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Hybrid OR Spinal surgery

Customer testimonial

Universitätsklinikum Schleswig-Holstein, Kiel, Germany

Making the difference with **Philips Live Image Guidance**

Perform spine surgery with confidence and precision

“As the system is attached to the ceiling, it can be operated with great accuracy by one person.”

Prof. Dr. A. Seekamp MD,
Director Director of the Orthopedic and
Emergency Surgery clinic, UKSH



When the orthopedic team at the University Medical Center Schleswig-Holstein (UKSH) began performing minimally invasive spinal procedures in the hospital's new Philips Hybrid OR they were not sure what to expect. They thought procedures might take longer and that their way of working might change, but just the opposite has happened. Three years on, Prof. Dr. Andreas Seekamp MD, Director of the Orthopedic and Emergency Surgery clinic, says the Hybrid OR gives them a huge advantage for spinal procedures on all fronts. The high quality 2D and 3D visualizations of complex spinal structures enhance confidence and decision making. Procedures are shorter, positioning is easier, post-operative CT scans have been eliminated and the ceiling-mounted X-ray system allows free access to patients.

The University Medical Center Schleswig-Holstein

The University Medical Center Schleswig-Holstein is one of Europe's largest centers for medical care with locations in Kiel and Lübeck. This is one of the few places in Germany where top international physicians, scientists and researchers come together to treat patients, research and teach. The center covers the entire spectrum of modern healthcare. Care is largely organized in comprehensive multi-disciplinary off-campus medical competence centers. Every year about 11,000 staff members take care of 360,000 inpatients and outpatients in 80 clinics and institutes.

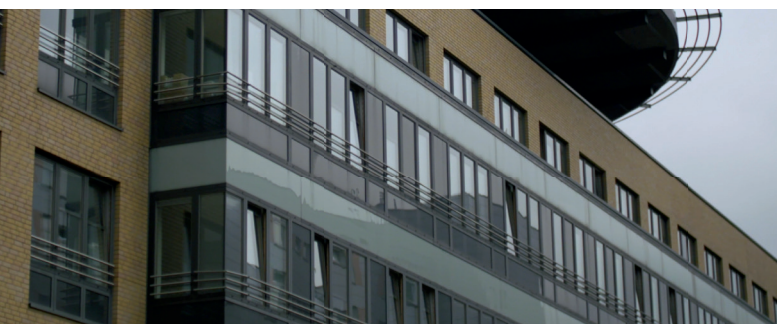
The Hybrid OR

In 2013 the UKSH upgraded an existing operating room to a Hybrid Operating Room (Hybrid OR), a specialized operating room with a movable high-end imaging system, Philips Allura FD20 X-ray imaging system. The Allura offers exceptional quality 2D and 3D imaging at ultra low dose levels, and can be moved around freely on the ceiling-mounted FlexMove Hybrid OR system to support open and minimally invasive surgery in a single room.

Minimally invasive treatment offers advantages for both patients and medical professionals and is rapidly being adopted by physicians across many areas of healthcare. When it first opened, the Hybrid OR at the UKSH was mainly used for complex catheter based procedures such as Transcatheter Aortic Valve Implantation (TAVI) and endovascular Aneurysm repair (EVAR). The multipurpose design of the Hybrid OR can also be used for cardio and neurovascular surgery without additional hardware. This opened up possibilities to identify and treat complications more rapidly in other clinical areas, such as vascular, neurovascular, orthopedic surgery, neuro surgery and trauma surgery.

Spinal surgery in the Hybrid OR

Before the Hybrid OR, spinal surgical procedures at the UKSH were performed using a mobile C-arm imaging system, which produced 2d images with a smaller field of view and had no motorized movement that could be controlled remotely. Since 2013, UKSH has been performing minimally invasive spinal surgery in the Hybrid OR with excellent results. The orthopedic team treats some 3,000 inpatient cases each year and performs around 4,000





“Almost half of our interventions for simple spinal fractures **have now gone to minimally invasive procedures.**”

Prof. Dr. A. Seekamp MD

operations. Spinal interventions are a key part of this; the team performs around 200 spinal procedures annually. Prof. Dr. Seekamp says, “In recent years, there’s been a transition to minimally invasive procedures when surgically treating fractures and instabilities of the spinal column. Almost half of our interventions for simple spinal fractures, for example, have now gone to minimally invasive procedures.” Other orthopedic procedures are performed minimally invasively as well.

High quality 2D and 3D visualizations

When the orthopedic team is performing a minimally invasive procedure, it is strongly dependent on imaging and image quality for guidance according to Prof. Dr. Seekamp. “The Hybrid OR provides a great solution to this requirement. Taking this approach was entirely new for us but we soon discovered we wouldn’t need to alter our way of working at all, which made adoption smooth and easy. I had expected operations to take a little longer than before, but they are, in fact, shorter.”

