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Scientific Posters

CODE: 1539VI-p
SESSION: Vascular Interventional (Dialysis Grafts and Catheters)
Cadaveric Central and Peripheral Venous Access Using the Sonic Flashlight, a Novel Ultrasound Display System



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stetten

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PARTICIPANTS

Presenter

Wilson [Chang](#) PhD ★

Abstract Co-Author

Nikhil [Amesur](#) MD ★

Albert [Zajko](#) MD ★

George [Stetten](#) MD

★ - Author stated no financial disclosure

▲ - Disclosure information unavailable

SUBSPECIALTY CONTENT



[Vascular and/or Interventional Radiology](#)

DATE: Thursday, December 02 2004

START TIME: 12:35 PM

END TIME: 12:45 PM

LOCATION: Hall D1, Lakeside Center

PURPOSE

Perform the first vascular access (VA) in a cadaver using the Sonic Flashlight (SF), a novel ultrasound (US) display system under development at our institution.

METHOD AND MATERIALS

The SF is a new handheld US display device that replaces the traditional US monitor by using a half-silvered mirror to reflect real-time US images into the body. When the operator looks through the half-silvered mirror, the US image appears to float beneath the surface of the skin, exactly where it is being scanned. The SF merges the US image, probe, needle, operator's hands, and patient into the same field of view, making procedures more intuitive to the novice user, in contrast to conventional US (CUS) guided procedures, where hand-eye coordination is displaced, forcing the operator to look away from the field to see the US screen. We have previously shown that VA in phantoms is easier for novices using the SF compared to CUS guidance. In an accompanying work, we show that VA with the SF is easier to learn than CUS in novices, as well as faster than CUS for those already proficient in CUS. The current SF prototype uses a 10MHz US system (Terason, Burlington, MA) modified by attaching a small flat-panel display (AM550L OLED, Kodak, Rochester, NY) and a 20x50x1mm half-silvered mirror to the probe. The cadaver was a female of unrevealed age and cause of death, heparinized prior to death. The neck and right upper arm were scanned using the SF to identify the internal structures, and the needle was aimed and inserted into the internal jugular vein (IJ)

and basilic vein (BV), sites that would normally be used for central and peripheral venous access.

RESULTS

The internal anatomy was clearly visualized in situ using the SF, with the carotid artery and IJ easily identified in the neck, and BV clearly identified in the arm. The needle was aimed and easily inserted into the IJ and BV, and the needle tip visualized at its expected location.

CONCLUSION

This study shows that it is possible to gain central venous access guided by the SF. We believe the SF is a more intuitive US display system than CUS, and with the results of this study, we feel that it is ready for clinical trials.

DISCLOSURE

G.D.S.: The Sonic Flashlight has been patented by George [STETTEN](#) through the University of Pittsburgh.

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