Valvular Heart Disease

- Risk of Stenotic lesions > Regurgitant lesion

[increased C.O.→ increased transvalvular gradient→ increased upstream pressures] *vs.* [reduced SVR→ reduces Regurgitant volume]

Left sided diseases> Right sided disease

MS

- Poorly tolerated [moderate & severe MS] Tachycardia, increased plasma volume
- PHT, Trans valvular gradients, PAP measurements are less reliable marker of severity
- Maternal Risks- HF symptoms, Pulmonary edema in II & III trimester. AF [increases risk of T.Emb, pulmonary edema]
- Fetal risks- prematurity 20-30%; IUGR 5-20%
- Moderate & severe MS counseled against pregnancy without prior intervention

Pharmacological management of symptoms

MS with symptoms or PAH, restricted activities and β1-selective blockers are recommended. Diuretics are recommended when congestive symptoms persist despite β-blockers.

BMV

NYHA class III/IV or sys PAP > 50mm Hg, preferably after 20 weeks POG. [CI in asymptomatic women]

Anticoagulation

•Paroxysmal or Permanent AF, LA thrombus, prior embolism

•Considered in mod/sev MS with spontaneous echo contrast, LA ≥ 40ml/m2, low CO, CCF

Delivery

•Vaginal delivery in mild MS, NYHA I/II, no PAH

•LSCS in Mod/Sev MS, NYHA III/IV, PAH despite medical therapy & BMV cannot be performed or failed.

Post delivery hemodynamic monitoring for 24-48 hours is very important in patient with VHD

AS

- Usually congenital bicuspid aortic valve [always assess aortic diameters]
- Even severe AS may be asymptomatic
- Maternal risk→ HF 10%, Arrhythmias 3-25%
- Fetal risk- Preterm Labour, IUGR, LBW

Pharmacological management of symptoms

HF- treat with diuretics

AF- β-blockers, CCB to control HR, Digoxin also may be used

Pre- pregnancy intervention

- Symptomatic severe AS
- LVEF<50%, severe LVH (PW> 15mm)
- TMT- symptoms or fallin BP
- Recent progression of AS
- Asc. Aorta> 50 MM (27.5mm/m2)

During Pregnancy

Severe symptomatic AS + refractory to medical therapy/ life threatening symptoms→ Non calcified valve may be subjected to BAV/o.w. emergency AVR

Delivery

- Vaginal delivery + regional anesthesia in non-sev AS
- LSCS in Sev AS

Regurgitant lesions

- Better tolerated
- Maternal risk- HF, Arrhytmias, Progressive worsening of regurgitations
- Moderate to severe Regurgitant lesions may undergo exercise testing to decide pre pregnancy intervention
- Severe lesions + symptoms/ impaired LV function/ Ventricular dilatation → treated surgically, if possible repair
- TV repair if moderate Secondary TR with annular dilatation >40mm, usu during left sided valve surgeries

PS & PR

PS is generally well tolerated

- Complic of sev PS-RV failure & Arrhythmias.
- Prepregnancy balloon valvuloplasty in severe stenosis (peak Doppler gradient ≥ 64 mmHg)
- LSCS is considered in patients with severe PS and in NYHA class III/IV despite medical therapy and bed rest, in whom percutaneous pulmonary valvotomy cannot be performed or has failed.

PS & PR Cont.

Severe PR with impaired RV function

- pre-pregnancy pulmonary valve replacement (preferably bioprosthesis) should be considered.

