

2018 ISSUE 1

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Editor in Chief

Dr. PRASHANT P JAJU



ONE ON ONE SESSION WITH Dr. Michael D. Scherer

Dr. Michael D. Scherer, DMD, MS, FACP

Dr. Michael Scherer is an Assistant Clinical Professor at Loma Linda University, a Clinical Instructor at University of Nevada - Las Vegas, and maintains a practice limited to prosthodontics and implant dentistry in Sonora, California. He is a fellow of the American College of Prosthodontists, has published articles, DVD training series, and in-person and online courses related to implant dentistry, clinical prosthodontics, and digital technology with a special emphasis on implant overdentures. As an avid technology & computer hobbyist, Dr. Scherer's involvement in digital implant dentistry has led him to develop and utilize new technology with CAD/CAM surgical systems, implement interactive CBCT implant planning, and outside of the box radiographic imaging concepts. Dr. Scherer also maintains two online courses:



Dr. Michael D. Scherer

1- Fast - Track Digital Dentistry & 3D Printing.

2 - Fast - Track Full - Arch Reconstruction Implant Overdentures, and five YouTube channels:

"Learn LOCATOR", "Learn LODI", "Learn SATURNO", "Learn LOCATOR F-Tx" and "The 3D Dentist"- popular YouTube channels on dental implant procedures and digital dentistry.

1. Can you share about your educational qualifications?

I am a board-certified prosthodontist, a type of dentist that manages and works with patients that are significantly medically compromised, missing many teeth, and are in need of major reconstruction of their teeth and jaws. I currently hold two academic positions, one at University of Nevada Las Vegas, and the second at Loma Linda University. I have had extensive background working with computers and with digital methods to assist in interpreting cone-beam CT radiography, progressive applications and education. In fact, I have personally educated thousands of students on working with 3D imaging and CBCT planning!

2. What do your Advanced In Person Fast-Track Digital Dentistry courses, provide to the participants?

I have been teaching techniques related to digital dentistry including intraoral scanning,

CBCT planning, surgical guides, and in-office desktop level 3D printing. In fact, I developed the first course in the world on combining these techniques! We debuted this course several years ago in San Francisco and have been running in-person courses focusing on these techniques ever since. We have priced our courses very reasonably and far below the average cost of what most clinicians would typically pay to attend these courses. The courses have been so popular that many have replicated this concept throughout the world!

As a result of the popularity, doctors have requested advanced courses on full-arch and complex workflows and closer to their homes so they would not have to travel to California. As a result, I have developed a fully online web - browser based course (www.LearnDental3D.com) with approximately 20 hours of video-based education with a step-by-step protocol for working with optical

scanning, open platform software, and desktop 3D printing. The course has been hugely popular and the feedback has been tremendous with multiple people requesting integration of many of the workflows into academic environments.

3. How do you see 3D printing shaping the dental industry?

I feel 3D printing is one of the most significant technological innovations in clinical and laboratory dental practice in sometime! After incorporating optical scanning into my clinical practice, I had a need for fabricating physical models from the optical scans I was creating on my patients. I was exposed to multiple companies providing industrial-grade 3D printing solutions and printers costing between \$20-150,000 and thought to myself, "Could I use lower cost, desktop-grade printers and do a similar workflow as these larger machines?" As a result, several years ago I invested in multiple 3D printers including many on kickstarter campaigns that cost between \$2,000-5,000. After some frustrating experiences with machines that were designed for engineers, I found Formlabs printers were very promising for dentistry as they were very simple to use and plug and play.

While dentists typically are relatively slow to adopting technology, desktop-level 3D printing is different. There is a need for clinicians to be able to utilize their existing technology in creative methods and leveraging them to enhance their patients' experiences at the office. Case in point, one of the first patients I treated with a 3D printing workflow came to me because she heard that I could make "impressions without the gooey material!" Over the course of 10 years, she saw 5 different dentists who all remarked that she was going to lose her front teeth. She was given the options for tooth replacement but never took the next step. Fear of surgery? Gagging reflex? Neither,

the patient was terrified at the *thought of an impression removing her teeth* and never started treatment because of it. Fast forward, she presented to my office when she heard I did digital impressions *and* 3D printing and could skip a traditional impression to do her treatment. She accepted and was thrilled with the results!

4. What have been some challenges or road barriers you have experienced in utilizing digital technology?

The 3 major barriers most dentists face for implementing digital technology are: 1) cost, 2) indifference, and 3) fear. Without a doubt, digital technology is expensive to implement and any technology is going to be more expensive, *at least initially*, compared to traditional analog methods. The good news? Dental technology is rapidly becoming more affordable desktop level 3D printing has been a huge portion of this drive. In fact, in the past few years, 3D printer costs have gone down from a high of around \$30-120,000 compared to where we are now, between \$3,500-15,000! Technology companies, like Formlabs, have created printers that can produce quality prints at a fraction of the cost compared to more expensive machines.

Dentists are creatures of habit, for many good reasons. We, as consumers & patients, value experience in a doctor. We understand that expertise is an important factor in potential success of a medical procedure. In response to this desire, dental clinicians feel the need to produce a similar product/outcome every time and ultimately they fall into a technical rhythm. New technology or new techniques can potentially disrupt this rhythm. A significant challenge that technology companies have to manage is working with clinicians to encourage them to step outside of their comfort level and try something new.

