



**PHILIPS**

Image guided therapy

**Zenition**

#### Who / Where

The Bellvitge University Hospital is one of the five major university hospitals in the Catalonia region of Spain that serves over two million people. Bellvitge is known for its outstanding care, teaching and research programs. Ramon Vila Coll, M.D. is Head of the Angiology and Vascular Surgery Department, which performs about 1,000 open and minimally invasive vascular surgeries a year.

#### Challenge

In 2018, the Angiology and Vascular Surgery Department was looking for a new mobile C-arm imaging system to support their most challenging TEVAR, FTEVAR, thoracic aorta and other minimally invasive procedures. First and foremost it had to provide better image quality at lower dose to enhance confidence and reduce cumulative dose levels for staff. It also needed to support long procedures without overheating, and be easy for all physicians and staff to use.

#### Solution

After evaluating many options, Bellvitge chose the Zenition 70 mobile C-arm, which was installed in April 2019. The Zenition 70 brings together innovations in image capture, image processing and dose control pioneered on Philips fixed C-arm systems. Its large 26 x 26 cm Flat Detector makes it ideal for imaging a larger field of view on challenging vascular anatomy.

#### Results

The Zenition 70 mobile C-arm has met and even exceeded Dr. Vila's expectations for complex vascular procedures.

## Superb image quality and dose control for complex vascular procedures

Bellvitge University Hospital is a 700-bed tertiary-care teaching facility that began as a surgical specialty hospital in the 1970s. Today it provides high quality medical care to over two million people. Known for its outstanding care, teaching and research, it has been ranked in the top 20 best hospitals in the Catalonia region for the last four consecutive years.

One of Spain's leading specialists in minimally invasive vascular surgery is Ramon Vila Coll, M.D., who is currently Head of the Angiology and Vascular Surgery Department at Bellvitge. There are nine vascular surgeons working in this busy department, which perform 1,000 vascular surgeries a year. About two-thirds are open procedures and one-third are minimally invasive procedures, ranging from mainstream peripheral to complex EVAR and TEVAR cases.



**Ramon Vila Coll, M.D.**  
Head of the Angiology and  
Vascular Surgery Department

**Elena Iborra Ortega MD, PhD**  
FEBVS, vascular surgeon

## Meeting new demands

Today, Bellvitge's Angiology and Vascular Surgery Department has become the center of excellence in its region for complex vascular procedures. In the last ten years, Dr. Vila has played a key role in supporting the rapid shift to minimally invasive vascular procedures. Today, his department has experience performing the most challenging TEVAR, FTEVAR, thoracic aorta and other minimally invasive procedures.

The department uses mobile C-arm imaging systems for the large majority of open and minimally invasive vascular procedures. For extremely challenging patients or cases, they use a fixed C-arm imaging system. As their cases have become more difficult, their imaging requirements have changed. In 2018, they were looking for a new mobile C-arm that would meet their new demands.

After evaluating several systems, the hospital chose Philips Zenition 70 Series because it provided an excellent fit with their needs. The Zenition 70 is part of a series of harmonized mobile C-arms that offers proven ease-of-use and future-fit capabilities. The system brings together innovations in image capture, image processing, dose control and ease-of-use pioneered on Philips fixed C-arm systems.

### **Superb image quality at low dose with Zenition**

"My ambition and responsibility as a surgeon is to provide the very best possible treatment for my patients," says Dr. Vila. "And my responsibility as head of the department is to make sure that my surgeons have the best possible technologies to do the same. The quality of the images we are looking at as we work, have a direct influence on how well we can do our job and live up to our ambitions."

"With the Zenition, our DSA image quality has improved greatly. We no longer see a grainy image. We just see a very clear image," says Dr. Vila. "What's been amazing for us is that we are able to maintain that clarity at the low dose setting of the system, which is obtained at just 4 pulses per second. In our previous Philips system, we had already reduced from 15 pulses to 7.5 pulses per second, and we have gone even lower with the Zenition."

"Decreasing X-ray dose is important for our patients, because we want to expose them to the lowest amount of radiation possible," says Dr. Vila. "But it is an even greater threat and worry for myself and my team. We are working with the imaging system day in and day out, sometimes for several hours at a time. For many years, we have been hearing about vascular

surgeons who are getting cancer, and that is a major concern."

Dr. Vila adds, "We are now performing the majority of our routine and complex vascular procedures at the low dose setting. If we need to see something better we can always switch to a higher dose or increase the magnification. That's important because any small detail might help you get a better result."

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**Ramon Vila Coll, M.D.**

### Benefits in distal artery vascularization for diabetic foot patients

“We often perform the POBA technique minimally invasively to treat peripheral artery disease in the foot for diabetic patients. On a mobile C-arm system, it’s always a challenge to visualize the very tiny wires to cross CTO lesions. At the same time we want to limit contrast media usage on these patients because injecting contrast is painful for them,” says Dr. Vila. “With Zenition, we can pull out an earlier acquired image and use it as a roadmap image, which helps us greatly reduce the contrast media load. The system also has a larger field of view, which allows us to cover more of the anatomy and avoid extra contrast media injections. Now we can do just one contrast injection to image the full limb instead of three injections.”

### Benefits for TEVAR

When the team is working in the thorax, they are dealing with an area that is very different from the abdomen in terms of settings on the imaging system. Zenition’s large field of view is ideal for this anatomy. Dr. Vila says, “Your system also has to be able to provide extreme angulations to see the origin of the visceral arteries. The celiac trunk is in front of the aorta, so you almost need a lateral view. It is not easy to get good images from the lateral view because of the thickness of the patient, but it is very important to know exactly where the ostium of the vessel is and to know where to

stop. With Zenition we can now see that because of the excellent image quality it provides for this difficult area. We have seen the origin of the celiac trunk which was very difficult to see before and would require a series of contrast media injections.”

### Benefits for FEVAR

“When doing a FEVAR, you need to see the marks that are on the AAA stent graft and the vessels you are going to. Sometimes it is difficult to align where the fenestrations are and differentiate between them on the image. The easier it is to differentiate these, the easier it is to get to this fenestration. Before, if there was a lag in the imaging, I could not see how the sheath and wires were moving or if they were stopping in one of the corners of the fenestration,” says Dr. Vila. “Zenition gives us a live image with no lag, and I feel that it’s working much better. There is no delay with the image on the screen and what I am doing. Sometimes the sheath is bending the stents and Zenition allows me to see the branches, which might be 50 centimeters away and move in the exact direction needed to avoid getting out of the vessel.”

### Using Zenition with cancer patients

“In a recent case, we operated on a patient with lung cancer. An aneurysm was identified on this patient, and they wanted us to remove it endovascularly before they began chemotherapy,” says Dr. Vila. “We are performing about 60% of aneurysm cases endovascularly. If the patient



is not fit for endovascular, they will go to open surgery. If the patient has comorbidities, they will usually go to an endovascular procedure.”

“It’s easier to see a guide wire compared to our old system. Now you can see the tip and the angle of the wire that’s going around, even with 0.014 inch wires. That’s because Zenition compensates for what’s metal and what’s moving”

Ramon Vila Coll, M.D.



Dr. Vila and Dr. Iborra performing a vascular procedure



Results from case studies are not predictive of results in other cases. Results in other cases may vary.