Early and midterm results in Sleeve Valve Sparing procedure for Aortic Root aneurysm with or without aortic regurgitation.

AMANDO GAMBA
M.Triggiani, G.Tasca, A.Galanti, A.S.Martino, F.Giannico, E. Lobbiati

Cardiovascular Department
Lecco – Italy

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REMODELING and REIMPLANTATION technique for aortic root aneurism are fascinating but demanding operations.

Experience and constant training with aortic root surgery is mandatory to obtain good results.

For the non expert surgeons that treat only few cases/year the solution are
- sending the patients in referral centre
- performing root replacement

or….

to make reimplantation technique (David operations) easier
In 2006 to make the “David operation” easier we introduced a new technique sharing the “Florida Sleeve” concept.
Sleeve operation
Bergamo/Lecco experience in 90 cases

Surgical Technique

- ECC 32°C, retrograde warm blood cardioplegia
- the aorta is transacted 5-10 mm distal to the STJ
- the aortic root/aortoventricular junction is dissected 10 mm under the origin of the coronary artery
- **Valsalva or Cardioroot graft** is prepared with two small key holes and it is fixed at the VAJ level with 3 stitches below the nadir of each leaflet
- an additional stitch is used to close the vertical slit of key holes under the origin of the coronary artery
- the aorta is fixed to the graft at the **level of the >STJ**
- the graft is fixed to the distal part of the ascending aorta/arch
Sleeve operation
VIDEO-CASE

• Male, 58 years old,
• 82 kilo, 176 height
• Ascending aorta 55 mm, arch 36 mm
• Moderate/severe aortic regurgitation

SLEEVE OPERATION
with
CARDIOROOT-PROTHESES 30 MM
Sleeve operation in 90 cases

Patients

- Nº patients 90 (October 2006 – October 2012)
- mean age $61 \pm 12$ years (range 26 – 85 yrs)
- mean BSA $1,93 \pm 0,19$ m² (range 1,49 – 2,4)
- mean aortic diameter $53,1 \pm 5,3$ mm (range 45-80)
- aortic valve insufficiency no/min 19%, mild 29%, mod. 41%, sev. 11%.
- associated pathology Marfan 2, CHD 2, bicuspid 16, dissection 2
| Nº patients | 61 | 9 | 4 | 16 |
## Sleeve operation in 90 cases

### Surgical Technique

<table>
<thead>
<tr>
<th></th>
<th>Bergamo/Lecco Sleeve</th>
<th>Original Florida Sleeve</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of prosthesis</strong></td>
<td>Valsalva 67 pts Cardiroot 13 pts</td>
<td>Tubular Valsalva only recently?</td>
</tr>
<tr>
<td><strong>Prothesis diameter</strong></td>
<td>28 mm 29 pts 30 mm 47 pts 32 mm 14 pts</td>
<td>34 – 36 mm</td>
</tr>
<tr>
<td><strong>Annular stitches</strong></td>
<td>three</td>
<td>multiple</td>
</tr>
<tr>
<td><strong>“Key-holes”</strong></td>
<td>small with radial incision</td>
<td>big</td>
</tr>
<tr>
<td><strong>Ascending aorta replacement</strong></td>
<td>with the same prosthesis</td>
<td>with a second prosthesis</td>
</tr>
</tbody>
</table>
Sleeve operation in 90 cases

Associated surgical procedures

- coronary artery bypass: 12
- aortic arch/emiarch replacement: 4
- aortic valve repair (bicuspid): 8
- mitral valve repair: 3
- other: 5

- Mean aortic cross clamping time: 70 ± 15 min
- Mean ECC: 88.9 ± 24 min
Sleeve Operation in 90 cases

Early Results

Complication:

- right coronary artery dissection : CABG (1 case)
- circumflex coronary artery stenosis : stent (1 case)
- reopening for bleeding : 1 case
- hospital mortality : no

Aortic regurgitation at discharge:

- Absent / trivial : 84%
- Mild : 13%
- Mild/mod : 3%
Sleeve Operation in 90 cases

Late Results

• **Mean follow-up** (100%) : 34.2 ± 19 months (range 4 - 75)
• Two late death (18-59 months, tumor)
• One reoperation (8 months) for severe aortic regurgitation

• Aortic regurgitation
  - absent 37 %
  - (81 pts mean f-up 18 months) minimal 25 %
  - mild 37 %
  - moderate 1 %

One patient with residual severe mitral regurgitation
Sleeve Operation

Postoperative Root Diameter in 73 patients

<table>
<thead>
<tr>
<th>Location</th>
<th>Diameter (mm)</th>
<th>Error (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAJ</td>
<td>27.2</td>
<td>+2.2</td>
</tr>
<tr>
<td>SINUSES</td>
<td>37.0</td>
<td>+3.4</td>
</tr>
<tr>
<td>STJ</td>
<td>30.6</td>
<td>+3.1</td>
</tr>
</tbody>
</table>
Sleeve operation
Postoperative Root Diameter in 73 patients

<table>
<thead>
<tr>
<th>TYPE OF PROTHESIS / MEAN DIAMETER</th>
<th>VALSALVA (60pts)</th>
<th>CARDIOROOT (13pts)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prosthesis</td>
<td>29.9 mm</td>
<td>29.4 mm</td>
<td>-5 mm (1.7%)</td>
</tr>
<tr>
<td>VAJ</td>
<td>27.6 mm</td>
<td>26.6 mm</td>
<td>-10 mm (3.6%)</td>
</tr>
<tr>
<td>Sinuses of Valsalva</td>
<td>37.3 mm</td>
<td>36.5 mm</td>
<td>-8 mm (2.2%)</td>
</tr>
<tr>
<td>STJ</td>
<td>30.7 mm</td>
<td>30.4 mm</td>
<td>-3 mm (0.9%)</td>
</tr>
</tbody>
</table>
Sleeve Operation in 90 cases

CONCLUSION

• Sleeve, compared with other technique, appears easier to perform

• It seems less difficult to fix the cusps in the right position for a good valve competence

• There is no contact between the leaflets and the graft

• Normal “design” of the aortic root is preserved

• A LONGER FOLLOW-UP IS REQUIRED