Update On Distal Extended Branched PETTICOAT- Technique To Treat False Lumen Dilatation In Complex Aortic Dissections: Technique And Improved Results

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Even after coverage of most proximal entry tear remaining FL-perfusion through tears related to torn out reno-visceral branches still causes aneurysmal degeneration of the aorta

- Torn out ostium of celiac trunc
- Backflow into thoracic FL
- Aneurysmal degeneration of thoracic and abdominal aorta
- Right lead to rupture and death

So far described methods to treat FL-dilatation of thoracic and abdominal Aorta

- Open repair
- Hybrid procedures
- Endovascular approach with CM fenestrated/branched SG in elective cases

Common features:

- 30 day mortality and spinal cord malperfusion around 10%
- Always all reno-visceral branches have to be bypassed or stented

Other less invasive methods aim for reduction of FL-perfusion only in the thoracic aorta

- Thoracic FL-occlusion techniques like knickerbocker or candyplug
- Stabilise technique

- FL- Aneurysms of abdominal aorta and iliac arteries cannot be treated with these techniques and FL-Dilatation in these segments is not inhibited

Universal technique, which can be used to treat and prevent FL-dilatation in nearly all kinds of dissections, no matter which part of the aorta or iliacs is dilated and no matter, how acute or chronic they may be
Based on PETTICOAT Concept:
Proximal descending aortic stentgraft plus distal bare metal stent

When major reno-visceral branches were torn out, PETTICOAT alone is not capable to induce complete attachment of delaminated abdominal aortic wall, even less in chronic dissections.

In such cases, adjunctive procedures are needed: Implantation of balloon expandable covered stents (BECs) through preexisting entries and struts of dissection stents into FL originating arteries = branched Petticoat.

Entering of torn out FL-perfused vessels through their already present corresponding entry-tears is easy and facilitated by the previously implanted dissection stents.

Blood flow to FL originating target vessels exclusively from TL is re-established, which simultaneously leads to sealing of corresponding tears in the dissection membrane.

Distal extended branched Petticoat for the sealing of all relevant entries with off the shelf devices.
60y old male patient with 66 mm post dissection TAAA 8 years after incidence of TBAD

- Deeb Petticoat has the ability to induce total/subtotal FL thrombosis in thoracic (96%), abdominal aorta (76%) and iliac arteries (96%)

Distal extended branched Petticoat: Results

- Deeb Petticoat in 30 patients, 15 initially Type A, 15 Type B
- 1 week to 14± years after initial treatment
- 39 aortic branches were supplied with covered stents 5 celiac trunks, 3 SMA’s, 31 RA’s
- Exclusively Cook Dissection stents (GZSD/ ZDES) were used, in combination with Advanta/ I-CAST and mostly Gore C3 excluder (no suprarenal fixation) together with 19 IBD’s (Cook/Gore)

Distal extended branched Petticoat: Results

- Quick and easy and - as only off the shelf devices are needed - perfectly suitable for percutaneous treatment of acute and symptomatic patients

- 10 years after initial therapy for type A dissection and 6 years after thoracic SG

Distal extended branched Petticoat: Results

- close follow-up of all patients (3-66 months, Median 35,2 months)
- No 30 day- mortality, no method-related late death
- All cause mortality: 2/30 = 6,7%, 1 cardiac arrest, 1 aortic arch rupture due to an untreated Typ I Endoleakage several years after subtotal arch debranching and arch endografting in a 79 year old patient, who refused Stenotomy
- extremely low morbidity (3 asymptomatic losses of hypogastric arteries, 2 iliac branch obstructions)
- No aortic branch vessel obstructions

Deeb Petticoat: What makes it different?

- less branch vessel complications can be expected in long term follow-up compared to other methods, as only 1.3 vessels per patient on average were stented
- in 20 cases (67 %) only 1 FL-originating renal artery had to be stented
- In contrast to all other techniques renal function was ameliorated
Deeb Petticoat: What makes it different?

- No spinal cord malperfusion observed, as TL originating spinal arteries in thoracoabdominal junction (Adamciewicz) stay perfused

Only a few patients cannot be treated with deeb PETTICOAT
For example: Large entry at LRA and very large entry tear directly below the renals

1. IBD’s bilaterally

2. 4-fenestrated CMD

In most cases such more invasive treatment-options with higher mortality and morbidity and presumably worse long term outcome are not needed as first line therapy

If no or just one or two renovisceral branches were torn out and rest of dissection membrane in visceral aortic segment is intact (vast majority of cases): Percutaneous (staged) deeb Petticoat technique by far better option

Further benefit:
- Other therapeutic options are preserved
- Example: fenestrated EVAR

Sealing in already implanted thoracic SG

Sealing in already implanted C3-excluder

Fenestrated EVAR facilitated by i-cast stent in RRA