital impression systems take some variables out of the equation, they present other challenges. Our approach toward our relationships with our customers is to develop a strong understanding of their preferences, and more specifically, their preparation and impression styles. The same technician is working on each customer’s cases, consistently. Therefore, when they’re trimming the dies they can intuitively fill in the blanks when necessary and still deliver consistent, accurate results.
Contributor Bios

Steven Pigliacelli, CDT, vice president and director of education at Marotta Dental Studio, Inc., has more than 27 years experience with Marotta Dental Studio as a dental implant specialist. He is a certified dental technician with the National Board for Certification. He manages Marotta Dental Studio and is the technical liaison between the dentist and the laboratory for case planning, telephone support and quality control. Steven writes all of Marotta’s educational and promotional materials, newsletters and presentations, as well as maintaining the Marotta Web site, www.marottadental.com. Steven is certified in the following systems: Branemark System (1984), 3-I/Implant Innovations (1987), Integral Implant (1987), Steri-oss (1988), Core-Vent Implant Prosthodontics (1988), Interpore IMZ (1989), Astra Implant (1989), Implamed Implants (1989), and Strauman ITI Implant System Scientific Training (1991). He lectures and performs hands-on demonstrations at study clubs and seminars.

Dr. Bruce Birchenough was born and raised in Copenhagen, New York. After graduating from SUNY Albany he attended the University of Pennsylvania School of Dental Medicine. He has been in Seneca Falls since 1993. He actively attends several study clubs each month and is a board member of the Seventh District (Rochester region) Dental Society. He averages more than 100 hours of continuing education every year with an emphasis on implants, aesthetic dentistry (veneers, bleaching, crowns) and TMJ-related problems.

Louis Malcmacher, DDS, MAGD, is a practicing general dentist and an internationally known lecturer and author, known for his comprehensive and entertaining style. Dr. Malcmacher is president of the American Academy of Facial Esthetics www.facialaesthetics.org. You can contact him at 440-892-1810 or e-mail drlouis@facialaesthetics.com. His Web site is www.common senseedentistry.com where you can find information about his hottest topics hands-on lecture schedule and live-patient Botox and dermal fillers training, download his resource list, and sign up for a free monthly e-newsletter.

William M. Neilsen, DDS, graduated from Creighton University Dental School in 1979. He has served in the Army as enlisted and after dental school, in the Air Force as a Dental Captain.

Dr. Jason Olitsky, The Smile Stylist, is an accredited member of the AADC, as well as president for the Florida Academy of Cosmetic Dentistry. He was a clinical mentor with the Hornbrook Group and is currently faculty with the Gold Dust Clinical Mastery Series. Jason currently works three days a week with his wife and partner, where 80 percent of their production is based off large cosmetic cases. They started Wallsmiles.com, a site that sells wall art for the dental office and teaches dentists how to get their own patients’ pictures on their walls. They created Smile Stylist, a brand committed to promoting, providing and maintaining beautiful smiles for the fashion-forward customer. He is also co-author of The Naked Tooth: What Cosmetic Dentists Don’t Want to Know. Check out Olitsky’s technique via his OnDemand Webinar on Dentaltown.com.

Scott Smith began his career in the dental industry with Bona-Dent and has been with the company for more than 22 years. With his in-depth training at the Pankey Dawson Institute and alongside industry leaders such Dr. Tom Trinkner, Dr. Gerard Chiche and Willie Geller, Scott has acquired extensive knowledge in both the Fixed and Removable departments. Scott provides particular expertise to customers regarding their implant-supported restorations, having undertaken such skills enhancement opportunities as the 3i Synergy Training Program, Nobelguide Laboratory Training, APM Sterngold Training, Nobel Biocare Training, and Precision Attachment Training with Jim Edelson. As a PTC certified trainer, Scott has extensive knowledge and experience in the steps necessary for producing high quality restorations, consistently. As operations manager, Scott is passionate about helping dentists succeed and prides himself on the close relationships he forms with his customers.

Kimberly Violante is the Sr. Marketing Communications Manager at Dentsply Prosthetics.

He has had the pleasure and privilege of serving his community since 1982. Dentistry is always changing and improving materials and technologies, therefore continuing education has always been a priority. Dr. Neilsen lives in Clifton Springs, New York and has two grown daughters. He enjoys golf, travel and spending time with family and friends.