Endovascular Management of Infrarenal Abdominal Aortic Aneurysm

Essay

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In

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ABSTRACT

EVAR may be the preferred treatment method for older, high-risk patients, those with "hostile" abdomens, or other clinical circumstances likely to increase the risk of conventional open repair, if their anatomy is appropriate.

Use of EVAR in patients with unsuitable anatomy markedly increases the risk of adverse outcomes, need for conversion to open repair, or AAA rupture.

At present, there does not appear to be any justification that EVAR should change the accepted size thresholds for intervention in most patients.

Key ward :-

- Endovascular Management
- of Infrarenal Abdominal Aortic Aneurysm

Contents

List of Abbreviations

AAA	Abdominal Aortic Aneurysm
AOB	Aortic occlusion balloons
CA	Conventional angiography
CE-MRA	Contrast-enhanced MRA
CIA	common iliac artery
CT	Computed tomography
CTA	Computed tomography angiography
GE-MRA	gadolinium contrast Magnetic resonance angiography
IMA	inferior mesenteric artery
MMP	matrix metalloproteinases
MRA	Magnetic resonance angiography
MRI	Magnetic resonance imaging
PTFE	polytetrafluoroethylene
TAA	Thoracic Aortic Aneurysm
TAAA	Thoracoabdominal Aortic Aneurysm

List of Figures

Introduction

An aneurysm is a permanent focal dilatation of an artery to 1.5 times its normal diameter. The normal infrarenal aortic diameter in patients older than 50 years is 1.5 cm in female and 1.7 in male. By convention, an infrarenal aortic 3 cm in diameter or larger is considered aneurysmal.(Lederle et al,1997).

Abdominal aortic aneurysms (AAA) is a life-threatening condition that mandates consideration of repair. A ruptured AAA has a mortality rate approaching 90%; however, when an AAA is repaired electively, the mortality drops to less than 5% (Noel et al., 2001).

Over the past 30 years, the reported incidence of AAA in the United States has tripled due to improvements in diagnosis and the increasing age of the population. Approximately 200,000 AAA are diagnosed in the United States each year, accounting for 10,000 to 15,000 deaths. Approximately 2-5% of men over the age of 60 develop AAA, and men are affected 4 to 5 times more often than women. Up to 75% of AAA are asymptomatic and are diagnosed incidentally (Thompson MM et al., 2000).

The two primary methods of AAA repair are open and endovascular repair which has proved to be safe and effective treatment. (Krupski et al., 2004).

Over the last 15 years, the management of AAA has changed dramatically because of the development of the technique of endovascular aneurysm repair (EVAR). Patients and physicians have embraced EVAR as the method of choice to treat high-risk patients with AAA. (Greenberg et al., 2004).

The advantages of EVAR compared with open surgery are the avoidance of operative exposure, retroperitoneal dissection, and aortic cross-clamping. Since the procedure can be performed under local or regional anesthesia, the cardiac, pulmonary, gastrointestinal, and metabolic effects of surgery can be minimized. The less invasive nature of this procedure may result in lower morbidity and mortality and allow for aneurysm repair in patients who are poor surgical candidates due to comorbidities. (Thompson et al., 2000).

Compared to the open procedure EVAR has a shorter procedure time, less blood loss, one-tenth of the days in ICU, quicker ambulation and return to normal activities, and only 1% overall mortality. Across all complication categories, the EVAR has less complications than the open group (Matsumura JS et al., 2003).

The Aim of work

The aim of this work is to highlight:

-The indications and contrindications of EVAR.

-The safety and efficacy of EVAR.

-Complications of EVAR.

-Results and long term follow up of EVAR.

Anatomy of Abdominal Aorta

The Abdominal Aorta(Aorta Abdominalis):

The abdominal aorta begins at the aortic hiatus of the diaphragm, in front of the lower border of the body of the last thoracic vertebra, and descends in front of the vertebral column, ends on the body of the fourth lumbar vertebra, commonly a little to the left of the middle line,
by dividing into the two common iliac arteries. It diminishes rapidly in size, in consequence of the many large branches which it gives off. As it lies upon the bodies of the vertebrae, the curve which it describes is convex forward, the summit of the convexity corresponding to the third lumbar vertebra.(Giorgio Gabella et al., 1995).

