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Surgical management of Rheumatic Heart Disease

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Issues for RHD surgery in Indigenous population

1. Barriers to access to specialist physician/surgeon
   - Lack of local or outreach cardiac services esp. multidisciplinary
   - Lack of continuity of care
2. Reduced availability of Echocardiography
   - Difficulty in access if no outreach service
   - Lack of skilled cardiovascular workforce, including sonographers, in areas with high population of Aboriginal people

Issues for RHD surgery in Indigenous population

3. Late Presentation
   - Difficulty achieving early diagnosis
   - Less likely to be suitable for valve repair
4. Difficulties with drug therapy and anticoagulation
   - Socio-economic & educational disadvantage
   - Access to pathology services
   - Mobility of population
   - Cultural & language barriers

Issues for RHD surgery in Indigenous population

5. Paucity of surgical outcome data for ATSI people
   - Lack of national registry
   - Lack of contemporary outcome data esp. adults

6. Often comorbidity

   E.g. diabetes, chronic kidney disease, smoking, poor oral health

Heart valve procedures for principal diagnosis of acute rheumatic fever or rheumatic heart disease, by Indigenous status, 2001–02

	Indigenous Australians		Other Australians	
		Proportion of all heart valve procedures		Proportion of all heart valve procedures
Heart valve procedure	Number	%	Number	%
Replacement of mitral valve	42	39.6	435	35.4
Replacement of aortic valve	20	18.9	390	31.7
Repair of mitral or aortic valve	24	22.6	178	14.5
Other heart valve procedures	20	18.9	227	18.5
Total	106	100	1,230	100

AIHW, *Rheumatic heart disease: all but forgotten in Australia except among Aboriginal and Torres Strait Islander peoples*, Bulletin, 16, 2004.

Outcome after Valve Replacement

- 81 patients followed who had valve replacement for RHD 1964 – 96 RAH
- 70/81 Aboriginal
- 49 MVR (84% S.E.)
- 11 AVR (72% B.S)
- 21 DVR

Carapetis et al, APHJ, 1999, (8), 3

Outcome after Valve Replacement

Embolic complications

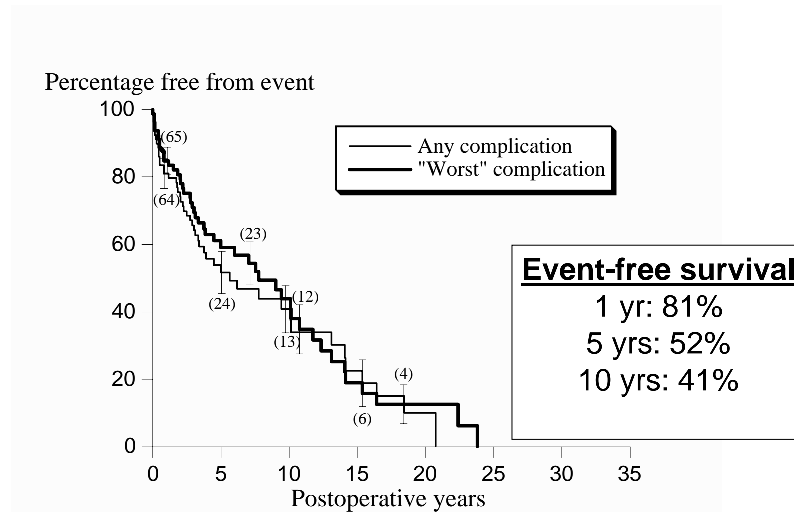
- 15 patients had 22 embolic complications
  - 3 sub therapeutic INR at time of embolism
  - 4 60% INR levels sub therapeutic over 2 yr. period
  - 3 30% INR levels subtherapeutic over 2yr. period

Bleeding complications

- 8 patients had 15 bleeding complications
  - 6 20% INR > therapeutic range
  - 5/6 30% of INR levels sub therapeutic

