Endothelialisation of cardiovascular implants: Histology and immunochemistry in 71 human explanted devices

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Endothelialisation of cardiovascular implants

Types of implants:

- **Occlusion devices**
  
  ASD-Occluder (Amplatzer/Cardioseal/Starflex) n = 23
  Implantation time 5 days to 8 years

- **Stents**
  
  Stainless steel stents (Ductus arteriosus) n = 24
  Implantation time 5 days to 13 months

- **Vascular (valve) grafts**
  
  RVOT-Conduits (Homograft/Contegra/Hancock) n = 24
  Implantation time 6 months to 19 years
Histopathologic work-up
Histopathologic work-up

Richardson Blue 200x
Sigler: Endothelialisation of cardiovascular implants

Fibrin

EC

20 µm

Scanning electron microscopy

Sigler et al, Z Kardiol 2005
ASD-Occluder group (n = 23)

Implantation time 5 days to 8 years

Amplatzer ASD occluder
PDA-Stent group (n = 24)
Implantation time 5 days to 13 months

Antibody: von Willebrand factor

PDA stent (HLHS), implantation time 161 days
RVOT-Conduit group (n = 24)
Implantation time 6 months to 19 years

Contegra conduit
Implant.-time 5.5 years

Hancock conduit
Implant.-time 14 months
# Complete Neo-Endothelialisation

**Minimal time interval between implantation and explantation**

<table>
<thead>
<tr>
<th>Device Type</th>
<th>Time Interval</th>
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<tbody>
<tr>
<td>ASD-Occluder</td>
<td>2 months</td>
</tr>
<tr>
<td>PDA-Stents:</td>
<td>31 days</td>
</tr>
<tr>
<td>RVOT-Conduits:</td>
<td>6 months</td>
</tr>
</tbody>
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Conclusion

Anticoagulant or antiplatelet therapy for 6 months following implantation of cardiovascular devices may be sufficient to bridge the time interval until neoendothelialisation is complete.
19 y male  Secundum type ASD
Implantation of an Amplatzer ASD occluder age 17 y
38 y male  Secundum type ASD
Implantation of an Amplatzer ASD occluder age 30 y
Thank you !