

The Digital Imaging Experience At Desert Orthopaedic Center

Desert Orthopaedic Center (DOC) is the largest and most established orthopedic group in southern Nevada. Founded in 1970 by John H. Payne M.D. and Chester W. Eskey M.D., the center today has 17 surgeons. Orthopaedic care is provided for a variety of subspecialties, including sports medicine, total joint replacement and revision, arthroscopic reconstruction of the knee and shoulder, hand/wrist surgery, pediatric orthopedics, scoliosis and spinal deformities, and foot and ankle reconstruction.



Desert Orthopaedic Center's Main Office

After opening a larger center, DOC embarked on a detailed assessment of the orthopaedic PACS market in 2004. There was a need to fully understand the current cost vs. benefits of migrating to an electronic imaging environment. The multifacility practice was looking to experience gains well beyond the obvious reasons for purchasing PACS; such as speed of image acquisition and management, reduction in film and processing costs, in addition to future planning of on-site physical space. A key consideration was the ability to provide clinical staff innovative ways to access and view images in order to enhance workflow. As a result, a more effective utilization of the orthopedic surgeon's time has followed while also delivering a higher level of patient care.

Like many clinics, DOC was challenged by various workflow bottlenecks and inefficiencies operating in the typical film-based environment. The healthcare provider required a sophisticated and

predictable transition that was minimally intrusive and a digital solution for orthopaedics. "We did our due diligence, and made our decision to look at both image capture and PACS together, rather than install modalities first, then turn on PACS," said Brien Vokits M.S. C.R.A., PACS administrator. For image capture, he began to evaluate computed radiography (CR) and direct or digital radiography (DR). In addition, "we looked at 22 PACS vendors narrowing the playing field down to three for final selection."

Evaluating the Image Acquisition Options

According to Vokits, key issues surrounding the final product selection were costs, technical capabilities, medical applications and patient care outcomes. Of clinical importance was the ability to apply anatomical reconstruction algorithms for desired radiographic contrast resolutions and image gray scale displays.

Due to the multi sub-specialty case mix at Desert Orthopaedics, it was not practical to assume all patients would be imaged on an X-ray table or at an upright image capture device. Routine orthopaedic radiography can result in off-table work; including standing/weight bearing protocols, children, patients examined in wheelchairs or on gurneys and cross-table imaging. Vokits discovered that DR would yield less flexibility with atypical patients and affect daily workflow. "It became apparent that if we selected DR, we would still need to acquire CR as well."

Image stitching for long length studies was another issue. "With DR, we would need to expose, move the image receptor, expose, maybe move again and expose, then stitch the image," Vokits said. "With CR, our radiographers could obtain the desired profile with one exposure and then stitch the image, minimizing the chance for patient motion on the final image."

While Vokits acknowledges that DR is an attractive option, his thorough evaluation

found that CR enabled high image quality along with the needed flexibility at a lower cost. With CR, DOC could also retrofit its existing X-ray equipment. CR quickly became the favored option.

Image quality and ease of use were key features as Vokits compared four CR vendors. He found two to be very close and of those, Konica-Minolta became the final choice due to its technological innovation and projected – or actual – life of the Xpress CR.

Another reason for selecting Konica-Minolta was its hybrid processing capability. “With this, we could easily see the edge of metal implants adjacent to soft tissue structures,” Vokits said. “Plus, we can use the same cassettes for high resolution or standard resolution processing. There is no need to buy two different CR plate types to image routine areas of interest and then fine structures.”

The PACS Decision Process

When selecting its PACS vendor, DOC understood that the full strategic potential of an orthopedic PACS is only realized with a tight integration to existing and future information systems or modalities. Not all PACS companies are equal in this category. Merely being DICOM compliant is not enough. Sectra, a company that is active in the creation of DICOM, HL-7 and IHE standards, understood DOC’s needs in this area.

When it came to deciding on the proper PACS system, DOC’s main considerations included architecture stability, orthopedic-specific tools and applications, an easy-to-use interface, and image portability – or ease of image access from within and outside of the clinic. Sectra’s dedication to orthopedic PACS was evident in all of these areas.