Prosthetic valves

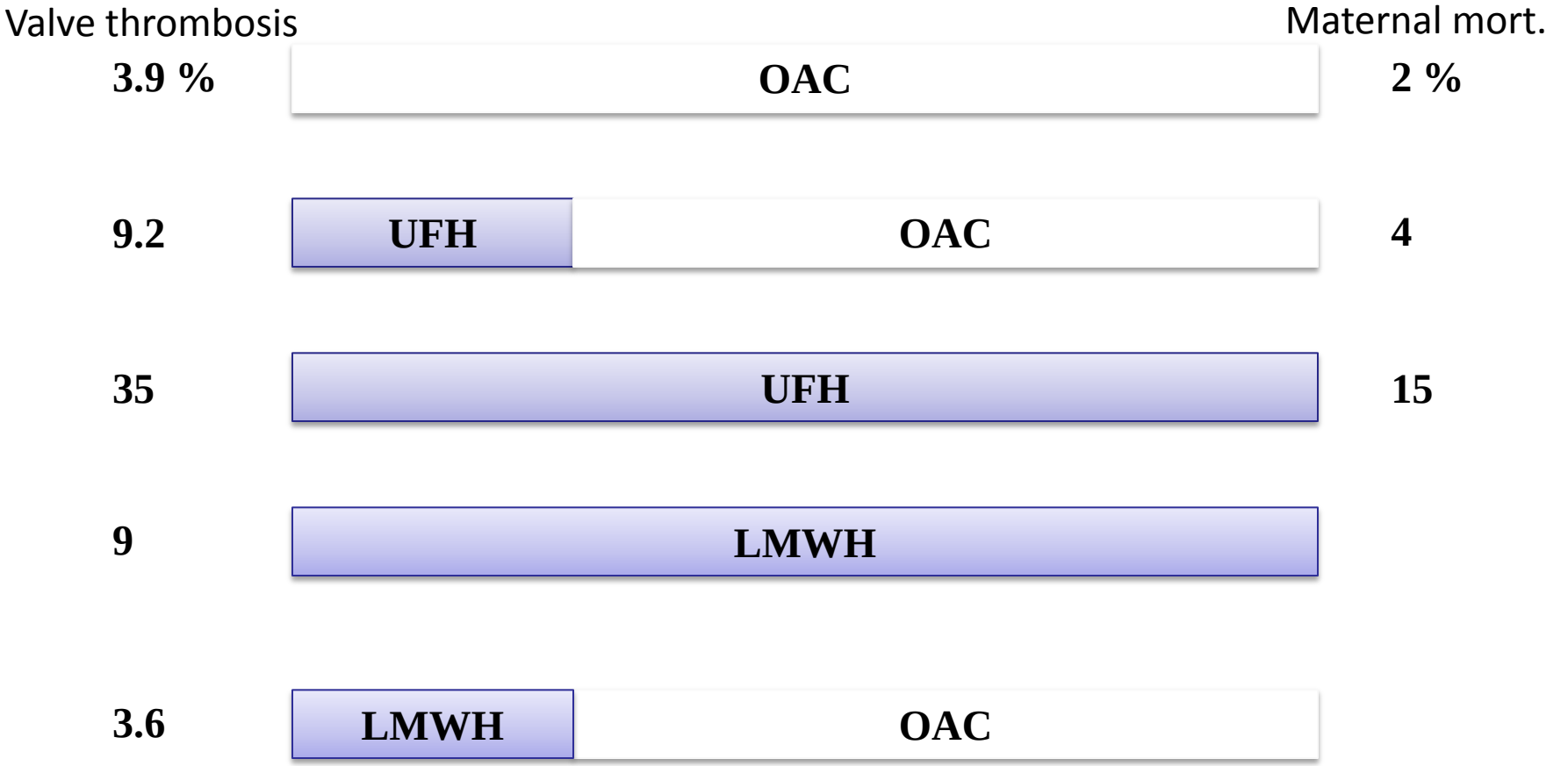
Mechanical valves

- Excellent H.D. Performances
- Long term durability
- Thrombogenic

Bioprosthetic valves

- Good H.D Performances
- Much less thrombogenic
- High risk of valve degeneration [~50% women <30yrs at 10 yr post implant]
  - M> A,T position
  - Reoperation mortality risk addl 5%

Anticoagulation Strategies



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American Heart Association.

