



Dr.Malik Al Qasem  
By:  
Batool Gharaibeh

Less is More

# Labour and heart disease



1. Avoid induction of labour 2. use prophylactic antibiotic  
3. ensure fluid balance 4. Avoid supine position

## 2nd stage

## 3rd stage

Should be kept short, with an elective forceps or ventouse delivery (if normal delivery does not occur readily)  
This reduces maternal effort and the requirement for increased cardiac output

active management of the third stage is usually with Syntocinon™ only (which is a vasodilator and therefore should be given slowly, with low-dose infusions preferable)

Epidural anaesthesia is often recommended because it reduces the pain-related stress and, thereby, some of the demand on cardiac function. However, regional anaesthesia has the risk of maternal hypotension,

### Caesarean delivery

Should only be performed if the maternal condition is considered too unstable to tolerate the physiological demands of labor.

Cardiac indications for elective CS are limited to:

- Dilated or expanding aortic root (>5 cm in bicuspid valve, >4.5 cm in Marfan syndrome)
- Severely impaired left (systemic) ventricular function

American College of Obstetricians and Gynecologists (ACOG) outlines termination of pregnancy as a consideration in cases where maternal cardiac disease poses a significant risk of death or severe morbidity. Indications include:

1. Severe pulmonary arterial hypertension, particularly Eisenmenger syndrome.
2. Severe left ventricular dysfunction, such as an ejection fraction below 30% or New York Heart Association (NYHA) class III or IV heart failure.
3. Complex cyanotic heart disease, where oxygenation is compromised, significantly increasing the risk for both mother and fetus.
4. Aortic dissection or Marfan syndrome with aortic root dilation, which can lead to life-threatening complications during pregnancy.

## Hypertrophic cardiomyopathy (HCM) and pregnancy

Mostly well tolerated in pregnancy  **$\beta$ -blockers** should be continued or started in pregnancy. Any hypovolemia will have the same effect as hypotension and should be rapidly and adequately corrected.

## Management of HF in pregnancy

are the same as in the non-pregnant individual

Diuretics  
Vasodilators  
digoxin

Oxygen and morphine may also be required  
**ACEI AND ARBs CONTRAINDICATED**

## Peripartum cardiomyopathy(PPCM)

### Acute decompensated PPCM

- 1.Urgent consults: critical care, cardiology, and obstetrics
- 2.Urgent stabilization
- 3.Initiate management of acute heart failure.
- 4.No response to inotropes: Consider mechanical circulatory support.
- 5.Identify and treat associated complications.
- 6.Hemodynamically unstable despite optimal medical therapy: Consider urgent cesarean delivery.

### Stable PPCM

- 1.Management is similar to that in nonpregnant patients. should be treated with conventional heart failure therapy (including thrombo prophylaxis), with the exception that ACE inhibitors are withheld until after delivery
- 3.vaginal delivery at term, if feasible
4. Indications for Anticoagulation in PPCM:  
Confirmed thromboembolic event and  $LVEF \leq 30-35\%$

# Pulmonary hypertension

**Avoiding Pregnancy:** Women with pulmonary arterial hypertension (PAH) are strongly advised to avoid pregnancy due to a high maternal mortality rate, which can reach 30-56% depending on the severity of the condition. Contraception is recommended, with progestin-only methods or intrauterine devices (IUDs) being safer choices. Estrogen-containing contraceptives are generally avoided because of the increased risk of venous thromboembolism (VTE).

Some patients have a positive pulmonary vasodilator response and may be treated with calcium antagonists to lower their pulmonary pressures.

**Antenatal Care:**

**I: PAH-targeted therapies:**

-Phosphodiesterase inhibitors (sildenafil, tadalafil).

-Prostanoid analogues (epoprostenol & iloprost) and nitric oxide.

-Endothelin receptor antagonists (bosentan, ambrisentan).

**II: Thromboprophylaxis with LMWH.**

**III: Timely admission.** Women are often hospitalized in the second or third trimester for close surveillance.

**IV: Cesarean section** is the preferred mode of delivery to reduce hemodynamic stress.

Some other women show a fixed PVR and those should be actively advised against pregnancy with contraception

If women with pulmonary hypertension become pregnant, termination should be considered.