“Desert Orthopaedic Center chose its PACS solution due to Sectra’s ability to customize workflow and proven outcomes in demanding installations,” said Desert

Orthopaedic Center’s PACS administrator, Brien Vokits MS. CRA.

In addition, Sectra and Konica-Minolta worked closely to create interfaces that well-define image quality. “Their software programs complement each other’s image display with edge enhancement and reconstruction algorithms that build upon each system’s capabilities,” Vokits said.

The End Result

Sectra has deployed the full suite of Sectra’s Orthopedic PACS offerings, including its orthopedic pre-operative planning tools and tight integration with DOC’s practice management system. The first three months post GO-LIVE focused on replacement processes in daily operations. Users then began to ask for more and learned additional functionality. After a year, a complete enterprise wide cultural change has occurred in acceptance of and expectations delivered by electronic imaging services.

“We currently print only four percent hard copy transparencies at our main location as portable true-size images when compared to our former analog film production. Most of these images travel to the operating room and are disposed of after surgery,” Vokits said. Even though the historical film master jackets are retrieved for patient appointments, DOC is realizing the benefits of PACS image-on-demand. Location, movement, relocation, sorting, filing and re-filing of film and master jackets has dropped 21 percent in one year and will continue to drop as the electronic imaging data base grows. Teleradiology exchange is currently underway with other radiology providers and shows great potential. “With teleradiology, MRI and CT images ordered by our practitioners can be proactively imported into PACS and quickly reviewed during clinic with consistency using familiar software tools,” said Vokits.

The practice of radiography has evolved. Technologists now apply magnification correction radiographic techniques to

calibrate electronic images for surgery planning. Computed radiography has proven superior to analog imaging. A baseline osteoporosis evaluation can now be quickly obtained with radiogrammetry. Three-dimensional evaluation of complicated fractures is now possible with imported CT images. Multiplanar reformatting of MRI and CT scans allows for realignment of imaging planes with desired anatomic structures.

Service support is of the utmost importance to any orthopedic clinic, as digital imaging becomes one of the major operating components of daily medical practice. Sectra's PACS-Guard™ remote system monitoring, coupled with its dedicated help desk and service team are in place to ensure the proper level of support is delivered.

“Applications and customer support is on target, available when and if needed to resolve any issues that may occur,” Vokits said. He noted that full implementation of the Sectra system has been a smooth process. Vokits believes the extensive preparatory work prior to going live by DOC, Sectra and Konica-Minolta are the reason for the accepted migration to and implementation of the digital infrastructure.

“Konica-Minolta's Xpress CR coupled with Sectra's Orthopedic PACS beat our expectations,” Vokits said. The center took advantage of the Xpress's flexible configuration to maximize throughput. “With the Xpress CR, there are a number of applications that can be performed in the radiographic room before sending the image to PACS. This is how we increased our clinical output and patient throughput. The surgeons can then leverage the extensive image analysis and orthopedic tools in Sectra PACS to optimize their diagnostic process” Vokits explained.

Since going live with the Konica-Minolta Xpress CR and Sectra PACS systems, DOC has experienced the positive outcomes they sought during the evaluation process, as well as some additional benefits, such as enhanced

patient education, image access on demand and increased pre-operative planning capabilities.

Recently, Desert Orthopaedic Center was chosen by Health Imaging & IT magazine as one of the most connected healthcare facilities.



About Sectra's orthopedic products:

Sectra offers a complete Orthopedic PACS system and application tool set for the orthopedic clinic and surgeon, containing a wide range of advanced pre-operative planning and digital templating capabilities.

Sectra North America, Inc. 2
Enterprise Drive Shelton, CT 06484
203-925-0899 Ortho@sectra.com
www.sectra.com/ortho

About Konica Minolta's Computed Radiography products:

Konica Minolta offers a full complement of easily integrated computed radiography solutions optimized for use in orthopedic clinics, imaging centers and radiology departments.

Konica Minolta Medical Imaging USA, Inc.
411 Newark Pompton Turnpike Wayne, NJ,
07470 800-934-1034
medical.konicaminolta.us