Pregnancy and VHD: Diagnosis and Follow-Up

Recommendations	COR	LOE
Exercise testing is reasonable in asymptomatic patients with severe AS (aortic velocity ≥4 m per second or mean pressure gradient ≥40 mm Hg, stage C) before pregnancy	IIa	C

Pregnancy and VHD: Medical Therapy

Recommendations	COR	LOE
Anticoagulation should be given to pregnant patients with MS and AF unless contraindicated	I	C
Use of beta blockers as required for rate control is reasonable for pregnant patients with MS in the absence of contraindication if tolerated	IIa	C
Use of diuretics may be reasonable for pregnant patients with MS and HF symptoms (stage D)	IIb	C
ACE inhibitors and ARBs should not be given to pregnant patients with valve stenosis	III: Harm	B

Pregnancy and VHD: Intervention

Recommendations	COR	LOE
Valve intervention is recommended before pregnancy for symptomatic patients with severe AS (aortic velocity ≥4.0 m per second or mean pressure gradient ≥40 mm Hg, stage D)	I	C
Valve intervention is recommended before pregnancy for symptomatic patients with severe MS (mitral valve area ≤1.5 cm^2, stage D)	I	C
Percutaneous mitral balloon commissurotomy is recommended before pregnancy for asymptomatic patients with severe MS (mitral valve area ≤1.5 cm^2, stage C) who have valve morphology favorable for percutaneous mitral balloon commissurotomy	I	C

Pregnancy and VHD: Intervention (cont.)

Recommendations	COR	LOE
Valve intervention is reasonable before pregnancy for asymptomatic patients with severe AS (aortic velocity ≥4.0 m per second or mean pressure gradient ≥40 mm Hg, stage C)	IIa	C
Percutaneous mitral balloon commissurotomy is reasonable for pregnant patients with severe MS (mitral valve area ≤1.5 cm^2, stage D) with valve morphology favorable for percutaneous mitral balloon commissurotomy who remain symptomatic with NYHA class III to IV HF symptoms despite medical therapy	IIa	B

Pregnancy and VHD: Intervention (cont.)

Recommendations	COR	LOE
Valve intervention is reasonable for pregnant patients with severe MS (mitral valve area ≤1.5 cm^2, stage D) and valve morphology not favorable for percutaneous mitral balloon commissurotomy only if there are refractory NYHA class IV HF symptoms	IIa	C
Valve intervention is reasonable for pregnant patients with severe AS (mean pressure gradient ≥40 mm Hg, stage D) only if there is hemodynamic deterioration or NYHA class III to IV HF symptoms	IIa	B

Pregnancy and VHD: Intervention (cont.)

Recommendations	COR	LOE
Valve operation should not be performed in pregnant patients with valve stenosis in the absence of severe HF symptoms	III: Harm	C

Native Valve Regurgitation: Diagnosis and Follow-Up

Recommendations	COR	LOE
All patients with suspected valve regurgitation should undergo a clinical evaluation and TTE before pregnancy	I	C
All patients with severe valve regurgitation (stages C and D) should undergo prepregnancy counseling by a cardiologist with expertise in managing patients with VHD during pregnancy	I	C

Native Valve Regurgitation: Diagnosis and Follow-Up (cont.)

Recommendations	COR	LOE
All patients referred for a valve operation before pregnancy should receive prepregnancy counseling by a cardiologist with expertise in managing patients with VHD during pregnancy regarding the risks and benefits of all options for operative interventions, including mechanical prosthesis, bioprosthesis, and valve repair	I	C

Native Valve Regurgitation: Diagnosis and Follow-Up (cont.)

Recommendations	COR	LOE
Pregnant patients with severe regurgitation (stages C and D) should be monitored in a tertiary care center with a dedicated Heart Valve Team of cardiologists, surgeons, anesthesiologists, and obstetricians with expertise in managing high-risk cardiac patients	I	C
Exercise testing is reasonable in asymptomatic patients with severe valve regurgitation (stage C) before pregnancy	IIa	C

Native Valve Regurgitation: Medical Therapy

Recommendations	COR	LOE
ACE inhibitors and ARBs should not be given to pregnant patients with valve	III: Harm	B

Native Valve Regurgitation: Intervention

Recommendations	COR	LOE
Valve repair or replacement is recommended before pregnancy for symptomatic women with severe valve regurgitation (stage D)	I	C
Valve operation for pregnant patients with severe valve regurgitation is reasonable only if there are refractory NYHA class IV HF symptoms (stage D)	IIa	C

Native Valve Regurgitation: Intervention (cont.)

