One solution for your aorto-iliac needs

A detailed look at the E-tegra and E-liac stent graft systems
High precision technology for exact treatment of aorto-iliac aneurysms

Gottfried J Mommertz outlines the benefits of JOTEC’s E-tegra for the treatment of complex aneurysms and details a case study using the device.

ALTHOUGH PRESERVING THE perfusion of the hypogastric artery (HA) increases the complexity of endovascular perfusion of the hypogastric artery (HA) endoleak, limb occlusion and secondary increases the complexity of endovascular perfusion of the hypogastric artery (HA)


Bell-bottom reconstruction (Figure 1) is one option to preserve the perfusion of the HA, which has shown better results than coiling the HA related to combined reparative and reintervention.

Case description

On 6 December 2019, we saw a 72-year-old man with a common iliac artery aneurysm, which had a maximum diameter of 5cm on the left side. The abdominal aorta also showed an aneurysm with a maximum diameter of 4.4cm (Figure 3a). The basic facts showed a coronary vessel disease with three aorto-coronary bypasses, arterial hypertension, and chronic obstructive pulmonary disease. As such, our patient was considered unsuitable for surgical repair. Therefore, we decided to perform a aorto-biiliac EVAR including an iliac side branch for the left common iliac artery aneurysm. We planned to use JOTEC devices: the E-tegra stent graft, which has excellent new features, such as the redesigned springs for better sealing, better flexibility and kink resistance of the main body, and enhanced patency of the legs due to an improved flow divider, in combination with the E-liac.

There were no complications during implantation on 13 December 2019 (Figure 3b) and the clinical course of the patient, who left the hospital on 17 of December 2019, was good. The CT imaging after implantation showed no endoleaks and preserved perfusion in the left hypogastric artery as well as in both external iliac arteries (Figures 3c-d). He showed no buttock claudication, no deterioration of renal function, and primary undisturbed wound-healing.

With E-liac alone, as well as combined with E-tegra, we have very good options to treat patients with these complex aneurysms.

References


Case study figures
Treatment of an aorto-iliac aneurysm: Case report and first experience with a new stent graft

Cornelis JJM Sikkink and Lee H Bouwman discuss the treatment of an aorto-iliac aneurysm, giving details of a case involving their first clinical experience with the new E-tegra stent graft system. They begin by acknowledging that, while stent grafts used for this purpose have undergone a “tremendous development” in the past twenty years, the search for the “ideal” stent graft continues.

DURING THE LAST TWO DECADES, endovascular treatment of aortic and aorto-iliac aneurysms has become standard of care. In the early days, only a limited percentage of patients was considered EVAR (endovascular aneurysm repair) suitable, with the majority of patients being treated with open surgery. Nowadays, the percentage of endovascular repair in the developed world is significantly higher than open surgery.1 The stent grafts used for this purpose have undergone a tremendous development in the past twenty years in order to deal with the complications which are related to endovascular repair. Despite all this effort, endoleak, migration, sac enlargement, and even rupture are still complications that are encountered after EVAR.2 Therefore, despite the evident decrease in perioperative mortality, the search for the “ideal” stent graft continues. It is questionable whether all the aforementioned problems can be tackled by means of adjustments to stent grafts alone.

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For enhanced sealing and fixation. Another change is the proximal catherization of the fabric to prevent in-folding. New asymmetrical springs at the trunk of the main body were designed for increased flexibility and radial force. Furthermore, the oval-shaped bifurcation spring is supposed to optimise flow and patency at the flow divider. The squeeze-to-release deployment mechanism of the delivery system remains the same and allows for stepwise and precise placement of the graft. The main body is available with proximal diameters from 23–36mm. Sizes go up with 3mm steps from 23–36mm. 23–32mm and a 4mm step from 32–36mm. It is available as a bi- and trimodular stent graft design. The cover consists of thin asymmetrical springs at the trunk of the main body, the contralateral leg was designed for increased sealing and fixation. Another change is the proximal catherization of the fabric to prevent in-folding. New asymmetrical springs at the trunk of the main body were designed for increased flexibility and radial force. Furthermore, the oval-shaped bifurcation spring is supposed to optimise flow and patency at the flow divider. The squeeze-to-release deployment mechanism of the delivery system remains the same and allows for stepwise and precise placement of the graft. The main body is available with proximal diameters from 23–36mm. Sizes go up with 3mm steps from 23–32mm and a 4mm step from 32–36mm. Distally, the sizes of iliac extensions range from 10–27mm.

