



Versatile Labs for General Hospitals

The quiet town of Neuwied with about 70,000 inhabitants lies on the banks of the mighty Rhine and is home to the Marienhaus Klinikum St Elisabeth. In the last eight months, Dr. Burkhard Hügl and his staff set up a spanking new cath lab equipped with an Artis **zee** Magnetic Navigation system for reconstructive heart procedures. Dr. Hügl's vision is to bring state-of-the-art technology to heart patients in the greater region.

By Rosemary E. Overstreet

St Elisabeth's is the largest of a group of 27 hospitals owned by the Franciscan Sisters of Waldbreitbach, a small community just north of Neuwied. The facility has approximately 600 beds and is the university teaching hospital of the Johannes Gutenberg University in Mainz, just up the river about 40 minutes south of Neuwied.

Dr. Burkhard Hügl joined the hospital for the purpose of establishing an invasive cardiology unit and he brought with him years of experience working with Siemens technology. Aware that electrophysiology is a developing field in cardiology in the region, he saw the potential that the market in Neuwied and the surrounding communities offered in terms of serving patients and utilizing the latest technology.

"Magnetic navigation was the right fit for what we were planning to do here: primarily for the general procedures associated with running something as complex as a cath lab, it was clear we needed high-quality X-rays and a good interface with all of the components working well together," Dr. Hügl explained, providing insight into the decision to combine the Artis zee Magnetic Navigation with the AXIOM Sensis XP recording system, the *syngo* X

workplace and the magnetic navigation system from Stereotaxis.

Besides using the lab for complex EP cases, the plan was to also use the Artis zee MN for coronary interventions. Swiveling the magnets into the park position turns the lab into a conventional lab with just the press of a button. The same applies to the AXIOM Sensis XP, which turns easily from an electrophysiological into a hemodynamic recording system offering complete functionality needed for PCI.

In addition, the doctor wanted good service in terms of maintenance and spare parts.

"The lab needs to function all day, every day and we have a really reliable Siemens representative just a few miles away in Koblenz. So this was another important factor in our decision to go with the equipment."

Efficient workflows are realized through the integration of the systems. Patient registration is done using the AXIOM Sensis XP which is linked in to the hospital's information network. The demographic data is then transferred to both the Artis zee imaging and Carto XP mapping system.

General workflow depends on which arrhythmia he and his staff are expect-

ing to treat. He explained that for pulmonary vein isolation, they currently use a CT image for preparation and merge it with the Carto map. In some recent cases, they have also used the *syngo* DynaCT Cardiac application in order to visualize the left atrium in 3D. "Having both options allows you to better familiarize yourself with the complex anatomy of the patient and differs from patient to patient for complicated left-side procedures," notes Hügl adding, "If a patient comes to us with a documented arrhythmia or with a history of an uncommon arrhythmia, we put our three catheters inside and can have a better idea of the landscape or we can insert our Stereotaxis catheter and go for ablation." He appreciates the option of using the Carto system along with *syngo* DynaCT Cardiac for the complicated left-side procedures, but also taking the advantage of remote magnetic steering using the Stereotaxis Niobe system.

Focusing on the essential aspects

At first glance, St. Elisabeth's appears no different than any other hospital: nurses and orderlies move patients and gurneys from one room or floor to the next, wait-



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Burkhard Hügl, M.D., Department of Cardiology / Rhythmology,
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ing rooms full of patients listen for their names and doctors check charts and compare notes with colleagues – there is a typical buzz of activity and sights universal to all hospitals. If you turn the corner and pass through the cath lab doors where Dr. Hügl’s team is working on a patient with atrial fibrillation, the sight is somewhat startling. Instead of an exam room with doctors and nurses huddled over the patient, the head physician is quietly sitting in front of a group of six monitors with another doctor a few seats away – a large glass window panel separates the two men from a solitary nurse and the patient is in a deep sleep – there is no need for intubation. The nurse remains with the patient in the examination room throughout the entire procedure, routinely monitoring blood pressure and O₂ saturation and real-time vital statistics personally to Dr. Hügl. Otherwise, they communicate via a loud speaker. Dr. Hügl likes to point out that though it is not the new lab’s prime advantage, it is an added bonus that the room is no longer so noisy and is generally very serene during the entire procedure, both in the examination room and outside where the doctors are busy in front of the various monitors performing maneuvers at the touch of a mouse click. You do not need ten years of medical school to see the obvious benefits the system brings to these professionals. There is no longer any need to worry about maneuvering the catheter and having to visualize its location. “You can focus more on the essential aspects. You know that the catheter is



stable and in place and thus it allows you to concentrate on the electrogram and what it is showing you."

The doctors are now more relaxed and sit for most of the procedure's duration and there is no need to wear the heavy protective radiation aprons and masks. Perhaps the biggest advantage to doctors is that the level of radiation they were previously exposed to is greatly diminished since they now enter the exam room only at the beginning of a procedure to put the catheters in place, place the magnets and again at the very end remove the catheters and park the magnets. "You used to be so exhausted and anxious when performing complex left-side procedures, which typically require a great deal of physical exertion. The conventional method left you physically drained for the rest of the day, but that is a thing of the past and I don't think anyone in our team misses it," he says. Dr. Hügl says that even during ablation it is easier to hold the catheter exactly in place and no perforation of the wall occurs because the catheter is very light and never exerts excessive pressure on the wall. "You have the necessary contact, but you are now telling or guiding the catheter where it should go instead of pushing it and risking perforation."

He has heard the criticism that magnetic navigation is too complex for easy routine procedures and thus requires more time to perform them; he argues that this is simply not true and insists that the time needed is about the same as using conventional techniques. He

believes the bias is due to the fact that it takes some time to make the switch from the physical process to the remote one and to become familiar with the buttons.

"If you plan on using the technology only for complex procedures, then perhaps the technology is not for you. It needs to be used on a regular basis and not just once a month. Over 90 percent of our EP cases are now handled by the system and in the first three months of 2009 we performed more than 80 ablations," says Dr. Hügl. They have put it to use on patients with right side flutter, AV nodal reentrant tachycardia, for left side accessory pathways and of course for pulmonary vein isolation.

He notes that the decision to buy the equipment requires a true team mentality and he believes this to be especially true when considering young professionals at the start of their EP careers, whom he thinks can be more easily trained on the Artis zee Magnetic Navigation system.

Is the head of the cath lab satisfied with the technology? In many ways, yes, since he and his team are now realizing in just over eight months of use that the equipment is far more flexible than they originally thought.

However, Dr. Hügl would like to see more automation such as automapping. He says it is there but it has a way to go. Still, Dr. Hügl and his staff never figured the system would turn out to be the one it is.

"The Stereotaxis system is far more versatile than what we once thought. It's

like a platform that you can build upon. If you are a hospital like us and you want your cath lab to be used for something besides EP – to do other cath lab implants or PCI for instance. Currently, magnetic navigation is routine for EP but for PCI and implant, it's still developing. However, I think it's very realistic that it'll be able to accomplish these things as easily as the routine procedures in two or three years."

His advice to colleagues pondering whether they should invest in the system is that they need to think of it as a decision for the next ten years; it is a good platform to begin building.

Easier and less time consuming

"We would like to use magnetic navigation not only for EP, but also for coronary angioplasty, for PCI and for implanting special leads in the coronary sinus. The combination of rotational angiography and magnetic navigation will eventually make procedures such as coronary sinus (CS) or biventricular pacing easier and less time-consuming and it is most definitely the future. We believe that in a few short years the range of procedures will be even greater than it is now," says Dr. Hügl.

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