

TECHNICAL NOTE

Single anterior retroperitoneal approach for bilateral exposure of iliac arteries

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Elective bilateral exposure of iliac arteries during endovascular or laparoscopic aneurysm repair is commonly performed through two retroperitoneal incisions in the iliac fossa. Larger incisions are necessary when simultaneous external and common iliac exposures are needed. We describe a new technique using a single incision for bilateral approach of the iliac arteries. Exposure of iliac arteries through this bilateral anterior paramedian retroperitoneal approach allows the introduction of endografts, crossover ilioiliac bypass, implantation of graft limbs for bifurcated bypass grafting, reconstruction of internal iliac arteries, and ligation of iliac arteries. (*J Vasc Surg* 2009;50:203-5.)

With the widespread use of minimally invasive abdominal aortic aneurysm (AAA) repair, we observe an increasing use of elective approaches to the iliac arteries.^{1,2} When a bilateral approach is needed, two incisions in the iliac fossa are performed. We describe a new and simple technique for bilateral exposure of iliac arteries using a single anterior paramedian retroperitoneal approach.

OPERATIVE TECHNIQUE

Intervention is performed in a supine patient under general anesthesia. The skin incision is median and transverse, 2 cm above the pubic spine (Fig 1). Its length is between 6 and 10 cm, depending on the patient's obesity. Subcutaneous fat is divided until the anterior rectus fascia. Detachment of subcutaneous tissues is conducted cranially in front of the anterior rectus fascia, usually over 8 to 10 cm (Fig 2, A and B). On each side, the paramedian anterior rectus fascia is incised longitudinally (Fig 2, C). The medial border of the anterior rectus muscle is freed showing the peritoneal sac (Fig 2, D). The anterior rectus muscle is retracted laterally, and the peritoneum is cleaved from the abdominal wall until exposure of iliac vessels is achieved (Fig 2, E and F). Dissection of the Douglas arch is needed to retract the peritoneal sac. Dissection is conducted cranially from the external to the common iliac artery. When



Fig 1. Operative view shows the suprapubic cutaneous incision of the anterior paramedian retroperitoneal approach.

needed, a tunnel between the two iliac fossas can be created in the prevesical space.

On closure, the two anterior rectus muscles come into place and are sutured to the midline with single absorbable sutures. The anterior rectus fascia is closed on both sides with absorbable running sutures. A suction drain is systematically placed in the subcutaneous space in front of the anterior rectus fascia.

DISCUSSION

Approaching iliac arteries through the iliac fossa is usually performed without cutting the muscles. However, when the common and external iliac arteries must be approached simultaneously on both sides, two larger incisions are needed, with subsequent postoperative pain and risk of abdominal wall dehiscence. The anterior paramedian retroperitoneal approach (APRA) allows simultaneous exposure of iliac arteries on both sides.

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Competition of interest: none.

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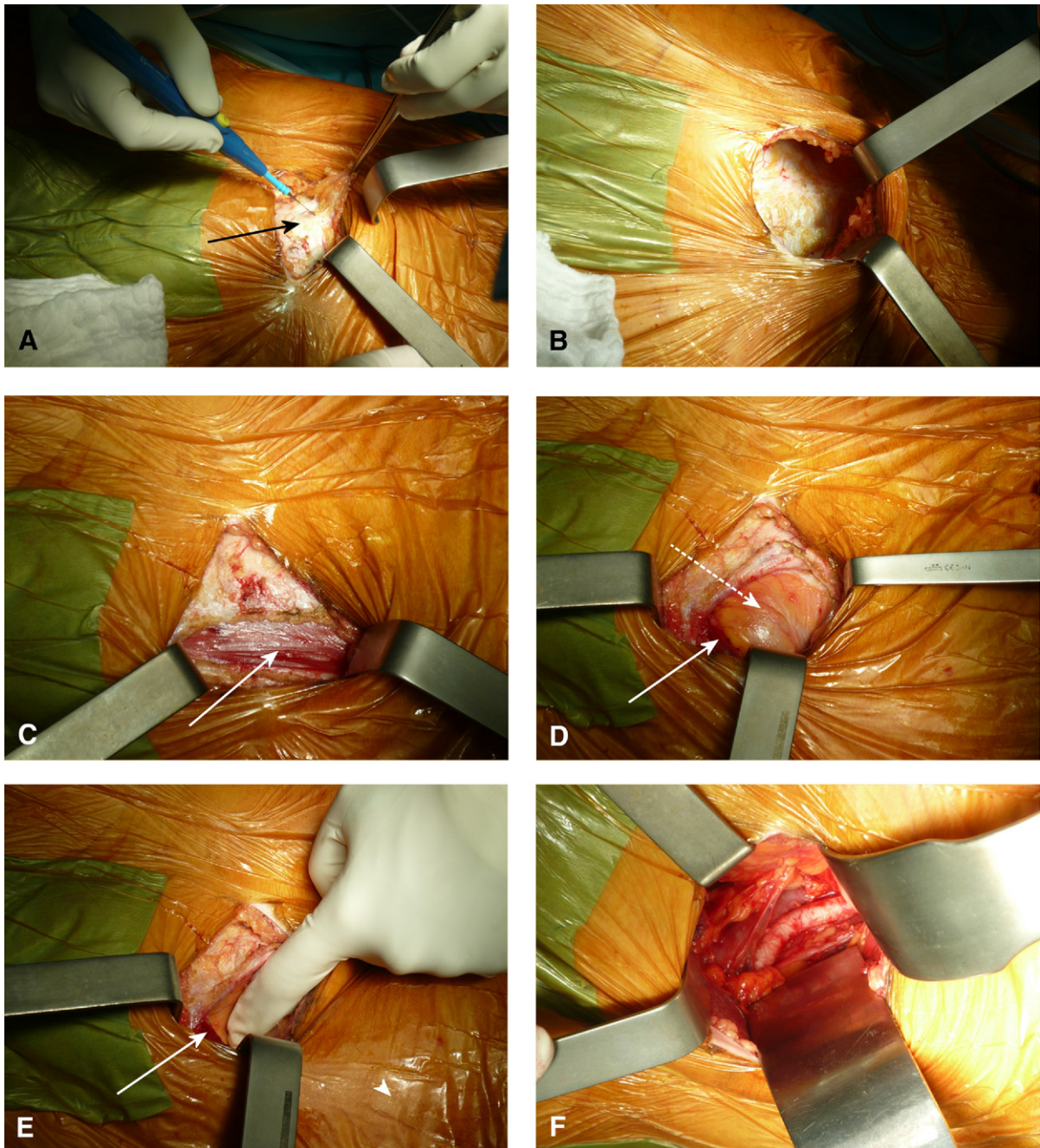


