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Internal iliac artery embolization in preparation for endovascular aorto-iliac aneurysm repair: Use of three-dimensional volume-rendered reconstruction and Amplatzer Vascular Plug 2 reduces radiation exposure to the patient

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Abstract

PURPOSE:

The purpose of this study is to determine whether our systematic technique for percutaneous embolization of internal iliac arteries performed in preparation for endovascular aorto-iliac aneurysm repair (EVAR) reduces the total radiation exposure (RE) to the patient below the threshold dose that triggers notification and follow up.

MATERIALS AND METHODS:

We retrospectively reviewed 8 patients who underwent internal iliac embolization using AVP 2 device in preparation for EVAR. Our technique for reducing the RE included; reviewing the 3-D volume rendered images (VRI) obtained from the CT angiography (CTA) performed prior to the procedure to determine the most optimum working position that will best show origin of the internal iliac artery, in order to minimize the number of angiograms. Our technique also included the use of Amplatzer vascular plug 2 (AVP 2) instead of coils. We recorded the size of the internal iliac artery lumen, the number of angiograms required before AVP 2 deployment, number and size of AVP 2 devices used, total procedure time, total fluoroscopy time, total RE and the serum creatinine level before and after the procedure.

RESULTS:

We treated 8 male patients using the described technique, with a mean age of 70 years (range=61-76 years). The size of the internal iliac artery lumen ranged from 7 to 14 mm. In all patients, we required 3 or less angiograms before AVP 2 device deployment. In all patients, only one device was used to occlusion the internal iliac artery. Device size ranged from 10 to 22 mm. The average total procedure time was 71 minutes (range= 49-114 minutes). The average total fluoroscopy time was 21 minutes (range= 8-38 minutes). The average total radiation exposure to the patients was 2772 mGy (range=1446-4301mGy) and all were below the threshold dose that triggers notification and follow up in most institutions. The average amount of CM used during the procedure was 183 ml (range=143-270 ml). There was no significant increase in serum creatinine after the procedure.

CONCLUSION:

Our technique significantly decreases the number of angiograms required before and after embolization, which reduces fluoroscopy time, total procedure time, and RE to the patients below the threshold dose that triggers notification and follow up in most institutions.

Biography

Ahmed Kamel Abdel Aal holds a Masters Degree and Ph.D. degree in radiology. He completed his Interventional Radiology and Neuroradiology fellowships at UAB. Dr. Kamel is a very skilled Interventional Radiologist. His areas of clinical interest are oncologic interventions, arterial interventions, spine interventions, DVT management, and Dialysis interventions and varicoceles embolization.