Surgical Management of Patients With Valvular Heart Disease

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Aortic stenosis

Severe AS

Vmax > 4.0m/s, mean dp > 40 mmHg with AVA <1.0 cm2 or AVAi < 0.6cm2

1. Symptomatic(syncope, angina, HF)
2. Severe
3. Severe AS with EF < 50%
4. Asymptomatic Severe AS with decreased exercise tolerance or fall in BP
5. Low-flow/low gradient severe AS with EF < 50% with dobutamine stress test(+)
6. Low-flow/low gradient severe AS with EF > 50% with data supporting Sx
7. Moderate to Severe AS with other cardiac surgery

- dobutamine stress test; Vmax > 4.0m/s, dp > 40 mmHg with AVA <1.0 cm2

Aortic regurgitation

Severe AR

vena contracta >0.6 cm , PHT < 200 msec, holosystolic aortic flow reversal, Rvol > 60ml/beat , RF > 50%, EROA > 0.3cm2, LV dilation

1. Symptomatic severe AR regardless of LV function
2. Asymptomatic severe AR with LV dysfunction (EF < 50%)
3. Asymptomatic severe AR with normal LV, but LV dilation(LVESD > 50mm)
4. Moderate to severe AR with other cardiac surgery

Bicuspid AV

1. Ao >5.5 cm
2. Ao > 5.0 cm with risk factors(familial Hx of AD, increase diameter > 0.5 cm / yr)
3. Ao 4.5 cm with aortic valve surgery for AS/AR

Choice of surgical AVR or TAVR

1. Surgical AVR; Low to intermediate surgical risk
2. TAVR; intermediate to high risk, survival >12 mo
3. Heart valve team approach

Mitral stenosis

Severe MS

MVA < 1.0 cm2, mean dp > 10 mmHg, TR vel> 3.0 m/s, PAP >50mmHg

1. PMBC; favorable morphology, no contraindication, Exercise induced MS, not candidate for surgery
2. Surgery ; severe, symptomatic, other cardiac surgery, recurrent embolism

Mitral Regurgitation ; Primary(valve itself) vs secondary(with CAD or CMP)

Severe MR

Jet area > 8 cm2, vena contracta >0.7 cm, PISA radius >1cm, Rvol >60ml, R fraction > 50%, EROA >0.4cm2, systolic pulmonary venous flow reversal

Primary MR

1. Symptom(+)
2. Severe
3. LVEF 30%–60% and/or LVESD ≥40 mm
4. Repair is better than MVR
5. MV repair in new onset AF or PAP >50mmHg
6. Other cardiac surgery
7. Percutaneous MV repair?

Secondary MR

1. Moderate to severe MR with other cardiac surgery
2. Severe symptomatic
3. Chordal-sparing MVR is better than reduction annuloplasty
4. No clinical benefit of repair for ischemic MR with CABG

Tricuspid regurgitation

Severe ; Jet area > 10 cm2, vena conatracta >0.7 cm, systolic hepatic vein reversal

1. Moderate to Severe TR with left-sided valve surgery
2. Isolated severe TR refractory to medical therapy
3. TV repair is better than replacement without severe RV failure nor PAH

Tricuspid stenosis

Severe ; TVA< 1.0 Cm2, PHT >190 msec, mean dp >7 mmHg

1. Severe TS with left-sided valve surgery
2. Symptomatic isolated TS

Recommendations for prosthetic valve

1. Sharing decision
2. CIX to anticoagulation -> Bio
3. Age < 50 -> mechanical
4. 50 < age < 70
5. Age> 70 -> Bio
6. Ross may be considered carefully

Anticoagulation for prosthetic valves

Risk factors; AF, prior TE, LV dysfunction, hypercoagulopathy, older generation

1. Mech AVR; 2.5(with RF 3.0)
2. Mech MVR; 3.0(with RF 3.0)

3. Bio AVR; 2.5 for 3 mo -> ASA 100mg
4. Bio MVR; 2.5 for 3 mo -> ASA 100mg
5. TAVR; INR 2.5 for 3 mo or clopi 75mg plus ASA 100mg for 6mo -> ASA 100mg
6. NOAC should not be used

Infective endocarditis

Medical therapy

Surgical intervention

1. Early surgery
    1) HF
    2) Left-sided IE by S aureus, fungal, or highly resistant organisms
    3) Heart block, annular or aortic abscess, or destructive lesions
    4) Large mobile vegetation(> 10mm)
    5) Persistent infection(bacteremia or fever > 7 days) despite appropriate antibiotics
    6) Recurrent emboli and persistent vegetation despite appropriate antibiotics
2. Recurred endocarditis
3. Prosthetic valve endocarditis
4. Complete removal of pacemaker or defibrillator generator and leads
5. Major ischemic stroke or hemorrhage -> delay 4 weeks, if stable

Pregnancy and VHD

First trimester

Warfarin dose < 5mg

1. continue warfarin after full discussion about risks and benefits
2. LMWH with anti-Xa monitoring
3. UFH (aPTT > 2 * control)

Warfarin dose > 5mg

1. LMWH with anti-Xa monitoring
2. UFH (aPTT > 2 * control)

Second and third trimester

Warfarin plus ASA

Discontinue warfarin and UFH before planned vaginal delivery

Evaluation of coronary anatomy

1. Angina Sx(+)
2. Risk factors(men age > 40, postmenopausal women)
3. Severe secondary MR
4. Surgery without evaluation; emergency, disease of aortic sinuses or asc-Ao, or IE
5. Positive CT angiography can be confirmed with invasive angiography