



Enhancing performance through better imaging

Veradius Neo provides support for vascular surgery at a low X-ray dose

Who/where

Hanau Clinic, Hanau, Germany
A tertiary level clinic with 740 beds
Dr. Simon Classen, Head of the Department for Vascular and Endovascular Surgery
Thorsten Wies, General Manager

Challenge

To guide efficient vascular surgery treatments with high image quality at low radiation doses for both the patients and clinicians.

Solution

Philips Veradius Neo mobile C-arm, providing excellent image quality, ease of use, and dose management for challenging, minimally invasive procedures.

The Hanau Clinic is a tertiary referral center for a district with around 400,000 inhabitants, east of Frankfurt, Germany. The clinic includes one of Germany's top 10 neurological centers, and treats stroke cases from beyond the region. The hospital is also noted for its dedicated Department for Vascular and Endovascular Surgery. This department is held in high regard, and also often gets referrals from around the country. As a result, the 4 vascular surgeons and 6 residents perform close to 2,000 interventions a year, ranging from neurovascular to the diabetic foot, from varicose veins to aortic aneurysms. In facing such a range of often complex cases, the department has one guiding principle: to do the right thing for the long-term benefit of the patient.

Challenges facing the vascular surgeons

The department strives to uphold consistently progressive levels of clinical performance, although it is faced with challenging demographic trends. These include obesity and the growing number of patients with diabetes, metabolic syndromes, and associated issues, like kidney problems.

Dr. Simon Classen, Head of the Department for Vascular and Endovascular Surgery highlights meaningful developments in radiography in the operating room – to provide better, more informative imaging – as one way of helping the team to cope with these trends.

The resurgence of CO₂ as a contrast agent is one important example of how imaging can help, particularly in cases where

using iodine as a contrast agent poses an unacceptable extra physical burden on the patient. For instance, the team is now using CO₂ angiography as part of procedures for creating arteriovenous fistulas in the lower arm, to prepare access for hemodialysis. Because they can use CO₂ to guide this, the surgeons can also create a “map” of the original vascular system before they begin. This would not have been an option when they were trying to create the shunt using minimal amounts of iodine. Such maps are something they will be able to refer to later, even after scarring, which is an unavoidable side effect of dialysis, may have obscured important details. “If we can use a contrast agent that has almost no side effects, then although we still need to stay aware of the radiation, we don’t feel as limited,” says Dr. Classen.

PHILIPS



Dr. Simon Classen “Because the Veradius Neo helps us see better, we have indeed been able to carry out our procedures in less time.”

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The Philips Veradius Neo mobile C-arm, which they have been using since 2013, was the first they had that could use CO₂ as a contrast agent. This system has the necessary image quality to overcome the relative lack of sharpness of CO₂ when compared with iodine. They acquired their Veradius Neo as part of the current refurbishment of the clinic, so they can continue delivering exceptional care, and keep doing the right thing for patients.

Enhancing the confidence of decisions

Working in the tract of ten operating rooms shared by all the surgical departments, and tackling the demands of a large number of complex aneurysms, means the vascular surgeons need a powerful, mobile C-arm. The decisive feature in choosing the Veradius Neo has been its image quality. Dr. Classen and his colleagues praise the high resolution of the image. This is because of the higher local resolution of the flat detector, and the inherent lack of geometric distortions. An image intensifier intrinsically produces distortions which previously could introduce

distortions that may have required the surgeon to re-interpret the images. These would often become obvious when the straight edge of a stent entered the picture later in the intervention.

They highly appreciate the excellent image quality due to the wide dynamic range of the flat detector, resulting in a wide range of differentiated levels of grey. “The image quality often gets close to an angiography suite,” says Dr. Classen. In one emergency case, with little space because of a stenosis with less than 1 cm, Dr. Classen had to place the marker of the stent precisely in the ostium of a renal artery. “Those are the cases where you need such quality. To not injure the patient, and to not waste your effort, because getting it wrong would make an operation necessary.”

Managing X-ray dosage

“And we notice the Veradius Neo managed this image quality at low radiation dosage. That was when we knew it was the right choice.” He is using a low dosage for high

quality imaging even during endovascular work on heavier patients. Apart from the sensitivity of the detector, this is also because the asymmetrical shutters help avoid unnecessary irradiation outside the region of interest.

Dr. Classen values the flexibility to go even lower with the dose levels when this is appropriate for exploratory work. ‘If I compare performance and exposure, Philips really fits my needs,’ he says. “It was almost beyond belief that this is possible for our application. This is not something we had considered, until our experience with the Veradius Neo caused us to look into it properly.”

Enhanced support in the OR

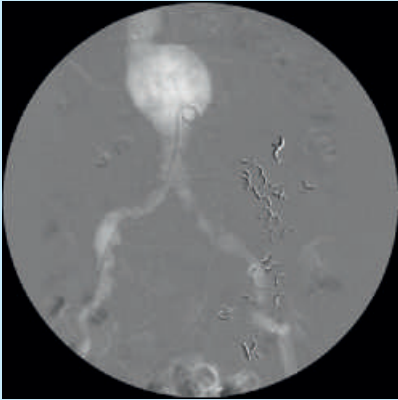
The team were also pleasantly surprised in terms of the positioning of the Veradius Neo. It was the only system they looked at that went low enough to adjust for the full range of surgeon heights in the department, so nobody has to work standing on a footstool!

