



CASE STUDY  
DENTAL

**Stratasys and  
Express Dental  
Laboratory partner  
to provide TrueDent™  
dentures to patients  
in need at **Oklahoma  
Mission of Mercy  
event****





After receiving a free full set of 3D printed dentures made with TrueDent resin and the J5 DentaJet, April Lewis is smiling again.

Lewis was one of hundreds of patients who received dental services at the 2024 Oklahoma Mission of Mercy (OkMOM) event, a free two-day clinic held in Lawton, Oklahoma in February. The annual initiative brings together local dentists, dental students, and University of Oklahoma (OU) College of Dentistry faculty to provide treatment for those without insurance or adequate access to oral healthcare. Services offered range from extractions and fillings to cleanings – and now, custom 3D printed dentures can be provided as well.

For the second year in a row, partnered with Express Dental Laboratory to provide full and partial TrueDent dentures to more than 55 patients in need at OkMOM. TrueDent is Stratasys' FDA-cleared (Class II) resin developed for [3D printing of permanent dentures](#) on the Stratasys J5 DentaJet.

Custom TrueDent dentures and partials were designed for each individual patient and then printed monolithically with minimal labor and maximum accuracy, providing patients with a beautiful, new smile and a comfortable appliances for them to wear.

"I felt so dull and depressed, but now, I can smile again," says Lewis. "My new TrueDent dentures make me feel so good about myself. I don't have to keep my mouth closed anymore."







## The process: Using TrueDent resin and the J5 DentaJet 3D printer to produce 76 dentures in under 24 hours.

“Before partnering with Stratasys and Express Dental Laboratory, very few patients who went to OkMOM could receive dental appliances at the event,” explains Tra’ Chambers, owner of Express Dental Laboratory. “Technicians would have to take an impression of a patient’s teeth, create an analog model using the impression, then quickly make an acrylic dental appliance.”

“We weren’t able to provide dentures before because the turnaround time was way too slow,” explains Paul Mullasserul, Dean of the OU College of Dentistry. “This simply wouldn’t have been possible with conventional dentistry.”

Patients who received dentures at this year’s event had a digital intraoral scan completed on the first day, which Express Dental Laboratory used to design the dentures. The appliances were printed overnight using the [J5 DentaJet](#) and [TrueDent resin](#). They were finished and ready for participating dentists to deliver to their patients within 24 hours.

While Express Dental Laboratory had already produced over 6000 dentures using the J5 DentaJet since purchasing it 14 months before, the OkMOM event was the first time they used it to produce such a large quantity of dentures within such a short timeframe.

“TrueDent and the J5 DentaJet allowed us to significantly expand the number of people we were able to serve at the event,” Chambers explains. “We’re really blown away by the throughput of the printer and the number of people we were able to help thanks to this digital process.”

TrueDent enables labs to produce multiple monolithic, full-color, multi-shade dental appliances on a single tray simultaneously. Dental lab technicians load the denture design CAD file into Stratasys’ [GrabCAD print software](#), then assign teeth and gingiva shades digitally to each appliance to match the patient’s specific needs.



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**Owner of Express Dental Laboratory**





The lab technicians saw patients with many different tooth and gingiva shades at OkMOM, Chambers notes. With TrueDent, they were able to make 76 unique, patient-specific prosthetics in just a couple of production runs.

“This event gives us a really narrow window for seeing all of the patients, getting their records, and delivering dentures,” Chambers says. “We chose to use TrueDent because it’s a streamlined process without assembly downtime and very little post-processing and additional cure time.”

### The results: 76 patients receive completely customized, comfortable dental appliances.

Clinicians and patients at OkMOM were impressed by the accurate, comfortable fit of the 3D printed dentures, says Dan Wilguss, DDS, who has volunteered at the event for more than a decade.

“The dentures are adapting easily into the patients’ mouths and they’re pleased with the aesthetics and phonetics,” says Dr. Wilguss. “The bite and the midline have been really good, and there have only been minor adjustments needed, if any at all. The patients are noting how comfortable the dentures are.”

“Some of the patients at OkMOM had no teeth before or had to have all of their teeth extracted,” Wilguss explains. “They would be nervous at the beginning of their appointments. Many would speak or laugh with their hand over their mouth because they were embarrassed by their teeth.”

Once the patients had the dentures or partials, though, their confidence would noticeably increase, and their smiles would open up again. Getting a new dental appliance allows these patients to eat, speak and function better than before, according to Wilguss.

“Immediately, you start to see them open themselves back up,” Wilguss says. “You can see it in their eyes. They don’t put their hand over their mouth any longer. This is a way that some people go get a job. It’s the first time they’ve had the confidence to feel that they could go out and present themselves in a way that they would be hired.”

Before receiving a new set of full dentures at OkMOM, Lewis had a partial denture that moved around when she ate or spoke.

“This is so much better because it’s more comfortable,” Lewis notes. “I don’t have to worry about the plate going up and down. This is solid and secure, and I’m really happy about it.”



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Dennis Langham, another patient who received full dentures at OkMOM, says that he hadn't been able to eat well before because his old dentures didn't fit and weren't finished well, so he couldn't wear them. When he first saw his face in the mirror after getting his new TrueDent dentures, he said that he looked like "a new man."

"These fit like they're made for me," Langham remarks. "I've already had pictures taken and sent to my family, and they love them. They make me feel really good."

Because TrueDent dentures are produced with digital files, they can be easily reprinted from the same file if a patient needs a replacement or adjustment.

"One of the things that's very encouraging is that you have a permanent digital record," Mullasserul notes. "That makes it extremely easy to make new prostheses or to make adjustments to the prostheses in a relatively short period of time."

Bringing additive manufacturing technology like the TrueDent and J5 DentaJet to OkMOM helps more communities get exposure to advanced technology and benefit from the care it enables, Chambers says.

"This event is an opportunity to show that the community can have access to really cutting-edge technology, to great quality products and the latest workflows," Chambers explains. "This helps them have a better experience, maintain better overall and oral health, and it helps us take care of more people."



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Dean of the OU College of Dentistry

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