Sectra Orthopaedic Solutions

Well prepared before surgery

The Orthopaedic section at the University Hospital of Rostock is a well-known institute for orthopaedic research and education in Germany. Prof. Dr. med. Wolfram Mittelmeier, the director, is one of the initiators of the Endocert certification process in Germany.

Since February 2014, the orthopadic team, has been using Sectra's solution to plan and prepare before surgery. Accoring to Dr. Skripitz one of the benefits of preoperative planning is that the junior surgeons learn a lot and they become involved in the patient. If a surgeon has not planned in advance, they might become insecure during surgery, but if they have a confirmed plan to follow they feel much more confident.

"We have always planned all prosthesis surgeries, but before we started using Sectra's solution we did it on paper which was quite time consuming, says Dr Skripitz

"By using a digital planning system, we can save the plan in our PACS system and there is no risk of losing any docu-mentation. This will improve and ease our administration and make it possible to maintain a high quality of service for our patients. I also estimate that we will save a lot of time by compiling the plan digitally. Before going digital, we first had to find everything needed for the plan, such as the image and the drawings of the prosthesis and then we spent quite some time on making the plan as well. Now it is much easier to compare different implants to find which model fits the patient best and which size to use, Dr Skripitz concludes."

Preoperative planning in 2D and 3D

Sectra's orthopaedic solutions enable orthopaedic surgeons to employ digital technology to reduce cost, increase efficiency and improve patient outcomes.

Sectra offers a complete set of highly efficient preoperative planning tools both for 2D and 3D images. The latter are especially valuable for planning complex trauma cases. Sectra's solution enables orthopaedic surgeons to increase precision in planning and advance preparation for various scenarios, thereby avoiding stress, saving time and minimizing risk during surgery. The solution also creates a well-documented workflow to meet regulatory demands.

Sectra's preoperative planning solution is provided as a PACS-independent online service or as a completely integrated add-on to Sectra PACS. For full flexibility, the user can access the system from any computer in the hospital network and even from home.

Plan complex trauma cases

Sectra's solution for planning on 3D images improves planning of such complex cases as multiple fragment traumas. It enables the trauma team to correctly diagnose and plan for surgery, to save valuable time during operation and improve the quality of diagnosis and the treatment plan. In addition, planning on 3D images facilitates communication in the surgical team, further improving operating efficiency.

Advantages of 3D planning

With Sectra's solution, it is easy to visualize trauma structure and diagnose a fracture without first opening the patient. With the advanced bone segmentation tools, the surgeon can study a joint surface or hidden objects, such as the acetabulum in a pelvic fracture, and decide on a treatment plan. This minimizes the risk of surprises and stress during surgery and consequently shortens the time spent in the operating room.

Increase precision in choosing trauma products

As with Sectra's solution for planning using 2D images, orthopaedists can easily choose from a wide variety of digital templates from different manufacturers to download and integrate into the preoperative planning tools. When planning using 3D images from CT, the images are displayed in true size which further increases the precision in choosing the correct trauma products.

Sectra's 3D solution includes tools for bone segmentation and the explode function to get an overview of the fracture as well as functions such as bone alignment.

» BONE SEGMENTATION
With the bone segmentation tool, the user can mark fragments and choose whether they stay visual, are hidden or marked for repositioning. Each fragment becomes color-coded for easy visualization. After marking a fragment, the system automatically creates a new color. Fracture segmentation can be done in infinite iterations.

» EXPLODE
To gain a quick overview of the fractured area, the system can give a cutaway view by moving all of the marked fragments away from the center of the fracture. For example, this helps to visualize that no fragments have been left behind or no other structures will interfere with implants.

» BONE ALIGNMENT
When bone segmentation is done, the fragments marked for moving can be repositioned, either manually by drag and drop with the mouse, or fingers when using touchscreen, or by using the bone alignment function, where landmarks are placed on the fragments and the system repositions them back into place.

» TEMPLATING
Enables placement of a 3D template of the prosthesis, plate, screw or nail on the image to decide size and placement. This ensures that you have the most suitable implants available during surgery.
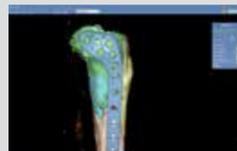
Intuitive planning for hip, knee and shoulder surgery

Sectra's preoperative planning system for 2D images provides surgeons with easy-to-use guides and planning tools for all body parts. The toolbox contains a wide range of measurements and functions, including automatic and manual calibration, dedicated tools for leg-length and offset measurement and guides for all major joints.

A complete 2D planning system

The 2D preoperative planning system includes guides that simulate actual surgical procedures and shorten the planning process. Images can be automatically calibrated using our calibration unit for all major joints. Furthermore, with Sectra's solution, it is possible to select a prosthesis with a perfect fit for the patient from our extensive template library of more than 75,000 template views. The template library is constantly updated with the latest released version of templates from selected vendors.

Flexible workflow

In the Sectra solution, every surgeon can work according to their own preferred workflow, with such parameters as distance and angle measurements used throughout the planning process. The solution supports both manual planning and the use of automatic guides for all major joints, speeding up the workflow. Sectra's solutions are extremely intuitive and ensure that you are quickly up and running.

Sectra provides a wide range of preoperative planning tools for different body parts as well as functions for repositioning, revision surgery and calibration of images.

