

# DENTISTRY HIGH-TECH

## *Present and Future*

By Helen Mitternight

For Dr. Sarandeep Huja, engineering was the family tradition: His grandfather, father and brother all were engineers. But he wanted to practice dentistry.

"I've never regretted it," said Dr. Huja, who became dean of the College of Dental Medicine at the Medical University of South Carolina in 2017. "I'm extremely happy in what I am doing. It was the perfect choice for me."

Engineering and dentistry sometimes overlap as technology pushes dentistry into high-tech.

"Imaging is done in 3D and not 2D, which leaves a lot to the imagination. It's changed the way we practice. A patient is a 3D human being," Dr. Huja said.

*Technology and the prominence of the researchers at MUSC have brought some "cool tools" to the college. For instance, MUSC has the first dental robot in the hemisphere. It enables students to "treat" the robot while someone on the other side of a one-way mirror controls it.*

"The skin is very human," Dr. Huja said. "It has a tongue, the eyes move and the movements it makes are very realistic. It can simulate feeling faint so the student has to come up with a scenario like reclining the chair or whatever – in a very safe environment."

The college also has a three-year loan on a 3D metal printer, which Dr. Huja said is a first for a dental school.

"A lot of the things we do in dentistry are metal-based, like a partial denture is cast on a metal frame. Typically, a surgeon will get a plate, bend it in the operating room and fit it to bone segments. But if a surgeon has a 3D model of the patient, it can be bent prior to surgery, and it is going to fit perfectly. Technically, what we can do with that printer – orthodontic appliances or metallic braces – is limited only by the imagination."

Besides technology, Dr. Huja said dentistry will evolve to be included as part of whole-health treatment.



"The fact that we are treating sleep apnea is totally new," he said. "If you think about the systemic oral health connection, where maybe with some patients, if you maintain oral health, you have less inflammation in your gums and that means your A1C level improves. One model for the future would be dental, medical, nursing, pharmacy and health profession schools combined into an academic health center, and you won't be siloed by buildings or artificial dividers. It will be health care professionals working together for the betterment of patients."

Of course, despite the brave new future, dentists still have to contend with not-so-

brave patients who fear going to the dentist.

"I think that is still true for some people," Dr. Huja conceded but added, "A lot of it is about educating the patient. If a patient has had a bad experience with one dentist, that lingers on for years or a lifetime. We have to make sure we look at the way we treat our children in first experiences with pediatric dentistry. We have to use the words that fit their vocabulary skills and choose to do certain things that are the least painful first before introducing a child to more complicated procedures. And we can sedate them so they don't remember any of those (painful) experiences."

Fear is not the only obstacle graduating dentists must overcome. Dr. Huja said dentists can face large student loans and can grapple with complicated licensure requirements that limit moving a license from one state to the next.

Still, Dr. Huja said dentistry is the key for so many things in life that he cannot imagine doing anything else.

"Oral health contributes to general wellness," he said. "If your teeth are in good shape, it affects your self-confidence in situations like a job interview. And if you have chronic inflammation, there are tenuous links to even Alzheimer's, although diabetes is the firmest footing. Think of all the diseases you diagnose through collecting saliva, and dentists are at the forefront of that."

"I think that what we are striving for is wellness through oral health. I always say that your dental and vision insurance are separate from your medical insurance, but the mouth is the gateway to the body and part of the head." 