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A 76-year-old male presented at our outpatient clinic with asymptomatic bilateral iliac aneurysms. CTA showed that the iliac arteries were 26mm on the right and 43mm on the left. The diameter of the right internal iliac artery measured 15mm. The abdominal aorta was slightly enlarged at 32mm. There was no relevant medical history. Treatment options were discussed in a multidisciplinary team. Endovascular repair was proposed using bilateral E-liac stent grafts and the new E-tegra. The procedure was carried out under general anesthesia. Prophylactic antibiotics were administered and 5000IE of heparin. The procedure was performed percutaneously. First, the iliac aneurysms were treated. On the right side, the E-liac stent graft was placed and the aneurysm of the internal iliac artery was treated with coiling of a side branch and very distal stenting with E-ventus stents (JOTEC GmbH) (Figure 1). On the left side, no coiling was needed. After the iliac part, the main body of the new E-tegra was introduced from the right groin. Introduction was very easy, without any resistance. Precise placement of the main body was possible percutaneously. After positioning of the grafts, no endoleak was detected. Both renal arteries were open. All distal vessels and stents were patent (Figure 3). Total procedure time was 181 minutes, with 200cc of blood loss. The postoperative computed tomography after four weeks showed adequate positioning of the grafts (Figures 4 and 5) and there was no sign of endoleak.

The new E-tegra stent graft is easy to handle, with smart engineering, and seems to be a mature stent graft, able to compete with the dominant players in the field.

References
First implantation of the updated E-tegra in combination with E-liac for AAA and concomitant iliac aneurysms

Matthias Trenner describes a case involving the first implantation of the updated E-tegra in combination with E-liac for AAA and concomitant iliac aneurysms.

Figure 1: Preoperative CTA 3D reconstruction

**Preoperative course**

A 73-year-old male was referred with an abdominal aortic aneurysm known for three years, but now growing in size. The patient has a history of smoking, hyperlipidaemia and hypertension. Ultrasound revealed a 56mm AAA and concomitant 26mm right-sided common iliac aneurysm, which was confirmed by CT angiogram (Figure 1). Furthermore, the CT revealed multiple bilateral renal arteries. The infrarenal neck was 17mm in length and 26mm in diameter.

After discussion in our multidisciplinary team, the patient was offered endovascular treatment with EVAR and a right-sided iliac branch device (IBD).

**Procedure**

The operation was carried out under general anaesthesia. Femoral access was gained percutaneously and vascular closure devices were put in place for later haemostasis. The E-liac iliac branch device was passed to the right common iliac artery over a 0.35” stiff wire and a 0.18” up-and-over wire. An 8F cross-over sheath was fed in after the opening of the iliac side branch. The hypogastric artery was cannulated and an Eventus balloon-expandable stent graft was implanted as a bridging stent. To avoid kinking, the stent graft was refined using an uncovered nitinol stent. This was followed by implantation of the updated E-tegra aorto-bilateral iliac stent graft from the contralateral side. After cannulation of the contralateral limb, a bridging stent graft (16mm) was implanted between the E-liac and E-tegra devices. On the left side, an additional 19mm limb extension was necessary to warrant sufficient sealing. Completion angiogram showed no endoleak and preservation of all renal arteries and hypogastric arteries (Figure 2a/b). Haemostasis was sufficiently delivered through the placed closure devices. Total procedure time was 124 minutes.

**Postoperative course**

After four hours in recovery, the patient was transferred to the regular ward. Postoperative controls by contrast enhanced ultrasound (CEUS) and CT angiogram confirmed successful occlusion of the aneurysm with preservation of renal and hypogastric arteries (Figure 3 a/b). The patient was discharged on the third postoperative day. Thirty days after operation no further complications occurred.

Matthias Trenner is head of the Munich Aortic Centre (MAC) and consultant vascular surgeon at the Department for Vascular and Endovascular Surgery (chair: H-H Eckstein), Klinikum rechts der Isar, Technical University of Munich, Munich, Germany. At the MAC, the team carries out >200 endovascular and open aortic repairs a year, covering all open and endovascular aortic sites from arch to iliacs.

