The Sandwich Technique To Treat Aorto-iliac Aneurysms: How To Size The Parallel Grafts

Samer Koussayer, MD, FACS, RVT
Assoc. Professor, Al Faisal University
College of Medicine
Section Head and consultant
Vascular & Endovascular Surgery Division
King Faisal Specialist Hospital & Research Center
Riyadh, KSA
Disclosure

I have the following potential conflicts of interest to report:

- Consulting
- Employment in industry
- Stockholder of a healthcare company
- Owner of a healthcare company
- Other(s)

X I do not have any potential conflict of interest
Importance Of Internal Iliac Artery

- Buttock claudication:
  - Unilateral 27% (range 14-50%)
  - Bilateral 32% (range 13-80%)
  - 50% decrease quality of life
- Impotence:
  - Unilateral 14% (range 11-45%)
  - Bilateral 18% (range 11-50%)
- Ischemic colitis 2-3%
- Spinal cord ischemia <1%
- Increase 30 days mortality

Endovascular solutions for AIA

- Coil and Cover
- Cerclage of common iliac artery
- Bell bottom technique
- EVAS
- Iliac Branch devices (IBD/IBE)
- Sandwich and Periscope
Coil And Cover

Conclusions:

- Increased complication rates
- Increased reintervention rates
- Worse long term result
Cerclage Of CIA

- Type 1B endoleak 4%
- Late dilatation of CIA 85%
Retrograde endovascular revascularization of the internal iliac artery

- Implantation of a conical aorto-uni-iliac endoprosthesis
- Creation of a femoral-femoral cross-bridge
- Implantation of a contralateral coated stent, extending from the EIA to the IIA
Bell Bottom Technique

• Pros:
  – Use flared iliac limb up to 28
  – An adequate sealing zone of at least 1.5 cm proximal of the origin of the IIA
  – Maximum CIA diameter of 24-25 mm

• Cons:
  – long-term outcome unknown
  – High rate of type 1b endoleak
  – Aneurysm progression
EVAS

Conclusions: EVAS was effective in treating aortoiliac aneurysms with preservation of internal iliac patency in most cases. Complete CIA exclusion prevented aneurysm enlargement over time, whereas partial exclusion did not prevent continued CIA enlargement, particularly in larger aneurysms.
Iliac Branch Devices (IBD)
Instructions For Use (IFU)

• Proximal common Iliac diameter: $\geq 17$ mm
• Minimum diameter at iliac bifurcation: $\geq 14$ mm
• External / Internal Iliac diameter: 6.5-13.4 mm and seal zone length of at least 10 mm
• Distance from lowest renal to iliac bifurcation: $\geq 16.6$ mm
• Angle between EIA / IIA $\leq 50$
Anatomic suitability of aortoiliac aneurysms for next generation branched systems.


Author information

Abstract

BACKGROUND: Preservation of internal iliac flow is an important consideration to prevent ischemic complications during endovascular aneurysm repair. We sought to determine the suitability of aortoiliac aneurysms for off-the-shelf iliac branched systems currently in clinical trial.

METHODS: Patients were selected based on diameters and lengths of aortoiliac aneurysms. Using an exclusion criteria for both Cook and Gore iliac branch devices, a total of 59% (39/99, 39.4%) of patients would have been candidates for the 2 current iliac branch devices. Of the remaining 41% (40/99, 40.6%) of patients, the major common reason for exclusion is the internal iliac landing zone for both devices. Familiarity with alternate branch preserving techniques is still needed in the majority of cases.

CONCLUSIONS:

✓ Only 35% of the aneurysm repairs involving common iliac arteries would have been candidates for the 2 current iliac branch devices.

✓ The major common reason for exclusion is the internal iliac landing zone for both devices.

✓ Familiarity with alternate branch preserving techniques is still needed in the majority of cases.

CONCLUSIONS: Only 35% of the aneurysm repairs involving common iliac arteries would have been candidates for the 2 iliac branch devices currently in trial based on anatomic criteria. The major common reason for exclusion is the internal iliac landing zone for both devices. Design modifications for future generation iliac branch technology should focus on diameter accommodations for the hypogastric branch stent and proximal and distal sizes of the iliac branch components. Familiarity with alternate branch preserving techniques is still needed in the majority of cases.
Sandwich Technique

\[
\pi c^2 = \pi I^2 + \pi E^2
\]
\[
C^2 = I^2 + E^2
\]

Add 2 mm for the fabric.

The size of the CIA graft is:

\[
C = (\sqrt{I^2 + E^2}) + 2
\]
The size of the CIA graft is:

\[ C = \left( \sqrt{I^2 + E^2} \right) + 2 \]

- IIA = 6-7 mm, with 10% oversize, Graft : 8mm
- EIA = 8-9 mm, with 10% oversize, graft : 10mm
- CIA stent graft needed:
  - \( C \) (radius) = \( \left( \sqrt{4^2 + 5^2} \right) + 2 \)
  - \( C = 6.4 + 2 = 8.2 \)
- CIA graft needed is 16 mm
The sandwich technique to treat complex aortoiliac or isolated iliac aneurysms: Results of midterm follow-up

Armando C. Lobato, MD, Jeane P. C. da Silva, MD, Welington A. S. Galdino, MD, Gerson de Araújo, MD, Instituto do Coração (InCor) – Hospital das Clínicas, University of São Paulo, Brazil

Objective: To ascertain midterm results following the sandwich technique for complex aortoiliac and isolated iliac aneurysm repair (EVAR) with endolateral covered stent-grafts (ECSG) in the present study. Patients were selected for the technique and were followed-up by the Institutional Review Board, and all patients signed informed consent.

Methods: All consecutive patients undergoing aortoiliac EVAR (EVAR) were selected for the present study. Patients were followed-up for at least 12 months after EVAR, and included computed tomography angiography and/or transcutaneous Doppler ultrasound. The institutional ethical committee approved the study.

Results: A cohort of 40 patients (20 men, 20 women) was analyzed. The mean age was 67.2 years (range: 40–83 years). The mean follow-up period was 4.4 months (range: 3–10 months). The mean number of iliac aneurysms (IIA) was 2.3 per patient (range: 1–6). The mean size of the iliac aneurysm was 2.5 cm (range: 1–5 cm). Aneurysm sac evolution ranged from a decrease of at least 5 mm to an increase of at least 5 mm. Postoperative complications were classified as follows: mild, moderate, and severe. The success rate was 100%, with primary patency of 93.8% and mortality of 0%.

- Aneurysma sac:
  - Decrease (at least 5 mm): 16 (34.8%)
  - No change: 29 (63%)
  - Increase: 1 (2.2%)

- Buttock Claudication: 0%

- Type III Endoleak:
  - 30 days: 1 (2.5%)
  - Late: 0%

Conclusions: The ST expands the limits of EVAR for complex aortoiliac aneurysms or IIAA in a safe, easy to perform, and cost-effective manner. (J Vasc Surg 2013;57:26S-34S.)
Conclusions

• Hypogastric preservation is indicated when treating CIA aneurysms especially in young patients if technically possible.
• There are many techniques to preserve the flow to IIA, but ST is safe, easy-to-perform and provide quick off-the-shelf solution and overcome may IBD limitations.
• We feel our formula decrease the Type III endoleak.
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Samer Koussayer, MD, FACS, RVT
Assoc. Professor, Al Faisal University
College of Medicine
Section Head and consultant
Vascular & Endovascular Surgery Division
King Faisal Specialist Hospital @ Research Center
Riyadh, KSA