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**Upper-extremity venography: CO<sub>2</sub> versus iodinated contrast material.**

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**Abstract**

**PURPOSE:**

To determine prospectively the diagnostic performance of CO<sub>2</sub> venography, by using conventional venography with iodinated contrast material as the reference standard, for the preoperative evaluation of upper-limb and central veins before creation of fistulas for hemodialysis access.

**MATERIALS AND METHODS:**

The study was approved by the institutional review board, and informed consent was obtained from all patients. Twenty-two patients underwent comparative CO<sub>2</sub> and conventional venography of upper-extremity and central veins. Two independent observers evaluated the opacification of the veins and grade of stenosis, if present. Interobserver agreements were estimated with the Cohen kappa coefficient. Calculations of sensitivity, specificity, and accuracy were used for intertechnique observations.

**RESULTS:**

For CO<sub>2</sub> venography, global interobserver agreement was good, with a kappa value of 0.90 (range, 0.71-1.00; 95% confidence interval: 0.84, 0.95). A kappa value of 0.96 (range, 0.86-1.00; 95% confidence interval: 0.93, 0.99) was calculated for global interobserver agreement for conventional venography. The sensitivity, specificity, and accuracy of CO<sub>2</sub> venography for all vein segments were 97%, 85%, and 95%, respectively.

**CONCLUSION:**

CO<sub>2</sub> venography had a sensitivity of 97% and a specificity of 85% in the assessment of upper-limb and central vein patency and stenosis, with conventional venography used as the reference standard.

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