

Web-Based PACS and Surgical Planning Tool Allows Filmless Operations at Busy University Orthopedic Practice

A bustling university orthopedic practice improves service and maintains its academic mission with Dynamic Imaging's OrthoTools™ powered by Orthocrat's TraumaCad™.



Stony Brook University Hospital

Stony Brook

Celebrating its 25th anniversary in 2005, Stony Brook University Hospital has experienced phenomenal growth since its inception and is now poised as one of the nation's premier academic medical centers.

Stony Brook's orthopedic practice includes approximately 15 surgeons, who perform more than 230,000 exams per year. Many of Stony Brook's patients are in need of orthopedic surgery and rely on their surgeons to quickly and accurately plan their surgery. Anthony Indelicato, the informatics manager in the department of radiology and cardiology for Stony Brook, is responsible for the implementation of new technology that helps the department maintain its first-class status.

OrthoTools

OrthoTools was born in 2004 from the combined efforts of Dynamic Imaging and Orthocrat (www.ortho-cad.com). Dynamic Imaging has been an industry leader in image and information management for more than 14 years and has more than 300 sites throughout the United States. Stony Brook has used Dynamic Imaging's IntegradWeb PACS for more than three years, allowing its physicians to conveniently access patient images on any computer with an Internet connection.

In 2003, a team of experienced surgeons established Orthocrat with the goal of developing computer-assisted surgical techniques. Orthocrat's TraumaCad allows orthopedic surgeons to use digital images, tools, and templates in planning a full range of orthopedic surgeries. TraumaCad eliminates the need for hardcopy films and overlays.

In 2004, Orthocrat and Dynamic Imaging combined the PACS technology of IntegradWeb with the digital preoperative planning tools of TraumaCad to create OrthoTools—the most advanced orthopedic PACS solution on the market.

Stony Brook was the first facility to install OrthoTools. "Our relationship with Stony Brook was already strong due to its satisfaction with IntegradWeb," said Brad Levin, the vice president of marketing at Dynamic Imaging. "Stony Brook wanted a digital orthopedic preoperative planning solution that would merge seamlessly with their enterprise PACS. We selected Orthocrat to serve as our partner in delivering this solution because of the innovation and capability of TraumaCad, which, when combined with IntegradWeb, provides the most advanced and accessible PACS-orthopedic solution available."



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Anthony Indelicato

Informatics Manager, Department of Radiology, Stony Brook University

Challenge

Stony Brook prides itself on being at the forefront of medical technology. For three years prior to implementing OrthoTools, the facility was using Dynamic Imaging's IntegradWeb as its PACS. However, the orthopedic department still planned surgeries with outdated and inefficient hardcopy film and needed a system that would allow it to go digital.

Because of Stony Brook's lack of a digital system to plan surgeries, orthopedists still used hardcopy film and overlays of prosthetics and lined them up against an image of the patient's body. Using a grease pencil, the orthopedic surgeon would then make adjustments. This method of inexact science forced physicians to bring multiple prosthetics into surgery in case the original did not fit, and had the potential to drive up costs and lead to a longer and more invasive procedure for the patient.

"We wouldn't necessarily know if the prosthetics and et cetera would fit until we were in surgery," said Indelicato of using film during preoperative planning.

This system also meant wasted time for Stony Brook's radiologists, who frequently had to print multiple sheets of film for difficult cases, and potentially long waits for surgeons. Additionally, Stony Brook's orthopedic surgeons spent too much of their vital preoperative time scheduling the delivery of needed films to the surgery suite.

This outdated method was not consistent with the mission of Stony Brook's Major Modernization Project. The project, which is currently underway, was designed to "provide the community with expanded and improved services as well as new facilities for orthopedics, cancer, heart, and neonatal intensive care."

Indelicato realized that by still using film for orthopedic surgery planning, Stony Brook's residents did not receive training with the most state-of-the-art equipment.

"As a university-based hospital, we have an academic mission to uphold," said Indelicato. "We needed a system that provided our residents with the most advanced technology available-one that would seamlessly integrate with our IntegradWeb PACS."

To meet that challenge, Indelicato turned to Dynamic Imaging and Orthocrat to integrate Stony Brook's IntegradWeb PACS with a state-of-the-art, completely filmless preoperative software system that was also Web-based.

Solution

To meet Stony Brook's needs, Dynamic Imaging and Orthocrat worked together to develop OrthoTools-a completely digital orthopedic planning solution with full IntegradWeb PACS capabilities, including the ability to see full-resolution images from any computer with an Internet connection. Since OrthoTool's implementation, Stony Brook has gone completely filmless.

"Dynamic Imaging and Orthocrat customized a system that utilized IntegradWeb, which our staff was already familiar with, and combined it with a system that allowed us to go completely digital," said Indelicato. "The implementation was seamless."

With OrthoTools, Stony Brook's radiology department no longer has to print multiple films and orthopedists no longer have to spend time scheduling the delivery of film or tracking down film prior to surgery. Now all preoperative plans and patient files can be archived and viewed digitally anywhere the physician has a computer with an Internet connection-including the operating room or remotely from home.

OrthoTools is also used for scoliosis screening. Its tools measure various angles of the spine and compare these images to children of the same age in a database to determine whether a child has scoliosis and how serious the scoliosis is. OrthoTools allows surgeons to use these image comparisons to determine how to treat the condition, including whether prosthetic tools should be worn or if surgery is needed.

Referring physicians also benefit from Stony Brook's installation of OrthoTools. After planning, surgeons can take screenshots and save them to the PACS as key images, which can be incorporated with a collage of images from the original case and then be sent to the ordering physician. All information about prosthetics is enclosed in imbedded reports in the key images. Referring physicians can pull up the images and see the orthopedic surgeon's plan in order to talk their patients through the planned surgery.

"We worked with Dynamic Imaging to make a product that would become a part of the orthopedic workflow and not just a side tool," explained Zeev Glozman, chief executive officer and founder of Orthocrat. "OrthoTools gives physicians the clinical ability to perform preoperative planning conveniently from anywhere with an Internet-accessible PC."

Indelicato said, "OrthoTools has given our orthopedic surgeons the ability to work differently. They can now do their job more efficiently, and more effectively. They can now perform preoperative planning from anywhere because of OrthoTools' Web capabilities. It's much more convenient, but also more accurate than the old way. OrthoTools gives our residents a tool that allows them to learn how to provide the best patient care possible."

Results

By implementing OrthoTools and going completely digital, Stony Brook has saved time, money and the energy of its staff. OrthoTools has allowed Stony Brook to meet the goals of the Major Modernization Project and to continue to be an elite academic institution for its residents.

Residents now learn preoperative planning techniques exclusively digitally, foregoing the outdated film and grease pencils used in the past.

"Our orthopedists have come to feel OrthoTools is necessary," Indelicato said. "They depend on it. Everyone at Stony Brook is using this system."

In addition, OrthoTools is a system that Stony Brook can grow and adapt with.

"OrthoTools is a solution that will continue to grow with Stony Brook," said Levin. "Working with Orthocrat, we are also helping them design future versions of the templating system to ensure that they remain at the forefront of technology."