Carapetis et al, APHJ, 1999, (8), 3

Event-free survival of 80 postoperative survivors of valve replacement for RHD



Event-free survival

1 yr: 81%

5 yrs: 52%

10 yrs: 41%

Carapetis et al, APHJ, 1999

Late Outcome after Cardiac Surgery SGH Perth 1996 – 2001

57 Aboriginal patients (2.3% of all patients)

- 10 had valve surgery
  - 9 Mechanical valve replacement
  - 1 Mitral valve repair
- 2 patients lost to F/U
- 3 admissions within 1/12 with PE & INR > therapeutic
- 1/3 (34 years) SCD INR 1.0
- 1/3 readmitted with INR > 9
- 4 Regular follow up
- 2/4 Irregular warfarin
- 1 MV repair admitted with anterior MI

Kejriwal et al HLC 2004, 13, 70-73

Mitral Regurgitation

Surgical Management – Choice of operation

- Mitral Valve Repair operation of choice
  - Low operative mortality
  - Better late outcome
  - No anticoagulation if in SR
  - Better preservation of LV systolic function
- Valve replacement
  - Mechanical
  - Bioprosthetic valve. Structural degeneration more common than aortic ? Role in young females

Mitral Regurgitation

Indications for surgery

- Symptoms
- Reduced systolic function (LVEF < 60%)
- LVESD > 45mm (? Correct for BSA)

Mitral Regurgitation

Indications for surgery in patients with mod/severe MR , normal LV systolic function and no or mild symptoms

Case for Early Referral

- Borderline normal systolic function (50-60%) may represent LV dysfunction
- MR tends to progress, most patients symptomatic in 5-10 years
- High likelihood of repair

Mitral Regurgitation

Indication for surgery in patients with mod/severe MR,normal LV systolic function and few or no symptoms

Case Against Early Referral

- Reoperation rate for recurrent MR up to 10% of patients within 2 years

- Need to perform MVR in some patients esp. if associated with fibrotic, calcified valve and MS

Mitral Stenosis

Percutaneous balloon mitral valvuloplasty PTMV treatment of choice for mitral stenosis.

Patient selection

- Symptoms
- MVA < 1.5cm^2
- All patients unless valve heavily calcified
- Best in young patients with thin pliable valves
- No LA thrombus (unless small, stable)

Chronic aortic regurgitation

Surgical Management

Choice of operation

- Replacement with mechanical valve
- Replacement with stented or stentless bioprosthesis
- Homograft replacement
- Aortic valve repair
- Ross procedure

Chronic aortic regurgitation

• Mechanical VR	Need for warfarin long term
• Homograft, bioprosthesis	Structural degeneration in young patients eg 50% at 10 years. Reoperation may be difficult.
• Aortic Valve repair	Limited experience Reoperation easier
• Ross Procedure	More difficult surgery Risk of RF process on pulmonary autografts Reoperation more difficult

Aortic Stenosis - rheumatic

- Very uncommon
- Symptoms
- Examination
- Echocardiography – gradient
- Aortic Valvuloplasty

Surgical Management

- Symptoms
- Mean Gradient > 40-50 . AVA < 1.0cm

Conclusion

- Surgical management of RHD in indigenous patients poses many challenges.
- Surgeons must consider circumstance of each patient eg accessibility to care, local environment
- ? Selected referral centres for valve sparing surgery in indigenous patients eg mitral valve repair.