As a result of the aforementioned, some

clinicians tend to be *fearful* of technology. Now not the scary movie sort of fear but the *fear of the unknown*. Will this technology work for me? I know Dr. Scherer can do it, but can *I* do it?

5. What do you suggest other dentists do when deciding which products and software to implement into their practice?

This question comes up quite often. The big question to answer is, “Do you want a simple, fully integrated, albeit a more expensive, solution that is simple plug and play or do you want an open system that, while is free, is more complicated at first to learn?” I have been working with both systems in my practice and there is a time and place for both. Many clinicians are concerned with software choices, and rightfully so! While there are a few main choices in dental software, they are expensive and often meant for laboratories, not clinicians. I have been teaching workflows for clinicians to use in their offices using free/open source CAD engineering software. Things that anyone can pick-up right away and experiment with. Once a clinician is comfortable with these workflows, they can “graduate” to more advanced dental system workflows.

6. How has 3D printing advanced your practice and personal goals?

3D printing has been one of the most amazing things I have incorporated into my clinical practice in years! I use it for being able to generate dental models, surgical guides, diagnostic assessment tools, nightguards, and even crazy things. One of the biggest reasons I use 3D printing in my practice is for marketing. For example, a key part of my practice is marketing to patients that I run a *modern dental practice*. I now have tremendous fun with marketing 3D printing technology, including giving away phone charger holders with my practice emblem on them and also practice

mascot toys... all generated with my 3D printer.

Naturally, I have found the biggest improvement with in-office 3D printing is improving patient care. Now, my routine is digital dentistry, minimal impression gooey material, and improved precision of my clinical results. Less trips for my patients to our practice means happier patients and more productive time spent treating patients, instead of costly revision treatment. Finally, I can leverage 3D printing to be able to do things that would normally take weeks in a laboratory, I can produce in just a few hours for minimal cost. Amazing.

7. What are your future plans with respect to 3D printing, CAD/CAM, and MRI?

It has been a fun journey so far! I look forward to working together with 3D printing companies, universities, and to develop new technology and workflows. I have always found it rewarding with educating and bringing complex technological techniques to everyday clinicians in dental practice. I envision an environment where we can all come together in a collaborative environment and learn from each other. We have gotten closer with the dynamic nature of forums, groups, and online connections, however, we need to do much better. We need to challenge ourselves to continued progress, we need to interact and work together, and we must always keep our patients in the center of our goals to ultimately strive to improve patient care and dental treatment.

8. How do you see CBCT and CAD/CAM technology advancing in your area of profession?

Near time, I anticipate the proliferation of CBCT and CAD/CAM into many early adopter practices. As with any technology, adoption rates follow a bell-shaped curve of

implementation, I do think 3D printing is promising because it's just so practical. Ultimately, I do believe every dentist in the world should be using scanning and printing techniques to enhance patient care.

9. What types of changes are you looking forward to in the future?

I do believe we are just at the beginning of implementation of 3D printing in dental practice. Intraoral scanning and 3D printing has been around for almost 30 years yet less than 15% of dental practices have implemented the technology, why? Traditionally the reason for lack of implementation has been complexity, cost, and fear. As the prices become more affordable, the workflows become more established, and in-person and online education becomes more utilized, dentists will embrace digital techniques almost the same way as they utilize traditional analog techniques. Intraoral scanning, 3D printing, and CBCT radiography helps to solve clinical problems. I am looking forward to seeing where dentistry goes!

10. What types of support/customer service from the distribution companies or manufacturers, would benefit you and other dentists when implementing a digital workflow into their practice?

One of the biggest challenges we are working with is the limited development of materials for 3D printing. We are eagerly looking forward to new materials to be able to be printed, including dentures, tooth-colored materials, and ceramics. Additionally, we must get companies to push forward biologically compatible and long-lasting materials that we can utilize directly in the mouth as final restorations instead of just prototypes for our patients. Until then, we will be limited with our technology and will still need to rely upon traditional methodology to finalize the final product. I

would encourage dental technology companies to work hard at making technology more attainable for everyday clinicians financially and done so in a way that is simple to utilize. We are in a new world of business and technology, however, the traditional relationships of how we work together with manufacturers and technology experts remains strong.

11. What do you do in your leisure time?

I am hopelessly and tirelessly addicted to technology. Digital technology is fun for me and I can't get enough! I do have a life outside of technology, I enjoy fishing, scuba diving, and skiing with my wonderful wife, but even while I'm out skiing, I run into CBCT scanning and 3D printing applications, like one time I met a patient of mine on the ski hill near home and he was complaining about his ski boot bottom heel. He mentioned it was worn out and needed a replacement, the quote, \$500. I told him to bring it in to my office and I'll see what I can do. He brought his ski boot in and I was able to CBCT scan the part of the boot that was broken, digitally designed a replacement, and 3D printed a replacement in my dental office. We then did 2 arches of full-arch immediate load implant bridgework using open-source software to aide in the design process. Amazing!

I love interacting with dental students and residents. I find that the new generation of dentists has now grown up with video games, technology, and interactive tablets. Using CBCT software comes easily to them, 3D printing is not strange, and thinking is unencumbered with traditional thought. Many began their digital dentistry journeys with video games, priming them with understanding how a computer works. Playtime is now professional time, and vice versa. As Steve Jobs once said, "Stay hungry, stay foolish" and we will be forever challenged to strive forward in our professional lives.