The Hanau Clinic is facing a general shortage of sufficiently experienced OR nurses, particularly for emergency interventions late at night. Here Dr. Classen praises the clear color-coding of the different adjustments of the Veradius Neo. This has made it easy to provide instructions.

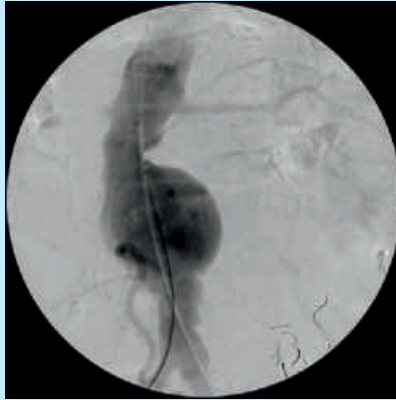
Providing more than clinical value

Of course, though it is central to have technology that has the quality and flexibility to let the surgeons work effectively, this only meets part of today’s overall challenge. Equipment also needs to be evaluated for the total expense of ownership and its influence on workflows. “Our suppliers had to be in a position to deliver products that could satisfy

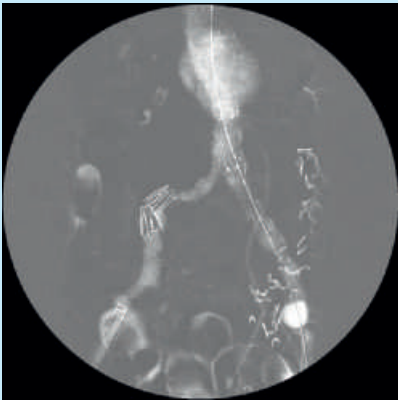
Using CO₂ as a contrast agent



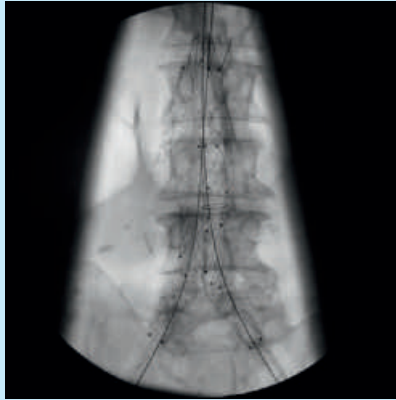
Overview using CO₂



Detailed contrast image



Final check after stent placement, using CO₂



Snapshot of the final stent placement

“If I compare performance and exposure, Philips really fits my needs.”

clinical needs, provide good service, and do all this at a reasonable price/performance point,” says Mr. Thorsten Wies, General Manager of the clinic. The chosen suppliers also needed to prove long-term commitment to its customers, and a convincing product development strategy. The panel in the Hanau Clinic chose Philips as one of their radiography suppliers. “Investments like the mobile C-arm are going to be in use for 10 years or more,” says Mr. Wies. “Buying that from a company like Philips means we can rely on their support, and take part in upgrades to stay relevant over that period.” To evaluate running costs they also



Mr. Thorsten Wies: “Philips impressed us, not only with their products and the passion of the people involved in the negotiations, but also with a solid and carefully balanced price/performance spectrum.”

consulted the biomedical organization in the hospital. This is run by a company with experience from over 100 hospitals across Germany. They could check data on reliability, maintenance, repair costs, access and response times of the remote and on-site service organizations, that support the Veradius Neo. “Philips impressed us, not only with their products and the passion of the people involved in the negotiations, but also with a solid and carefully balanced price/performance spectrum,” says Mr. Wies.

Being able to work efficiently is the final hurdle in keeping costs down, and ensuring financial performance. With each minute in the OR costing €30 or more, everybody relies on the overall ability of the C-arm to guide the intervention.



Working as a team to treat a complex aneurysm involves making decisions for the long-term benefit of the patient.

“Because the Veradius Neo provides clear images, we have indeed been able to carry out our procedures in less time,” says Dr. Classen.

Combined with the clinical performance, this makes the Veradius Neo a convincing proposition. “We are faster, we can treat more effectively. And we have a low exposure to radiation. We are very satisfied,” Dr. Classen concludes.

All results and experiences are based solely on procedures performed at the Hanau Clinic and may not be reflective of performance at other clinics.

Making dosage a priority

With their Veradius Neo, the Department for Vascular and Endovascular Surgery also started using Philips DoseAware, to raise the constant awareness of X-ray exposure. All the surgeons and OR nurses wear badges that collect live dosage information which shows on a central monitor, directly visible from the table. “We need to ensure people are aware of dosage even if they feel nothing. It is important,” says Dr. Classen. This is not only essential for the continued health of the staff. Patients are increasingly aware of radiation dose issues, and being able to ease such patient concerns is increasingly making a difference in how they choose a hospital.

Please visit www.philips.com/veradiusneo



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