Recommendations	COR	LOE
Valve repair before pregnancy may be considered in the asymptomatic patient with severe MR (stage C) and a valve suitable for valve repair, but only after detailed discussion with the patient about the risks and benefits of the operation and its outcome on future pregnancies	IIb	C
Valve operations should not be performed in pregnant patients with valve regurgitation in the absence of severe intractable HF symptoms	III: Harm	C

Prosthetic Valves in Pregnancy: Diagnosis and Follow-Up

Recommendations	COR	LOE
All patients with a prosthetic valve should undergo a clinical evaluation and baseline TTE before pregnancy	I	C
All patients with a prosthetic valve should undergo prepregnancy counseling by a cardiologist with expertise in managing patients with VHD during pregnancy.	I	C
TTE should be performed in all pregnant patients with a prosthetic valve if not done before pregnancy	I	C

Prosthetic Valves in Pregnancy: Diagnosis and Follow-Up (cont.)

Recommendations	COR	LOE
Repeat TTE should be performed in all pregnant patients with a prosthetic valve who develop symptoms	I	C
TEE should be performed in all pregnant patients with a mechanical prosthetic valve who have prosthetic valve obstruction or experience an embolic event	I	C

Prosthetic Valves in Pregnancy: Diagnosis and Follow-Up (cont.)

Recommendations	COR	LOE
Pregnant patients with a mechanical prosthesis should be monitored in a tertiary care center with a dedicated Heart Valve Team of cardiologists, surgeons, anesthesiologists, and obstetricians with expertise in the management of high-risk cardiac patients	I	C

Prosthetic Valves in Pregnancy: Medical Therapy

Recommendations	COR	LOE
Therapeutic anticoagulation with frequent monitoring is recommended for all pregnant patients with a mechanical prosthesis	I	B
Warfarin is recommended in pregnant patients with a mechanical prosthesis to achieve a therapeutic INR in the second and third trimesters	I	B
Discontinuation of warfarin with initiation of intravenous UFH (with an activated partial thromboplastin time [aPTT] >2 times control) is recommended before planned vaginal delivery in pregnant patients with a mechanical prosthesis	I	C

Prosthetic Valves in Pregnancy: Medical Therapy (cont.)

Recommendations	COR	LOE
Low-dose aspirin (75 mg to 100 mg) once per day is recommended for pregnant patients in the second and third trimesters with either a mechanical prosthesis or bioprosthesis	I	C
Continuation of warfarin during the first trimester is reasonable for pregnant patients with a mechanical prosthesis if the dose of warfarin to achieve a therapeutic INR is 5 mg per day or less after full discussion with the patient about risks and benefits	IIa	B

Prosthetic Valves in Pregnancy: Medical Therapy (cont.)

Recommendations	COR	LOE
Dose-adjusted LMWH at least 2 times per day (with a target anti-Xa level of 0.8 U/mL to 1.2 U/mL, 4 to 6 hours postdose) during the first trimester is reasonable for pregnant patients with a mechanical prosthesis if the dose of warfarin is greater than 5 mg per day to achieve a therapeutic INR	IIa	B
Dose-adjusted continuous intravenous UFH (with an aPTT at least 2 times control) during the first trimester is reasonable for pregnant patients with a mechanical prosthesis if the dose of warfarin is greater than 5 mg per day to achieve a therapeutic INR	IIa	B

Prosthetic Valves in Pregnancy: Medical Therapy (cont.)

Recommendations	COR	LOE
Dose-adjusted LMWH at least 2 times per day (with a target anti-Xa level of 0.8 U/mL to 1.2 U/mL, 4 to 6 hours postdose) during the first trimester may be reasonable for pregnant patients with a mechanical prosthesis if the dose of warfarin is 5 mg per day or less to achieve a therapeutic INR	IIb	B
Dose-adjusted continuous infusion of UFH (with aPTT at least 2 times control) during the first trimester may be reasonable for pregnant patients with a mechanical prosthesis if the dose of warfarin is 5 mg per day or less to achieve a therapeutic INR	IIb	B

Prosthetic Valves in Pregnancy: Medical Therapy (cont.)

Recommendations	COR	LOE
LMWH should not be administered to pregnant patients with mechanical prostheses unless anti-Xa levels are monitored 4 to 6 hours after administration	III: Harm	B

Anticoagulation of Pregnant Patients With Mechanical Valves