Stenting of CoA

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It is correct to conclude that coarctation of the aorta is not the simple lesion it often appears to be.
Balloon Angioplasty

- Effective and safe (immediate result)
- Complications
  - restenosis (5-15%)
  - aneurysm: (5-40%)
  - dissection: (1-3%)
  - femoral artery injury and thrombosis
  - death: 0.7%
Balloon Angioplasty

Approach:
- Angiography and catheterization
- Measurement
- Diameter of Balloon: 2—4 times of diameter of CoA/diameter of normal aortic isthmus; not above the diameter of descending aorta (diaphragm level)
- 3—8 atm, 5—15s, could repeat for 2—4 times, interval 5 min
- Hyperinized; aspirin for 3-6 months
Balloon Angioplasty

1979, Sos et al; 1982, Lock et al
Indication: native CoA/ recurrent CoA, SPG>20mmHg, discrete
Mechanism: tear and stretch of aortic wall
Balloon catheter: low profile
Advantage: suitable for all patients of any age
Disadvantage: uncontrolled tear and stretch of vessel wall
Implantation of Stent

1991 O’Laughlin, Lock etal

Targets:
- Getting more diameter
- Less vessel wall injury, less complication
- Preventing recoil/ restenosis

Indication:
- native CoA or recurrent CoA, PSG>20mmHg
- children >30 kg, adolescent and adult

Disadvantage:
- Large sheath
- Expensive
Implantation of Stent

- Stent:
  - Bare stent: **CP stent**; Palmaz stent (8–10 series); Genesis XD stent; eV3 LD stent
  - Covered stent: **covered CP stent**

- Balloon
  - **BIB catheter**; Z-Med balloon

- Guide wire: supper stiff (260cm)

- Sheath: Mullins sheath or ...
Bare Stent for CoA
Covered CP Stent and BIB Catheter

- Palmaz Stent
- NuMED CP Stent

BIB PTA Catheter

<table>
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<th>Size (Fr)</th>
<th>Length</th>
<th>Max. Pressure</th>
<th>Max. Flow Rate</th>
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All Catheters have:
- An inner balloon 1/3 of the balloon diameter
- An outer balloon 1/3 of the balloon diameter
- An inner balloon that is 1 mm smaller than the outer balloon. In BIB10 has an inner balloon that is 0.5 mm larger
- An inner balloon with a rated burst pressure of 180 kPa, 0.18 bar, 0.018 MPa, 2.6 psi
- A length of 115 cm
- All Catheters are for use with a 300° axis
**Implantation of Stent**

**Approach**
- Locating stiff guide wire in ascending aorta
- Push sheath across the guide wire
- Balloon: length \( \geq \) stent length; diameter = diameter of aorta proximal to CoA segment or +1-2mm
- Mount stent to balloon
- Draw sheath back and leave stent
- Confirm
- Inflation of balloon to expand stent
- Deflation of balloon and draw back into sheath
- Angiography and catheterization
A 30 years old refer for fatigue, weakness and shortness of breath.
Stenting COA and PDA closing

In 2 years old with 11 kg
• In physical exam
• Weight 6kg
• Respiratory distress and tachypnea
• Systolic MrMr in LSB
• In echocardiography
  LA enlargement
• TR 50 mmHg
• PDA And COA with 55 mmHg PG
• in echocardiography, there was a narrowing of the previous COA

• The PG was about 50 mmHg in the echo

• Patern COA again showed
We decided that the stent would be better for treatment

- Because the desired stent that we need is an 8 French sheet.

- We should be dilated by the femoral artery gradually and with caution.

- We injected in the femoral artery to calculate and see whether or not we accept our sheet.

- Then we mounted the stent 29 Xd Genesis on a z-med balloon of size 40 * 12
From axillary

A 8 days neonate with heart failure and respiratory distress
azarmad

A 25 years old refer for palpitation and hypertension
OMID 24

A 24 years old was referred for headache and hypertension
Self expandable
neonate
ARMIN

Infant

50 days with heart failure and tachypnea and 4.5 kg weight
5 years