Philips BV Pulsera at the USP San Carlos hospital in Murcia

Founded in 1924, the San Carlos hospital in Murcia, South-Eastern Spain, moved to its present central location in 1979. The site has room for further expansion, and is close to a coastal region (Mar Menor and the Costa Cálida) that is popular with tourists and retired people, so that the hospital is a referral center for these areas. The hospital has a tradition of excellence and innovation, implementing the latest medical and technical advances, while maintaining the open and friendly character of the locality.

WHO/WHERE

USP San Carlos hospital, Murcia, Spain.
General hospital, 134 beds
In February 2002 the hospital was acquired by United Surgical Partners (USP) Europe
The hospital now has an area of some 1000 square meters divided over five floors

Hospital is mainly oriented towards surgery, specializing in traumatology, gynecology and obstetrics, general surgery and ophthalmology.

CHALLENGE

Treatment of heart attack victims

SOLUTION

Angioplasty with the BV Pulsera mobile C-arm system

In February 2002 the hospital was acquired by United Surgical Partners (USP) Europe, and is now referred to as the USP San Carlos hospital.

USP has instituted a program of further modernization and upgrading, while still respecting the unique character of the San Carlos hospital. The first phase, which has recently been completed, includes new areas for Accident and Emergency, Admissions, Administration and Management.
The improvements combine outstanding architectural design with practical solutions eliminating physical barriers and giving the patients quick and easy access to the various medical services.

PHILIPS

The hospital now has an area of some 1000 square meters divided over five floors, of which three have now been renovated. The comprehensive range of healthcare services includes: inpatient facilities (134 beds), surgical department (6 operating rooms and 2 delivery rooms), intensive care department, A&E, and a department for conventional and advanced diagnostic imaging (2 MRI systems, CT system etc.). Next to the hospital there is a large building (opened in 1996) with a group practice polyclinic.

USP San Carlos hospital is mainly oriented towards surgery, specializing in traumatology, gynecology and obstetrics, general surgery and ophthalmology. There is also a growing requirement for heart catheterization.

Angioplasty at the USP San Carlos hospital

Dr. Pico

An important aspect of the work at the USP San Carlos hospital is the treatment of heart attack victims. Recent studies (Gracia and Siam studies) have demonstrated that angioplasty at the earliest possible stage greatly improves the prognosis for ischemic cardiopathy patients, and is included in therapeutic recommendations as a preferred option to thrombolysis. Although some studies report good results from the transfer of the patient to a referral centre where angioplasty can be carried, it is undoubtedly easier to bring the specialist to the patient rather than vice versa. However, this depends on the availability of a suitable hemodynamic installation.

The BV Pulsera is a cost-effective solution for hemodynamic installations, especially for hospitals with a relatively small number of heart patients.

That is why the USP San Carlos hospital has installed a Philips BV Pulsera C-arm system with the Cardiac Pulse dynamic imaging package. Dr Pico is very enthustiastic of the BV Pulsera: “This system represents a revolution in the diagnostic and therapeutic hemodynamics: inexpensive and independent of fixed installations, it produces digitized images at up to 25 images/second. Images can be displayed in real time or as cine loops, securely and reliably stored on a CD-ROM on any computer, and/or transferred onto a conventional X-ray film by laser printer with absolute precision”.

The images are available for viewing by the surgeon in the operating room, and by the referring specialist for detailed analysis. Fully integrated DICOM solutions allow the physician to save the data on a hard disk or transfer it from the BV family onto the hospital network. Images can be easily reviewed, printed and stored, which is not only important for the patient record, but is also very useful for training purposes. The system also supports full RIS/HIS functionality.

“This system represents a revolution in the diagnostic and therapeutic hemodynamics”

The architectural requirements for the BV Pulsera are minimal: as a mobile unit, it does not require lead shielding in the walls, and can be powered from a standard wall socket. The system can be used with the surgical table, or with a separate mobile table, so that all that is needed to work with absolute precision is a sterile environment.