## Congenital heart disease

For women with congenital heart disease (CHD), the mode of delivery is determined by the severity of the cardiac condition and maternal hemodynamic stability. According to the American College of Obstetricians and Gynecologists (ACOG) and other sources:

1. Vaginal delivery is often preferred for most women with stable CHD, as it avoids the hemodynamic stress associated with surgery.
2. Cesarean delivery may be recommended for women with severe cardiac conditions or obstetric complications.
3. Continuous hemodynamic monitoring is crucial during labor and delivery to avoid complications.

### Patent ductus arteriosus: PDA

Corrected cases pose no problems in pregnancy and do not require antibiotic prophylaxis.

-Uncorrected cases usually do well but are at risk of congestive cardiac failure.

### Atrial septal defect: ASD

-Usually well tolerated in pregnancy.  
-Potential risk of paradoxical embolism but risk is low.

-Women may become hypotensive if there is an increase in the left-to-right shunt following blood loss at delivery. This causes a drop in left ventricular output and coronary blood flow.

### Ventricular septal defect: VSD

-Usually well tolerated in pregnancy unless the woman has Eisenmenger's syndrome.

## Coarctation of the aorta

1-If diagnosed, this is usually corrected prior to pregnancy but residual coarctation is not uncommon.

2-The risks with uncorrected coarctation are angina, hypertension and congestive heart failure. There is also an association with aortic rupture and aortic dissection.

3\_The risk of aortic dissection may be minimized by strict control of the blood pressure and  $\beta$ -blockade to decrease cardiac contractility.

4-Vaginal delivery is generally preferred for stable cases, while cesarean section may be indicated for those with significant cardiovascular risk or complications like hypertension.

## Marfan's Syndrome



Pregnancy is contraindicated if the aortic root is  $>4-4.5$  cm.

Patients at high risk (and particularly if root  $>4.5$  cm) should be offered aortic root replacement prior to pregnancy.

$\beta$ -blockers have been shown to reduce the rate of aortic dilatation and the risk of complications in patients with Marfan's syndrome so should be continued or started in pregnant patients with aortic dilatation.

Regular echocardiograms should be carried out to assess aortic root diameter.

Elective caesarean section usually recommended for women with aortic roots showing progressive enlargement or  $>4.5$  cm.

## Dissection of the aorta



Acute severe chest pain described as tearing, with interscapular radiation, jaw pain, systolic hypertension and/or differential blood pressures in each arm. Chest X-ray is mandatory and may show mediastinal widening,

Expedient delivery by CS

## Ischemic heart disease



1. percutaneous transluminal coronary angioplasty (PTCA) it still used but only when absolutely necessary, avoiding the time when the fetus is most susceptible to radiation (8-15 weeks)

2. Aspirin and clopidogrel could be used in acute management and prophylactically. Statins should be discontinued prior to pregnancy

## Arrhythmias



Treatment is only required for life-threatening arrhythmias, atrial fibrillation/flutter or SVTs that are frequent, persistent or symptomatic by Adenosine,  $\beta$ -blockers, verapamil And Flecainide Or electrical cardioversion.

Amiodaron must be avoided if possible.

We should know that Paroxysmal SVT is the commonest arrhythmia In pregnancy.

# Valvular diseases

severe left heart obstruction from critical mitral or aortic stenosis is contraindication of Pregnancy

## MITRAL STENOSIS

1. b-blocker and diuretic therapy and avoiding excess iv fluid
2. Balloon mitral valvotomy or valve replacement surgery are the treatment of choice after delivery or before pregnancy, but can be considered in pregnancy depending on the clinical condition and gestation.

## AORTIC STENOSIS

Management is the same of mitral stenosis

And usually well tolerated in women with isolated and mild and moderate AS

If the woman's condition deteriorates before delivery is feasible surgical intervention such as balloon or surgical aortic valvotomy can be considered

## ARTIFICIAL VALVE

- Mechanical heart valves require lifelong anticoagulation.
- Grafted-tissue heart valves (from pigs or humans) have the advantage that anti-coagulation is not usually required.

MX :

Continuation of warfarin affords the mother the lowest risk of thrombosis, whereas for the fetus, warfarin is associated with an increased risk of teratogenesis, miscarriage, stillbirth and intracerebral bleeding