Relations :

The abdominal aorta is covered anteriorly by the lesser omentum and stomach, behind which are the branches of the celiac artery and the celiac plexus; below these, by the lienal vein, the pancreas, the left renal vein,the inferior part of the duodenum, the mesentery, and aortic plexus. Posteriorly it is separated from the lumbar vertebae and intervertebral fibrocartilages by the anterior longitudinal ligament and left lumbar veins.On the right side it is in relation above with the azygos vein, cisterna chyli, thoracic duct, and the right crus of the diaphragm; the last separating it from the upper part of the inferior vena cava, and from the right celiac ganglion; the inferior vena cava is in contact with the aorta below.

On the left side are the left crus of the diaphragm, the left celiac ganglion, the ascending part of the duodenum, and some coils of the small intestine.(Giorgio Gabella et al., 1995).

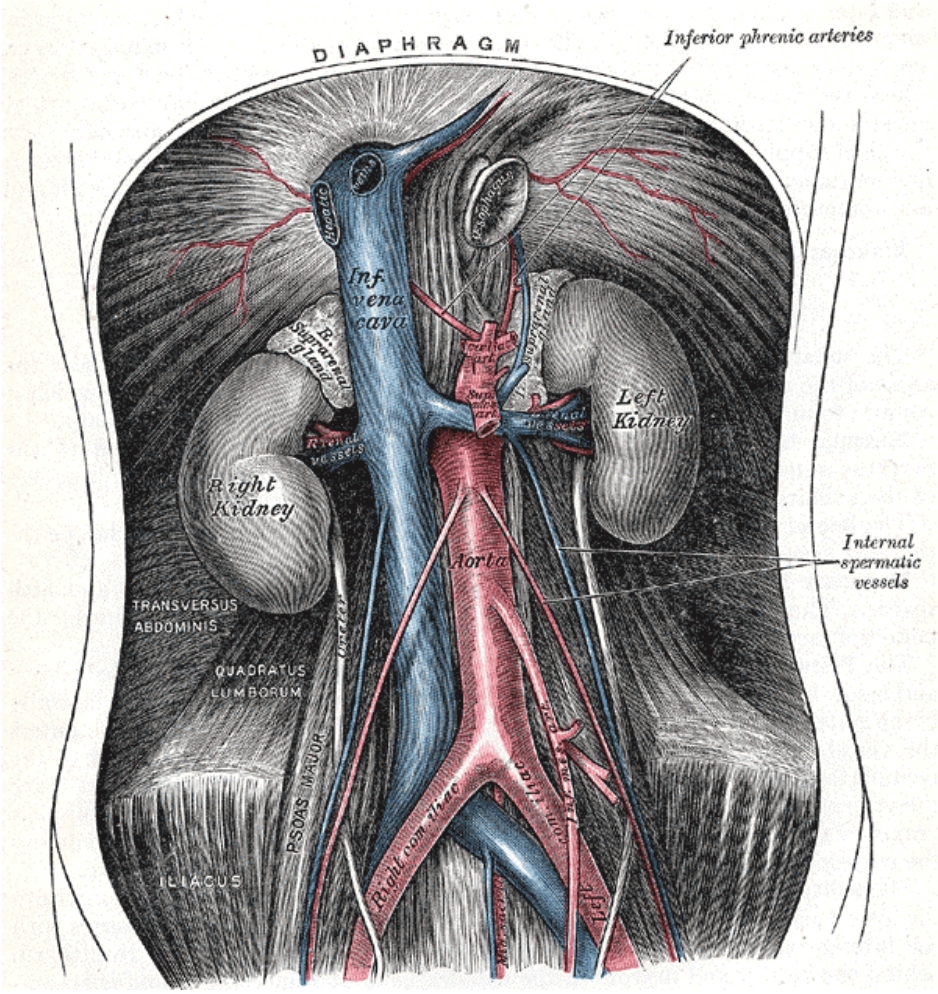

Figure (1):The abdominal aorta and its branches

Branches :

The branches of the abdominal aorta may be divided into three sets: visceral, parietal, and terminal. The visceral branches are celiac ,superior mesenteric, inferior mesenteric ,middle suprarenals, renals, internal spermatics, ovarian (in the female).The parietal branches are inferior phrenics, lumbers, middle sacral. The terminal branches are the common iliacs. Of the visceral branches, the celiac artery and the superior and inferior mesenteric arteries are unpaired, while the suprarenals, renals, internal spermatics, and ovarian are paired. Of the

parietal branches the inferior phrenics and lumbars are paired; the middle sacral is unpaired. The terminal branches are paired.(Giorgio Gabella et al., 1995).

ETIOLOGY AND PATHOGENESIS