Chronic aortic regurgitation

- Natural history
- Symptoms
- Physical Examination
- Echocardiography
- Cardiac Catheterization
- Medical Management - Vasodilators

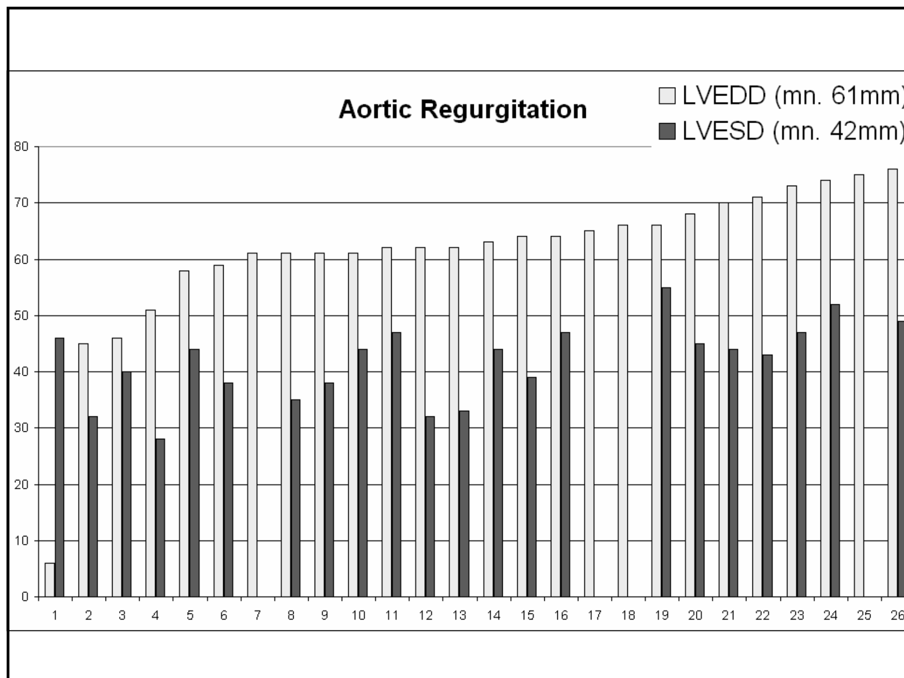
Pregnancy
Mechanical Prosthetic Valves & Anticoagulation

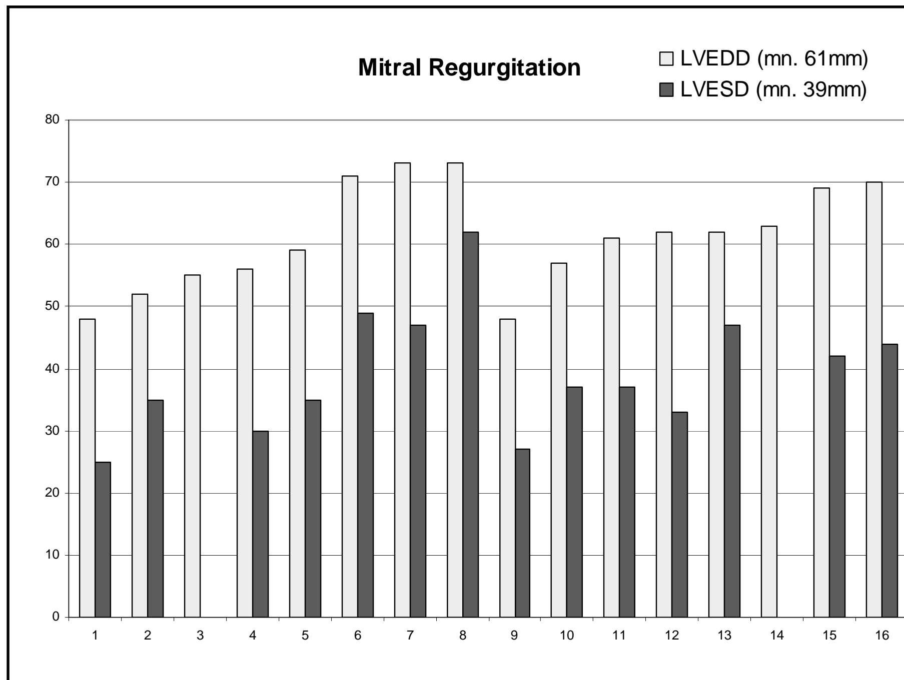
- LMW & Unfractionated heparin do not cross the placenta but rate of valve thrombosis is up to 20%
- Warfarin is associated with embryopathy & ↑ foetal loss especially in the 1st trimester.

