PDA closure in adult

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Are there any differences from pediatrics?

- Less number of cases
- Larger body size (easy puncture, may be more difficult to cross, more space for delivery system and device landing)
- More pulmonary hypertension?
- More calcification – difficult to complete closure using device and high risk for surgical closure
## Indications for intervention in PDA

<table>
<thead>
<tr>
<th>Indications</th>
<th>Class&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Level&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDA should be closed in patients with signs of LV volume overload</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>PDA should be closed in patients with PAH but PAP &lt;2/3 of systemic pressure or PVR &lt;2/3 of SVR</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>Device closure is the method of choice where technically suitable</td>
<td>I</td>
<td>C</td>
</tr>
</tbody>
</table>
### Indications for intervention in PDA

<table>
<thead>
<tr>
<th>Indications</th>
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<th>Level&lt;sup&gt;b&lt;/sup&gt;</th>
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<tbody>
<tr>
<td>PDA closure should be considered in patients with PAH and PAP &gt;2/3 of systemic pressure or PVR &gt;2/3 of SVR but still net L–R shunt (Qp:Qs &gt;1.5) or when testing (preferably with nitric oxide) or treatment demonstrates pulmonary vascular reactivity</td>
<td>IIa</td>
<td>C</td>
</tr>
<tr>
<td>Device closure should be considered in small PDAs with continuous murmur (normal LV and PAP)</td>
<td>IIa</td>
<td>C</td>
</tr>
<tr>
<td>Indications</td>
<td>Class&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Level&lt;sup&gt;b&lt;/sup&gt;</td>
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<tr>
<td>----------------------------------------------------------------------------</td>
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<tr>
<td>PDA closure should be avoided in silent duct (very small, no murmur)</td>
<td>III</td>
<td>C</td>
</tr>
<tr>
<td>PDA closure must be avoided in PDA Eisenmenger and patients with exercise-induced lower limb desaturation</td>
<td>III</td>
<td>C</td>
</tr>
</tbody>
</table>
## Recommendations for correction of congenital heart disease with prevalent systemic-to-pulmonary shunts

<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Class&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Level&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVRi (WU • m&lt;sup&gt;2&lt;/sup&gt;)</td>
<td>PVR (WU)</td>
<td>Correctable&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>&lt;4</td>
<td>&lt;2.3</td>
<td>Yes</td>
</tr>
<tr>
<td>&gt;8</td>
<td>&gt;4.6</td>
<td>No</td>
</tr>
<tr>
<td>4–8</td>
<td>2.3–4.6</td>
<td>Individual patient evaluation in tertiary centres</td>
</tr>
</tbody>
</table>

ESC guideline for PAH 2015
Case presentation

• A 70-y-old woman presented with progressive dyspnea. PDA was detected and tried to close using device occluder but failed to complete closure. Then the patient was referred to us.
Case presentation
How to manage this patient?

1. Leave it without closure.
2. Sent her for surgical closure.
3. Try to re-close using PDA coil.
4. Try to re-close using ductal occluder.
How to manage this patient?

- If try to use ductal occluder, which size?
  - 4/6
  - 6/8
  - 8/10
Case presentation

Cocoon ductal occluder 6/8
Do you accept this result?

- Yes
- No

If no, how would you do?
  - Wait for a few minutes
  - Re-position of device
  - Change device size
Case presentation

Reposition device 6/8
Do you accept this result?

- Yes
- No

If no, how would you do?
- Wait for a few minutes
- Change device size
Case presentation

Cocoon ductal occluser 4/6
Do you accept this result?

- Yes
- No

If no, how would you do?

: Wait for a few minutes
: Re-position of device
: Change device size
After 10 minutes

Cocoon ductal occluder 4/6
Case presentation

- 30-y-old woman presented with progressive dyspnea 1yr.
- PE: Sign of pulmonary HT, RV heaving and loud P2, diastolic blowing murmur at LUSB
Case presentation

• How to manage this patient?
  : Closure with device
  : Closure with surgery
  : Medication with pulm. vasodilatation
  : Cardiac cath.
  : I have no idea....... refer
Case presentation

• She received 300 mg/d of sildenafil for almost 1 year.
• Then, she was scheduled for Rt and Lt-heart cath.
Case presentation

<table>
<thead>
<tr>
<th></th>
<th>Qp : Qs</th>
<th>Rp : Rs</th>
</tr>
</thead>
<tbody>
<tr>
<td>At rest</td>
<td>1.39</td>
<td>0.84</td>
</tr>
<tr>
<td>Post 100% O₂</td>
<td>1.8</td>
<td>0.44</td>
</tr>
<tr>
<td>Post Iloprost</td>
<td>1.33</td>
<td>1.05</td>
</tr>
</tbody>
</table>
Aortography
Case presentation

• How to manage this patient?
  : Leave her with medication
  : Closure with device
  : Closure with open surgery
  : I have no idea...........
  : Other option............
Post balloon occlusion
Post balloon occlusion
PDA device occluded
Immediate device occluded
Case presentation

• How to manage this patient?
  : Wait for a few minutes
  : Change to bigger device
10-minutes device occluded
Case presentation
Case presentation
Case presentation

• How to manage this patient?
  : Send pt to open surgery
  : Change to longer sheath?
  : Other option..........
Case presentation
Case presentation
PDA with dextrocardia
Case presentation
PDA with dextrocardia
PDA with dextrocardia
Small PDA
Small PDA
Small PDA
Small PDA
Small PDA
Take home messages

• Device closure is treatment of choice and can apply to almost adult patients.
• Calcified is common and sometime be a problem for device selection.
• Pulmonary HT is a challenging situation and may be need pulmonary vasodilator plus balloon occlusion test.
• Sometime need to modify technique and apply in individual case.
Thank you for your attention