Table: Principal services

Most important specialisms	Clinical admissions
	Surgical admissions
	Mother and baby unit
Diagnostic imaging	Conventional radiology
	Orthopantomography
	General ultrasound
	Ultrasound for gynecology and obstetrics
	Echocardiography
	Doppler echo
	Hysterosalpingography
	Angiography
	MRI
	CT
Surgery	Operating rooms
	Radiology for surgery
	Hemodynamics and heart catheterization
Accident and emergency	Adults
	Children
	Traumatology/wound treatment
	Obstetrics and gynecology
Other	Day care
	Urodynamics
	Intensive care
	Eating disorders
	Endoscopy for digestive studies
	Laboratory for clinical analyses
	External specialists

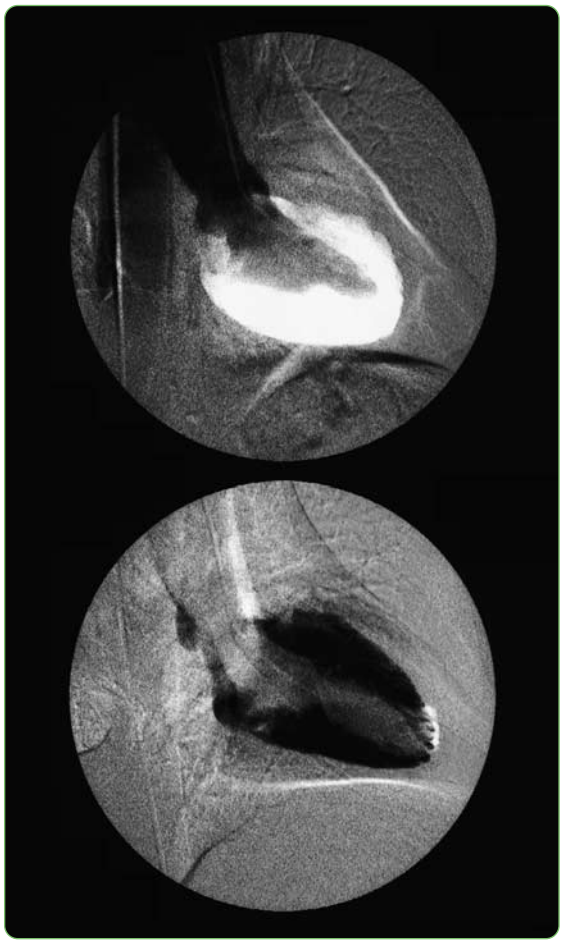
When not in use, the BV Pulsera occupies an area of less than two square meters.

The unit has twin 17" high-end monitors. On-line images are displayed on the left monitor, while reference images, selected from those on file, are displayed on the right. The hemodynamist can control all major functions via a remote control, which is enclosed in a sterile cover. The functions include a cine-loop option for reviewing the recorded series. The latest series appears by default, but the series can also be displayed in sequential order, or any series can be selected from all the series stored.

The image processing programs are comprehensive, enabling contrast and brightness adjustment and the calibration and quantitative measurement of lesions, stenosis, arterial and/or ventricular diameters, muscle walls, etc.

Of particular interest is the image exclusion programme, which considerably improves the display of arteries with antegrade flow occlusion and collateral filling, and can sometimes enable more precise determination of the length of the obstruction and the diameter and state of the distal vessel, with a view to desobstruction and angioplasty or scheduling for revascularization surgery.

This same program allows superimposition and subtraction of systolic and diastolic ventriculograms, providing a much better impression of the segmentary contractility than would be possible with separate images.



Case 1 Ventriculogram.
Top image shows a ventriculogram with no alteration is egmentary contractility (angor and non-QAMI).
Bottom image shows limited anteropical necrosis.

Case 2 Normal left and right coronary arteries.
In both cases, the mitral valve is competent and the muscle wall can be analyzed and measured.
Dr Pico: "The excellence of the subtraction program in the BV Pulsera allows, even in normal cases, the ability to achieve 3D like images ".

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