Pregnancy
Mechanical Prosthetic Valves & Anticoagulation

3 Choices

1. Adjusted LMW heparin throughout pregnancy *sc bd* +/- low dose aspirin
2. LMW 1st trimester until 13th week then warfarin INR 2.5 – 3.5 until middle of third trimester
3. Warfarin throughout pregnancy until 37th week to maintain INR 2-3 & dose ≤ 5mg. Change to heparin at 37th week.





Mitral Regurgitation

- Natural History
- Symptoms
- Physical examination
- Echocardiography
- Cardiac Catheterization
- Medical Management

Pregnancy

Multidisciplinary Team

MR/AR - Medical Management

MS - Medical Therapy if MVA > 1.5 & mild symptoms
- PTMV if severe MS, MVA < 1.0

AS - Very uncommon
- Usually medical management

Anticoagulant Therapy with Mechanical Valve Prostheses

INR 2.0 – 4.0

Non Aboriginal (15)	6.6 months/ year
Aboriginal (33)	3.4 months / year

Smyth T. Proceedings of 39th CARPA Conference Alice Springs, 2003

Mitral Stenosis

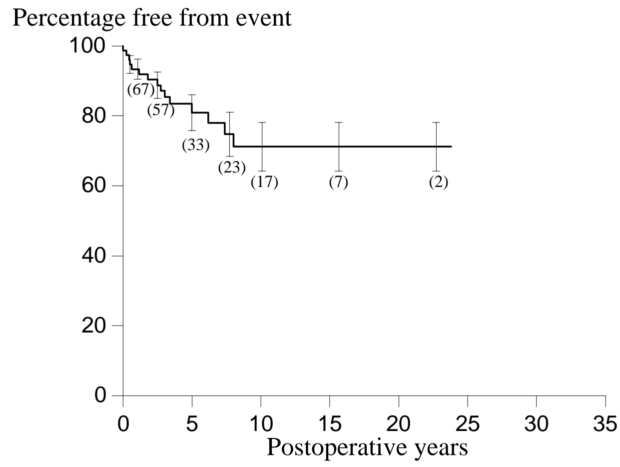
- Natural History
- Symptoms
- Physical examination
- Echocardiography
- Cardiac Cath
- Atrial fibrillation - Warfarin

Rheumatic Heart Disease Current Cardiac Surgical Referral Patterns

Region	Patient	Referral
Cape / NW QLD	adult	→ Townsville
Top end NT	adult	→ Flinders Medical Centre
	children	→ RCH Melbourne
Central Australia	adult	→ RAH
	children	→ RCH Melbourne
Kimberleys	adult	→ Fremantle Hospital
	children	→ Princess Margaret Hospital

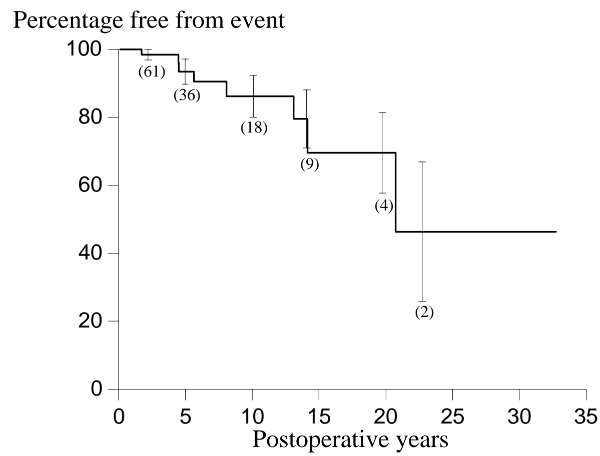
Remainder spread among all metropolitan cardiac surgical units

Embolic Complications



Carapetis et al, APHJ, 1999

Bleeding Complications



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