When And How Endovascular Treatment Can Be Helpful For Middle Aortic Syndrome And Renovascular Hypertension: Tips And Tricks To Make It Work: When Can It Not

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Disclosures
UK Lead for Voyager-PAD Trial
Bayer / Covance

Tip number 1
In MAS important association with severe congenital intracranial arterial disease
Cerebral MRA as component of work-up

Tip number 2
• Paediatric Nephrology input
• 30 to 50% of children can be successfully managed on medical treatment alone

Tip number 3
Careful assessment of segmental and parenchymal arterial circulation

Nephrectomy: medical (ACE-I) or laparoscopic
Technique of Renal Angioplasty

- Paediatric anaesthesia
- Paediatric endovascular expertise
- Low profile systems
- Vascular surgical cover

Technique: Access

- Femoral artery
  - Very safe in children > 3 kg
  - Can usually be used in children > 1 kg
- Umbilical artery
  - First few days of life
- Axillary and brachial arteries
- Pressure gradient measurement across stenoses

Tip number 4
IVUS Routine

Tip number 5
Cutting Balloon for severely fibrotic stenosis / restenosis

Tip number 6
Stenting in Renovascular Hypertension

- Indications
  - Immediate recoil after angioplasty
  - Dissection
  - Early restenosis after primary angioplasty
    - Balloon expandable
      - Coronary stent

Angioplasty of in-stent restenosis

In-stent restenosis after 2 years
Post-angioplasty
**Stent Failure**

Bilateral stenting 2 months later

**Bilateral renal revascularisation:**

Supraceliac bifurcated 12x6 mm dacron Aortorenal bypass

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**Tip number 7**

Stents are only placed at the renal artery origins to preserve surgical options

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**The Aortic Stenosis**

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**Uncontrollable hypertension in 3 Month Old Male**

(BP 300 mm Hg)

Mid to distal thoracic aorta

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**Mid Aortic Syndrome in 3 Month Old Boy:**

Clinical Course

- Now 4 years old
- 4 angioplasties
- Aorta has remodelled
- Hypertension cured
Tip number 8

The infantile/young aorta has the potential to remodel.
Be highly selective in use of aortic stents in younger children.

Tip number 9

- In stent stenosis is not infrequent
- Pressure gradient measurement
- Use balloon expandable stents

Aortic Stenosis: Williams syndrome
15yr male

8-mm balloon expandable metal stent
pre stent insertion
30 mm gradient
8-mm balloon expandable metal stent
in-stent stenosis 20 months later

Exceptions to Primary Endovascular Protocol

Multiple renal arteries (>2)
Renal aneurysm
Adolescents (>12 years)

Mid Aortic Syndrome in 7 Year Old Boy with Limiting Claudication

>90% aortic stenosis with high pressure gradient

8 year old girl: MAS with end-stage renal failure

Aorto-aortic bypass
Live donor renal transplant

8 year old girl: Aorta at bifurcation
Aorta at infrarenal
JS: Thrombosed aortic graft: Reconstructive surgery at 4 years old

Paediatric Vascular Disease

- Paediatric multidisciplinary care is essential
- Paediatric Nephrology
- Endovascular
- Open Vascular