Figure 2a/b: Intraoperative angiographic imaging

Figure 3a/b: Postoperative CTA imaging

Key features and benefits of the newly-updated E-tegra stent graft system and the E-liac stent graft

Jacek Kurnicki talks through the key features and benefits of the new JO Three-dimensional reconstruction (3D) of the aortic arch and the E-liac stent graft system. The E-liac stent graft is suitable for treating isolated iliac aneurysms.

**How can JOOTEC/CryoLife meet the requirements of an EVAR stent graft?**

JOOTEC/CryoLife understands the patient’s and their doctor’s needs and offers a wide armamentarium. According to the IFU, their infrarenal stent graft E-tegra is suitable for AAA with the following preconditions:

- Infrarenal proximal landing zone ≥15mm
- Diameter of the proximal neck 19–32mm
- Distal landing zone length in the common iliac artery ≥15mm
- Distal landing zone diameter in the common iliac zone 8–25mm

These are the preconditions which should be met to use the infrarenal stent graft E-tegra. JOOTEC also offers their E-xtra DESIGN ENGINEERING products for anatomies that are not suitable for the E-tegra as a standard off-the-shelf product.

Pararenal/juxtarenal or thoracoabdominal aneurysms could be treated with fenestrated or branched devices provided by E-xtra DESIGN ENGINEERING. These customised devices fit very well to the aortic morphology and, despite the experience needed for such procedures, simply facilitate the stent graft’s implantation.

Patients with aorto-iliac or isolated iliac aneurysms can be treated with dedicated E-liac stent graft systems. The E-liac stent graft system can be implanted in combination with the E-tegra stent graft system.

**What are the key features and benefits of the new E-tegra?**

JOOTEC redesigned their abdominal working horse—E-tegra. The newly designed proximal W-shaped springs remarkably improve sealing in the proximal landing zone. The newly designed bifurcation spring remarkably improves flexibility of the main body and to guarantee improved flow and patency to both limbs. At the proximal end of the E-tegra main body, the fabric is flared between the struts of the bare stent, and that helps avoid the infolding of the fabric and consequently reduce the risk for Type I endoleaks. The redesigned sealing stent ensures better alignment and conformability. The above mentioned enhancements lead to an excellent sealing performance even in short infrarenal and highly angulated necks. The new asymmetric springs enhance conformability without diminishing colummary strength.

**What are the key features and benefits of the E-liac?**

The most important benefit of the E-liac stent graft system is the possibility to treat patients with aorto-iliac as well as isolated iliac aneurysms. JOOTEC is the only provider of an endovascular product for the treatment of isolated iliac aneurysms. The delivery system is simple and comfortable to use and the overall endovascular procedure is easy to perform. A wide range of anatomies can be treated due to the various sizes of the product.

None of my patients treated with the iliac branch stent graft, E-liac, complained of buttock claudication or colonic ischemia. Furthermore, there was also no sign of Type II endoleak coming from the hypogastric artery on the side of the iliac branch device. So far, I consider preserving the hypogastric arteries with dedicated stent grafts to be a safe operation.

**What has been your clinical experience with the new E-tegra device and what results have you seen?**

I perform about 50–75 endovascular aortic aneurysm repairs per year. About 5–10% of these procedures are aorto-iliac or, more rarely, isolated iliac aneurysm operations. Since JOOTEC launched their E-tegra update, I have performed five operations using this device. I am very satisfied with the handling and the outcomes of these procedures.

**What makes E-tegra and E-liac different from other devices for abdominal/aorto-iliac aneurysms?**

The main differences are the mechanism for the deployment of the stent graft (squeeze-to-release mechanism) and the position of the markers. The first feature makes the deployment smooth, simple and precise—I would say effortless. The second feature simplifies the positioning of the stent graft, visibility and the accurate intraoperative measurement and connection of the elements. JOOTEC/CryoLife offers the complete aorto-iliac product range and provides solutions for simple and complex anatomies. The management of AAA procedure with JOOTEC’s products is more flexible due to a large availability of diameters and lengths. The E-tegra has excellent sealing performance even in angulated and short necks. In addition, the service-oriented and well-trained product specialists from JOOTEC ensure excellent treatment.

Jacek Kurnicki is a general and vascular surgeon and vascular consultant at the Medi- cal University of Warsaw (Warsaw, Poland).
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