» **HIP**
The guides for planning a hip arthroplasty use advanced image analysis to suggest and place a template into the plan with a few clicks. You can choose to correct for leg length discrepancy or not and add tools to estimate offset, CCD angle and the distance from trochanter minor to the tip of the neck.

» **FRACTURE**
Fracture fragments can be removed before starting templating, thus providing the user the opportunity to simulate, measure and template on ideal post-operative anatomy before entering the operating theater. Templates can be connected and manipulated as a single compound template. This simplifies planning for trauma surgery since complex arrangements of implants can easily be visualized.

» **REVISION**
When planning for revision surgery, the different modular parts can be connected with each other to visualize a final plan. The guides for hip and knee can be used to plan and place the main parts, first to speed up the planning process. It is then simple to connect the extension parts. For complex cases, you can easily create more than one plan as backup if the first strategy fails.

» **SPINE**
The spine module provides access to fast and intuitive tools for measuring vertebral slip, multiple Cobb an¬gles and spine labelling.

» **SHOULDER**
For a primary shoulder case, the guide will place the stem and head of the prosthesis based on three anatomical landmarks. To optimize the placement, it is possible to change neck/head snap points and rotations of heads when the guide is finished.

» **KNEE**
The knee guides for short and long AP images use an automatic zoom function to speed up the planning of primary prosthesis. You can easily simulate the alignment corrections and display the mechanical and anatomical axes. When using the guide for LAT view, the automatic synchronization between the AP images can be used to ensure that the prosthesis fits the patient.

» **OSTEOTOMY**
The osteotomy guide saves valuable time when planning a closed or open high tibial osteotomy procedure, for example. The Osteotomy guide is used to assist you in marking resections, simulating corrections and establishing wedge angles and heights. The guide can be used when planning osteotomies on other parts of the body as well.

» **SECTRA CALIBRATION UNIT**
Sectra Calibration Unit is developed for practical everyday use. The calibration markers for the hip, knee or shoulder should be positioned at the same level above the image plate as the anatomical part of the patient where the surgical procedure is to be performed. The Sectra Calibration Unit consists of a stand holder with a calibration marker and a strap holder with a marker.

Orthopaedic solutions outside the digital preoperative planning

Sectra also offers solutions for the orthopaedic department for areas other than digital preoperative planning. Sectra Table supports orthopaedist residents in their training and Sectra OneScreen provides an online solution for efficient detection of osteoporosis following low-energy fractures.

Improved medical education

With the Sectra Table, a large, multi-touch medical display, orthopaedic training can be enhanced using interactive natural-size 3D views of real patients, rendered from CT or MR images. Users can localize vessels, muscles and skeletal tissue and study their three-dimensional relation by virtually slicing, segmenting or peeling off layers of tissue. The touch interface allows the users to interact with the virtual body using hands, as in the real surgical setting, which supports his or her tactile memory. Going through a case in real-size together with the supervisor is a valuable practical component of lectures or courses. A unique function of the visualization table is that each university can download and create its own teaching files from its own clinical practices, as well as using the preloaded collection of demonstration cases that comes with the table.

Follow-up low-energy fractures with efficient osteoporosis detection

Osteoporosis is one of the most disabling diseases in the world. It primarily affects women, particularly after menopause, when every third woman is at risk of having a fragility fracture, typically of the wrist, hip or spine. Women seldom realize they are suffering from osteoporosis until they have their first fracture and even then, many leave healthcare without analyzing if they have osteoporosis. Using Sectra OneScreen, it is possible to measure bone health (Bone Mineral Density, BMD) with a single, standard X-ray image of the hand, acquired on any digital modality. The test takes about 30 seconds to perform and is an effective way to calculate the risk for future fractures, thereby identifying people in need for further examinations, using for example DEXA, or medication. Patients with a wrist fracture or other low energy fractures can have their BMD measured from the X-ray image of the fracture, for example, if the metacarpals are included in the image. Thanks to the high reproducibility, it is also convenient to use Sectra OneScreen for monitoring BMD changes in the hand, even over short periods. This can be of interest for patients having treatment that effects bone remodeling.

THE KNOWLEDGE TO MEET EXPECTATIONS.
THE PASSION TO EXCEED THEM.

Each and every one of us working at Sectra is driven to make a real difference in everything we do. It is that difference that you, and in turn, your patients, perceive as added value over and above the solutions we deliver.

Since our first deployment of an image management solution in the early 1990s, our focus has been solely on imaging IT products and innovation. Through experienced cooperative teamwork, we provide a better working environment for you, which ultimately results in enhanced, more effective care for your patients. Perhaps that is one of the reasons why our solutions are used so successfully by more than 1,700 healthcare providers worldwide.

KEY REASONS FOR PARTNERING WITH SECTRA

- More than 20 years' experience as a leading innovator in medical imaging IT.
- Sectra PACS ranked "Best in KLAS" for two consecutive years - 2013 and 2014.
- High delivery reliability and a vast experience in migration and integration.
- Experience with a wide range of complex, large-scale solution deployments.
- Customer-driven development ensures efficient solutions that make a difference in our users' daily work.
- Close collaboration with research centers and universities to apply leading-edge technology.
- Strong, stable, public company founded in Sweden in 1978 with positive financial performance.

Sectra AB • info.medical@sectra.com • sectra.com/medical

SECTRA

Knowledge and passion