

Experience in VSD closure from India

Bharat Dalvi, MD
Glenmark Cardiac Centre
Mumbai, India

History of device Closure of VSD in India

- G B Pant Hospital in Delhi. Dr Arora's group
- Mid 90s
- Transcatheter device closure of ventricular septal defects: Immediate results and intermediate-term follow-up (Am Heart J 1999;138:339-44.). Rashkind's device
- Transcatheter Closure of Congenital Ventricular Septal Defects: Experience with Various Devices (J Interven Cardiol 2003;16:83-91)

- Initial human experience with the Amplatzer perimembranous ventricular septal occluder device (Cathet Cardiovasc Intervent 2003;58:238–245)
- Transcatheter Closure of PMVSDs Using Amplatzer Asymmetric Ventricular Septal Defect Occluder: Preliminary Experience (PICS 2006)
- Transcatheter closure of perimembranous ventricular septal defects using amplatzer asymmetric ventricular septal defect occluder: Preliminary experience with 18-month follow up (Cathet Cardiovasc Intervent 2006;68:145-52)

Sources of Data

- Do NOT have a functioning National Registry
- Complete data is impossible
- Number of centres (32), operators (70) and devices used (ADO I and ADO II): Industry
- 5 centers with PROBABLY the maximum experience
- 4 centres replied

Centres and PO

- U. N. Mehta Hospital, Ahmedabad: Dr Bhavesh Thakker
- Care Hospital, Hyderabad: Dr Nageshwar Rao
- Jaydeva Institute, Bangalore: Dr Jayrangnath
- Glemark Cardiac Centre, Mumbai: Dr Bharat Dalvi

Basic Data

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|-------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|
| Period of Study | 2007-2012 | 2006-2012 | 2010-2012 | 2000-2012 |
| Total no of cases | 431 | 158 | 158 | 102 |
| Age | 2m to 38 years (7.6 years) | 6m to 22 years (4.6 years) | 9m to 41 years (5.3years) | 4m to 21 years (4.2 years) |
| Gender (M:F) | 255:176 | 71:87 | 91:67 | 68:34 |
| Weight | 4.2 – 72 (20) | 3.2 – 55 (14) | 7.5 – 64 (21) | 3.5 - 56 (16) |
| | | | | |

VSD types

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|-------------------------|---------------|---------------------|-------------------|-------------|
| Perimembranous | 310 | 108 | 136 | 76 |
| Muscular | 83(34) | 38(4) | 18(0) | 22(3) |
| Postop (Residual) | 2 | 8 | 4 | 1 |
| Others (Subpulmonic) | 2 | 0 | 0 | 0 |
| | | | | |

Approach

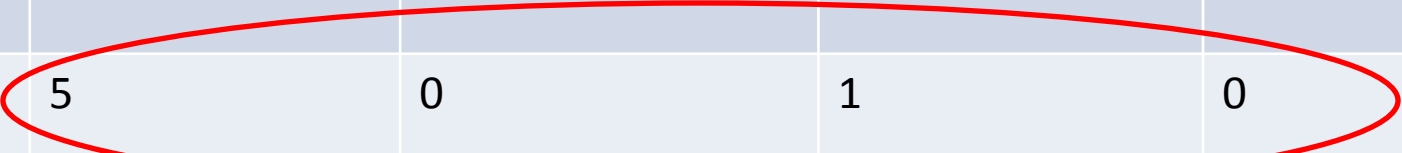
| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|---------------|--------------------|---------------------|--------------------|------------------|
| Transvenous | 397 | 64 | 112 | 85 |
| Transarterial | 0 | 94 | 46 | 14 |
| Hybrid | 34 | 4 | 0 | 3 |
| Success | 423/431 (98.1%) | 150/158 (95%) | 157/158 (99.3%) | 100/102 (98%) |
| | | | | |

Devices Used

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|----------------|-----------------------------|---------------------|-------------------|-------------|
| AAPMVSDO | 1 | 19 | 12 | 61 |
| Symmetric VSDO | 113(SSM) + 159 (Starway) | 11 (Lifetech) | 0 | 0 |
| MVSDO | 32 | 20 | 8 | 15 |
| ADO I | 88 | 18 | 90 | 11 |
| ADO II | 0 | 87 | 46 | 14 |
| ASO | 1 | 0 | 2 | 0 |

Complications

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|---------------------|---------------|---------------------|-------------------|-------------|
| Device Embolization | 4 | 3 | 1 | 1 |
| NeoAR | 4 (1) | 3 | 1 | 6 |
| NeoTR | 3 | 2 | 5 | 12 (1) |
| Acute MR | 0 | 1 (1) | 0 | 0 |
| Hypotension | 0 | 2 | 0 | 1 |
| CHB | 5 | 0 | 1 | 0 |

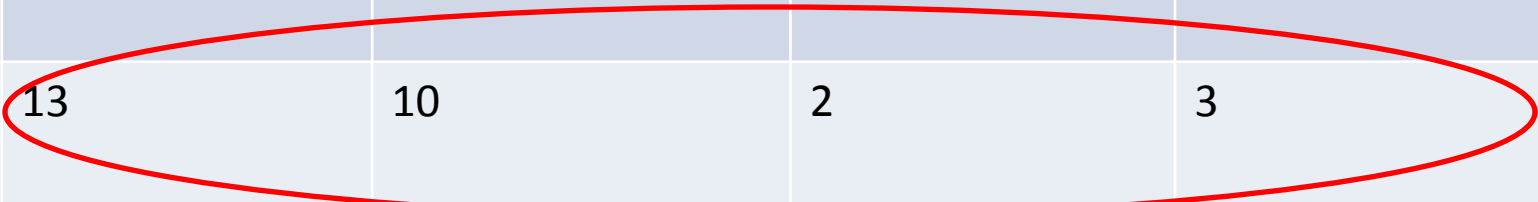


ECG Changes

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|-----------------|---------------|---------------------|-------------------|-------------|
| Isorhythmic AVD | 7 | 0 | 2 | 1 |
| RBBB | 6 | 9 | 2 | 6 |
| LBBB | 2 | 0 | 0 | 1 |
| IRBBB | 0 | 0 | 0 | 3 |
| LAHB | 1 | 0 | 0 | 3 |
| | | | | |

Follow up

| | Thakker et al | Nageshwar Rao et al | Jayrangnath et al | Dalvi et al |
|----------------------|---------------|---------------------|-------------------|--------------|
| Duration | 1-54 months | 1-56 months | 1-30 months | 1-134 months |
| Late onset CHB | 0 | 0 | 0 | 0 |
| Device migration | 0 | 0 | 0 | 0 |
| Thromboembolism | 0 | 0 | 0 | 0 |
| Pericardial effusion | 0 | 0 | 0 | 0 |
| Residual Shunt | 13 | 10 | 2 | 3 |



Conclusion

- Long history of VSD closure
- Last 2 years has seen a lot of activity
- 32 centers are actively closing VSDs
- PMVSD tops the list
- Relatively older and bigger children
- ADO I and ADO II - flavors of the day: Why ?
- Excellent success rate (> 95%)
- Finite complications
- Low incidence of CHB, AR, TR (< 1%)