

Endovascular treatment of abdominal aortic aneurysms with the CHIMPS technique: a challenge for the OR nurse

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Introduction: The endovascular aortic repair (EVAR) is a technique that allows treatment of an aortic aneurysm in a minimally invasive fashion. The most common exclusion criterion is a proximal neck that does not allow a standard repair. If the patient is not a good candidate for open surgery, two main options are available to the surgeon who wants to pursue an endovascular choice: fenestrated EVAR (FEVAR) or the CHIMPS (chimney, periscope, snorkel) technique. FEVAR requires a custom graft that is expensive and takes a few weeks to manufacture, but its use is standardized and has CE approval. CHIMPS can be performed in an emergency setting and can be done using materials commonly used in vascular surgery.

Most Vascular Surgery Units, like ours, don't have a hybrid operating room and adapting a regular operating room to deal with complex endovascular cases is a real challenge for the nursing personnel.

Method: We reviewed our experience with the CHIMPS technique: from January 2012 to March 2016 we performed 17 CHIMPS. The indications for surgery were a type Ia endoleak in five patients, a juxtarenal AAA in nine patients, a type IV TAAA in one, a ruptured abdominal aortic aneurysm (RAAA) in one and an aortoduodenal fistula in one. We employed one parallel graft in three cases, two in nine cases, three in three cases and four in one case (three renals and one SMA). No side graft were placed in the celiac trunk. In total there were 29 renals and five SMAs; 31 snorkels, one periscope and two sandwiches. The need to work simultaneously on both groins and one or both axillae and dealing with three or four surgical/radiological teams may be overwhelming without a meticulous preparation, including repeated simulations.

Results: We were able to achieve technical success in all cases; no surgical conversions were required. Intraoperative complications included thrombosis of a femoral artery requiring thrombectomy and failure of deployment of a covered stent requiring its reposition.

Mean operating times were 368 minutes

Mean fluoroscopy times were 42 minutes

Conclusions: The CHIMP technique makes it possible to treat endovascularly patients that are not suitable for a standard EVAR. It is a complex procedure and a real challenge for the OR nurses: the circulating nurse needs to be able to organize all the materials and coordinate the logistics while the scrub nurse has to help the surgeons in three or four different surgical sites, and be conversant with traditional surgical technique as well as the endovascular procedures. With so many people in the room sterility is a critical issue and

the nurse must be very vigilant. The possibility of an emergency surgical conversion, albeit rare, has to be always kept in mind.

A meticulous preparation and attention to detail facilitates the surgeon's work, reduces operating times but above all ensures patient safety .

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