Fig 2. Operative views showing different steps of the anterior paramedian retroperitoneal approach (APRA). **A** and **B**, Detachment of subcutaneous tissues in front of the anterior rectus fascia (*arrow*). **C**, Longitudinal incision is made in the anterior rectus fascia (*arrow*: left anterior rectus muscle). **D**, Medial border of the anterior rectus muscle (*arrow*) is freed, showing the peritoneal sac (*dotted arrow*). **E**, Peritoneum is cleaved from the abdominal wall (*arrow*: left anterior rectus muscle). **F**, The external and distal common iliac arteries are exposed through the APRA.

The APRA is derived from anterior approaches of spine and is similar to the Pfannenstiel approach.³⁻⁵ For spine exposure, the cutaneous incision is usually median vertical,^{3,4} which could also be used for the APRA; however, a transverse cutaneous incision is more appropriate to reach

iliac vessels from the midline. With the Pfannenstiel approach, the incision of the anterior rectus fascia is transverse, which is appropriate for pelvic exposure or hernioplasty.⁵ On the other hand, the Pfannenstiel approach is not appropriate for proximal retraction and exposure of

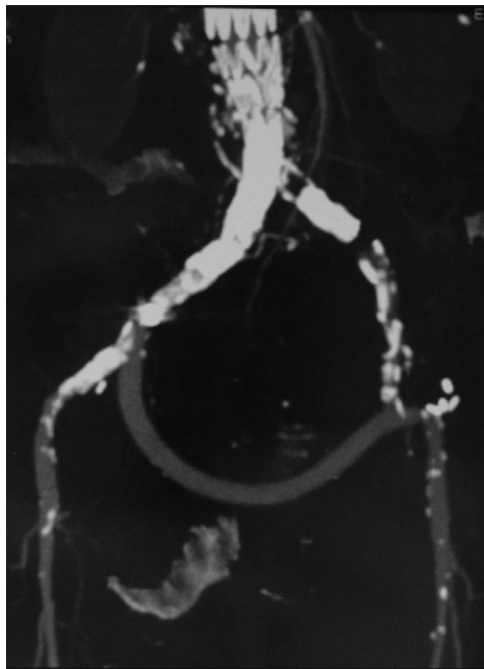


Fig 3. A computed tomography scan after completion of the anterior paramedian retroperitoneal approach shows an aortouniiliac stent graft with crossover ilioiliac bypass and reimplantation of the proximal external iliac artery.

common iliac arteries. With the APRA, incision of the anterior rectus fascia is longitudinal, which allows a more proximal retraction of abdominal muscles and subsequent easier exposure of distal common iliac arteries.

The APRA allows the different steps of minimally invasive AAA repair, either during endovascular AAA repair (EVAR) or laparoscopy. During EVAR,¹ the APRA allows a good exposure for introduction of endografts, either directly through the iliac arteries or through a bypass previously placed on the common iliac artery. For aortouniiliac endografts, APRA allows the crossover ilioiliac bypass (Fig 3) and the ligation of the contralateral common

iliac artery. During laparoscopic AAA repair,² APRA is useful when the target zones for distal anastomoses are both external iliac arteries. In these cases, APRA avoids gas leakage, which is inevitable with an incision in the left iliac fossa. Finally, on both sides, APRA allows reconstruction of the internal iliac arteries, which is sometimes needed during EVAR or laparoscopy.

The APRA avoids cutting the abdominal musculature. Moreover, the APRA incision is far from the muscle nerves, which limits the risk of neuralgia and muscular hypotonia.

The drawback of the APRA compared with incisions in the iliac fossa is the difficulty for exposure of the distal aorta and proximal common iliac arteries. When this exposure is planned preoperatively, a longitudinal skin incision or an upper transverse incision between the pubic spine and the navel are preferable.

CONCLUSION

The APRA focuses on reduction of abdominal wall trauma when a simultaneous bilateral approach of iliac arteries is needed. We expect a decreased incidence of pain and abdominal wall hernia compared with bilateral incisions in iliac fossa but further experience is needed to draw firm conclusions.

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