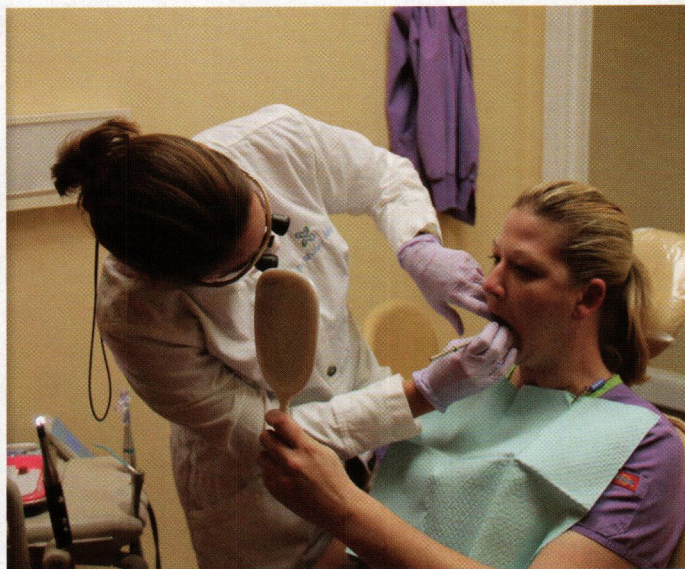




Above Left: The intraocular camera allows dentists to see into a patient's mouth with much more precision.



Above Right: Prior to the intraocular camera, dentists required their patients to hold a mirror in front of their face to explain conditions.

# TOOTH SHOOT

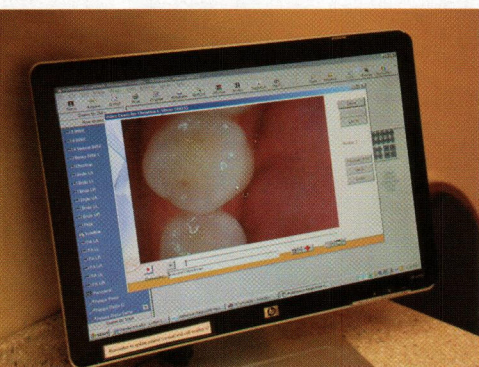
Like all healthcare specialties, dentistry has realized significant advancements in technology through the years. The intraoral camera is just one tool that has made a difference in how dental health professionals diagnose conditions and educate patients.

It may be hard to believe, but the use of cameras to capture oral images dates all the way back to 1839. On January 7th of that year, Louis J. M. Daguerre, a well-known French artist and chemist, introduced the first commercially successful photographic process at the Paris Academy of Sciences. Later that same year, Alexander S. Wolcott, a manufacturer of dental instruments, designed and patented the first camera using Daguerre's concept. One of the many results of this "photographic phenomena" included the beginning of a new era of objectively reproducing and recording extraoral visual dental images. This era also led to the inception of the world's first dental journal, the American Journal of Dental Science.

Over time, advancements in photography benefited many healthcare specialties, including dentistry. With each passing year, this headway allowed dentists to realize greater success in capturing extraoral images of the mouth, thus leading to improved diagnosis and treatment options.

But in 1987, the use of a camera for dental care changed entirely. And it was because of a company named Fuji Optical Systems (FOS).

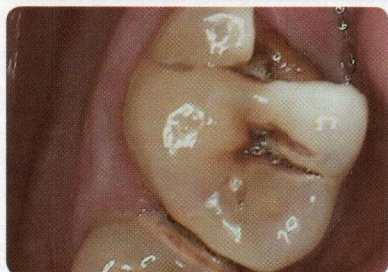
On July 7th of 1987, FOS acquired the first registered trademark of a new technology called an Intraoral Camera (IOC). Later that same year, FOS released their IOC technology as DentaCam™ under Patterson Dental Supplies. The Fuji DentaCam™, which debuted at a cost of \$35,000, gave dentists a tool to tour a patient's teeth and gums using a small, linear device that captured oral images and displayed them on a monitor for the dentist and patient to view.



The intraocular camera instantly displays images on a computer screen for both the patient and dentist to view.

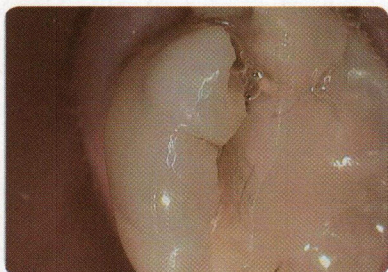


Below: Picture of a cavity in a molar. The patient had no symptoms associated with this tooth. The picture helped her to see the problem.



Above: Picture of a tooth with a large cavity. The distal portion of the enamel has fractured. The patient thought he has a small cavity. The picture helped him understand.

Below: Intraoral picture of a tooth that split in half.



Above: Intraoral picture of a molar with a vertical crack. The tooth was asymptomatic. We were able to detect the crack and treat the tooth to prevent future problems.

Although the initial version of this technology was groundbreaking, more advanced systems have since been developed.

Today, dentists throughout the country, including here in Southwest Virginia, use IOC technology. And it's a lot more sophisticated now than when it was first introduced some 24 years ago. It's also a lot more affordable, which translates into lower costs to the patient. The current, average cost of a high-end IOC system is about \$4000.

One of the local dentist offices that use the latest in IOC technology is Mills & Shannon Dentistry, located on Keagy Road in Salem near the LewisGale Medical Center campus.

"There are many benefits to having IOC technology in a dental practice," explains Michele Mills, DDS, a dentist who has more than ten years experience in the field and who has practiced locally for six years.

"From a diagnostic standpoint, the light from the camera on the IOC transilluminates through teeth to allow us to identify small cracks in a tooth that can go undetected by the naked eye. We can also take a picture of the whole arch of the inside of the mouth, allowing us to study it more closely. Also, we use the IOC to help educate patients about their oral health. They can see in real-time what we are explaining to them."

Before IOC technology, educating patients during their appointment required them to hold a mirror in front of their face while the dentist tried to match up a view with a dental mirror.

"The 'old-school' way of using two mirrors was not only challenging, but also less exact," explains Dr. Mills. "Because of the IOC, patients leave our office more aware of their dental health and/or conditions."

Dr. Mills also says the IOC helps patients out when it come to insurance claims.

"An insurance company requires in-depth information before it will pay a claim," continues Dr. Mills. "With IOC technology, we can take high resolutions pictures inside the mouth before, during and after treatment. We can then email the images to the insurance company immediately."

The advanced IOC system Mills & Shannon uses includes a powerful zoom option that can reproduce high- resolution images both on screen and in print.

"I can definitely say the IOC is a difference maker when it comes to diagnosing and educating patients," concludes Dr. Mills. "And in our dental practice, everything we do is for our patients."

**What does it mean when pictures are taken extraoral and intraoral?**

Extraoral photographs are taken from outside of the mouth. Intraoral photographs are taken inside the mouth.