



# Versatile mobile C-arm fosters clinical collaboration

## Philips BV Pulsera used at Carolinas Medical Center

### Who/where

Ronald F. Sing, DO, FACS  
Department of General Surgery  
Surgical Critical Care  
Trauma and Critical Care

F.H. "Sammy" Ross Jr. Center;  
Carolinas Medical Center  
Charlotte, North Carolina  
USA

Level One Trauma Center for 14  
surrounding counties in the Carolinas

### Challenge

Identify efficient and effective technology  
to help support multi-discipline trauma  
care

### Solution

The versatile and mobile  
BV Pulsera C-arm

"Now we have one C-arm that takes care of all our needs – orthopedic, spinal and vascular," states Dr. Ron Sing, vascular trauma care surgeon at the F.H. "Sammy" Ross Jr. Center.

Facilities at the F.H. "Sammy" Ross Jr. Center include a specialized Emergency Department, an operating room (OR) designated for trauma, and a 29 bed Surgical Trauma Intensive Care Unit (ICU). This busy Level One trauma center serves 14 surrounding counties in the state of North Carolina, USA.

Critical to success is the ability to treat patients quickly and effectively, often under difficult circumstances. Staff must consider:

- Shortening time to treatment
- Coordinating specialized skills
- Maximizing technology resources
- Imaging when and where necessary
- Scanning virtually all patient types and sizes
- Acquiring top quality images at a low X-ray dose

The versatility and power of the Philips BV Pulsera mobile surgery system helps achieve these goals.

### One system, many applications

Dr. Sing spends his busy days tending to patients in the OR and the ICU. Working closely with his orthopedic colleagues, he is discovered that using the BV Pulsera results in time-saving benefits. "We've been able to go to a single platform to improve our efficiency," suggests Dr. Sing. "It's not like I have to ask for the 'vascular' C-arm. One system accomplishes it all."

"Both orthopedics and I have  
the equipment to see  
everything we need to see."  
Dr. Sing

In a complex lower extremity multiple fracture with decreased blood flow to the foot, this multi-disciplinary approach proves invaluable. Dr. Sing explains, "When we have a complex orthopedic injury such as a femur fracture with vascular injury, we can all use the same equipment and that's very helpful. I can do an angiogram, arteriogram, or venogram, whatever I choose and then without having to move the machine, orthopedics can use it to place a rod, nail or do some external fixation. We have got two separate teams working with one piece of equipment. Shortening time to treatment can enhance patient care."

# PHILIPS



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Department of General Surgery  
Surgical Critical Care  
Trauma and Critical Care

### Ideal for acute trauma

The BV Pulsera's mobility and flexibility saves time.

- The ultra compact mobile C-arm stand features rear-wheel steering for easy maneuverability and positioning.
- An optimally designed MobileView Station with flat screen monitor display can be moved around the tight confines of a crowded OR, enabling the user to get the optimal viewing position needed.
- The compact counterbalanced C-arm rotates a full 135° to provide all required projections.
- Imaging options include Low Dose Fluoroscopy, High Definition Fluoroscopy, Real Pulsed Fluoroscopy and Radiography.
- 1K2 imaging throughout the full digital imaging chain delivers high quality images time after time.

"The pedestal for the monitor is just feather-light to move," says Dr. Sing. "The C-arm itself is quickly maneuverable, even to the steepest projections – it's almost as though it has an internal power supply."

### Time and X-ray dose saving imaging

Consideration of time and continuity is important in any trauma case. In order to keep the process moving forward, Dr. Sing turns to the BV Pulsera's Real Pulse Fluoroscopy mode. Low X-ray dose, virtually motion and blur-free fluoroscopic images can be achieved at a rate of 12.5 pulses per second. "If I'm doing an arteriogram and need to do the entire extremity, instead of having to do the femur, the knee and the leg separately, I can do one injection and run the C-arm down as the contrast is moving down the leg. I don't have to do multiple studies and the patient is subjected to less contrast."

Then with one press of a button, flagged images are wirelessly downloaded to the hospital PACS. "That's pretty critical," notes Dr. Sing, "particularly in trauma cases where things are moving rapidly from one procedure to the next."

### CO<sub>2</sub> in the ICU

"As we transition over to the ICU," says Dr. Sing, "again we use the same equipment. This means I don't lose any image quality. In fact, we do our fluoroscopy right at the patient's bedside."

"What the BV Pulsera does is let us bring the procedure to the patient." Dr. Sing

A common procedure performed by Dr. Sing in the ICU is insertion of vena cava filters to prevent blood clots from traveling to the lungs. This is a procedure classically performed in either the OR or radiology department. But with an unstable patient, Dr. Sing can bring the procedure bedside – mitigating the challenges of transport to the OR.

For patients who are in shock and have already had other contrast exposures, or patients with renal insufficiency, an additional contrast injection can put them at risk for contrast nephropathy. So Dr. Sing and his team have used Carbon dioxide (CO<sub>2</sub>) gas as an alternative to iodinated contrast media, to look at the vena cava. He maintains, "An advantage of the Philips equipment is a subtraction package that accommodates for CO<sub>2</sub> injections. The BV Pulsera actually has a CO<sub>2</sub> subtraction feature built right into the system." Trace-subtraction easily shows maximum opacification of vasculature using CO<sub>2</sub> and can be combined with Extended Processing functions such as Zoom and Measure. Using these roadmap images, the filters are inserted with the C-arm under general fluoroscopy.



Insertion of Vena cava filter



Overview Vena cava inferior

“With CO<sub>2</sub> gas there is no toxicity, no cumulative effect, and no allergic reaction.”

“It’s truly an inert type of agent to use for vascular imaging,” concludes Dr. Sing.

#### Helping more patients

The BV Pulsera’s rotating anode technology and automatic high penetration mode deliver the power to see through virtually any size patient. For Dr. Sing, this translates to new opportunities. “We have had large patients for example who have a deep venous thrombosis or have had a pulmonary embolism that the radiology department can not image because they exceed the weight limit for the table. So I get a call to use the C-arm at the patient’s bedside. We have never failed to image a patient.”

Dr. Sing sums up his feelings this way, “Whether in the OR or ICU, all of my imaging needs are taken care of with the BV Pulsera. Simplicity and portability is what makes it work so well.”

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