The Allura has a large-area Flat Detector that provides exceptional 2D and 3D visualizations of complex spinal structures – providing far higher image quality than an image intensifier system – to enhance confidence, decision making and precision during spinal surgery.

Shorter procedures without CT

Sending patients for a post-operative CT scan used to be standard procedure for spinal surgery says Prof. Dr. Seekamp. “Until now, we always had to rely on getting the patient into computed tomography as quick as possible after an operation like that in order

to check the implant position.” In the worst-case scenario that meant moving the patient out of the OR, waking them up and scanning them in the CT. If an error in the screw position was discovered, the entire process had to be started again. That has changed with the intra-operative cone beam CT (XperCT) imaging provided by the Allura system.

“Post-operative CT scans to check implant placements are no longer necessary; it is possible to verify whether a procedure has been successful immediately after treatment. As soon as surgery has been performed, we can be 100% sure that implants are in place, thanks to the high quality of the intra-operative cone beam CT (XperCT) image and positioning flexibility of the system. The Hybrid OR’s integrated arm makes scanning all around the patient easy, allowing us to check positioning on a 3D image before finalizing the procedure.”

Saving time and improving precision

“What’s also special about the X-ray unit in the hybrid OR is the fact that we have orthograde parallel imaging showing up multiple disc levels, including disc spaces. They are imaged orthograde, meaning in both the lateral and the AP position, so we really only need one setting and can treat practically the entire surgical area. That’s a huge advantage compared to the conventional image intensifier system, which has to be set up for each individual lateral and AP projection.”

“Being able to store and recall positions is an important advantage. Once a patient has been positioned, we can precisely mark pedicle screw entry points and especially the level of injury and store these positions.



Prof. Dr. A. Seekamp MD

Customer
testimonial
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Spinal surgery
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UKSH
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You press a button and immediately see both the AP and lateral adjustment which saves a huge amount of time.”

Full control and flexibility

The Allura X-ray system features motorized automated positioning and users can easily control this table side. In addition, the surgeon can position the imaging system himself, which is faster than having to rely on an assistant for positioning.

The ceiling-mounted system can be positioned anywhere around the operating table, allowing free access to patients. Rails keep running parts out of the operating field, without interfering with the laminar airflow. These rails run almost the complete width of the room, and two-thirds of the length, allowing the system to be parked well away from the operating table when not in use. This eliminates a problem encountered with certain (floor-mounted) systems, in where the parking position at the head of the table interferes with the anesthesiologist and the anesthesia equipment.

“Our new integrated Hybrid OR solution is an extremely movable device with the high quality of an angiography workplace. We use an adjustable table, a very large workspace, and a movable X-ray unit, which is much more modular and movable than a normal angiography workplace.”

“The surgeon faces a large screen, and there’s a second screen for assistants. The scan’s large image section and short reconstruction time means extremely detailed images are immediately available. The higher image quality and larger screen make our work easier.”

A healthy prognosis

Procedures have become significantly faster. Furthermore, working without any post-operative X-rays introduces a significant cost saving without compromising on quality of treatment. Besides improved image quality and enhanced freedom to work unhindered, the solution offers excellent economic value – vital in today’s global healthcare environment.”

“The Hybrid OR’s great flexibility makes it very easy for us to implement modern technology in emergency and neurosurgery. Any familiarization required pertains only to the device itself. Integration has been remarkably easy and there’s no need for extra staff. We can now realize all operative procedures and offer minimally invasive interventions in one location. For the patient, the Hybrid OR generally means shorter hospital stays. And spinal surgery operating staff are very satisfied.”

This Hybrid OR is opening a lot of new pathways for the UKSH as it looks towards the future. “Endovascular is one focal area for us. Others are joint surgery, arthroscopic interventions and also spinal surgery – that is an area we’re planning to pursue more intensively in the future together with the neuro-surgical clinic here on the campus.”



Fast facts

Who/where

Prof. Dr. Andreas Seekamp MD, Director of the Orthopedic and Emergency Surgery clinic, University Medical Center Schleswig-Holstein (Klinik für Orthopädie und Unfallchirurgie, UKSH), Kiel Campus, Germany.

Challenge

Performing minimally invasive spinal surgery in a surgical environment that meets the high image quality and workflow requirements of spinal procedures.

Solution

A Hybrid OR equipped with Philips Allura FD20 X-ray system mounted on the ceiling with the FlexMove ORT system for excellent image quality and positioning flexibility, and an integrated Maquet Magnus OR table that is compatible with spinal accessories.

Results

Almost half of procedures for simple spinal fractures that were previously performed with open surgery are now being carried out minimally invasively in the UKSH Hybrid OR with excellent results. That is due to high quality 2D and 3D imaging, easy positioning and patient access. Procedures are shorter and post-operative CT scans have been eliminated.

