Echocardiographic assessment of after Rastelli operation

Multimodality Imaging in ACHD and PH

Annemien van den Bosch
Erasmus MC, Thoraxcenter, Rotterdam, The Netherlands
Rastelli surgery technique

- Rastelli operation is performed in patients with a variety of congenital abnormalities

- **Common theme** being the presence of a VSD
  - Double outlet right ventricle with VSD
  - TGA with VSD
  - Truncus arteriosus
Rastelli surgical technique

- Patch across the native VSD, to deviate blood from the LV to the aorta
- VSDs which are committed to the great arteries fare better than remotely located VSDs, which are difficult to use in the re-routing of LV outflow

Courtesy of Dr Hans Hamer
Rastelli surgical technique

- Native PV is disconnected proximally and a valved RV to PA conduit is inserted.
- The location of the conduit is usually very anteriorly in close proximity to the sternum.

Courtesy of Dr Hans Hamer
Post-operative Sequelae

- LV outflow obstruction
- VSD patch leak
- Aortic root dilatation
- RV-PA conduit dysfunction
- Bi-ventricular dysfunction
Key views specific to Rastelli repair

- Aorta remains in its anterior position and LV flow is through the VSD
- LVOT becomes elongated and sometimes acutely angulated
Elongated and angulated LVOT

- Elongated LVOT has increased musculature at the VSD site which can cause LV outflow obstruction
- It is important to identify LVOT obstruction
Key views specific to Rastelli repair

- Residual patch leak
Search for residual VSDs

The patch re-routes the flow from the LV to the anterior aorta, and so can be quite long
Key views specific to Rastelli repair

RV-AP conduit dysfunction

- This is usually positioned right underneath the sternum and requires very high parasternal views
RV-AP conduit

- Longterm consequences are significant regurgitation and/or stenosis
  
  $V_{\text{max}} = 3.6 \text{ m/s}$
RV-AP conduit

- Longterm consequences are significant regurgitation and/or stenosis

Enddiastolic antegrade flow
The conduit is long and narrow at one end, hence assessing the length of the conduit is important and may require multiple views.
RV pressure estimation using TR jet may help determine the clinical significance.
Rastelli repair report

- Clearly state the original anatomy. Rastelli operations can be used for other anatomies as well as dTGA.
- VSD patch integrity
- LV outflow haemodynamics
- Aortic root size
- RV-PA conduit haemodynamics & assess for regurgitation
- Estimate of RV systolic pressure
Thank you for your attention