

INTRODUCTION

- Cardiac disease is the leading cause of maternal mortality in the UK. International relocation and inter-hospital transfers create fractures in continuity of care and cause problems if the transfer of patient information is inadequate.
- This makes planning for high-risk cardiac patients all the more complicated. *In praesenti* multidisciplinary reviews and planning are vital to address such logistical, obstetric and medical complexities. Here we describe a case of such a patient, outlining the problems presented and the steps taken to address them.

CASE REPORT

- A primigravid woman in her 30s, recently arrived in the UK, was referred to the regional Maternal Medicine Centre (MMC) at 33 weeks for fetal concerns: reduced fetal movements, low estimated fetal weight and absent end diastolic flow on ultrasound.
- She had a history of rheumatic heart disease (RHD) with previous percutaneous mitral valvotomies in her 20s, and had ongoing surveillance echocardiograms (TTE) and cardiology follow-up.
- Her prescribed furosemide and bisoprolol had been omitted for 48 hours due to medical uncertainty, but were restarted in the MMC.
- The patient was peripherally oedematous and dyspnoeic, but remained in sinus rhythm. NTproBNP was elevated at 627ng/L and TTE (*Figure 1*) demonstrated mixed mitral valve disease with moderate/severe mitral stenosis (MVA 1-1.4cm², mean PG 12.6mmHg) and severe mitral regurgitation with elevated pulmonary artery systolic pressures (40mmHg +RAP) with preserved biventricular function.
- A plan was made for a Category 3 caesarean section (CS) to permit maternal optimisation, but needed to be expedited for fetal deterioration on CTG monitoring.

Figure 1: TTE views taken on the day of delivery, confirming the presence of moderate/severe mitral stenosis.

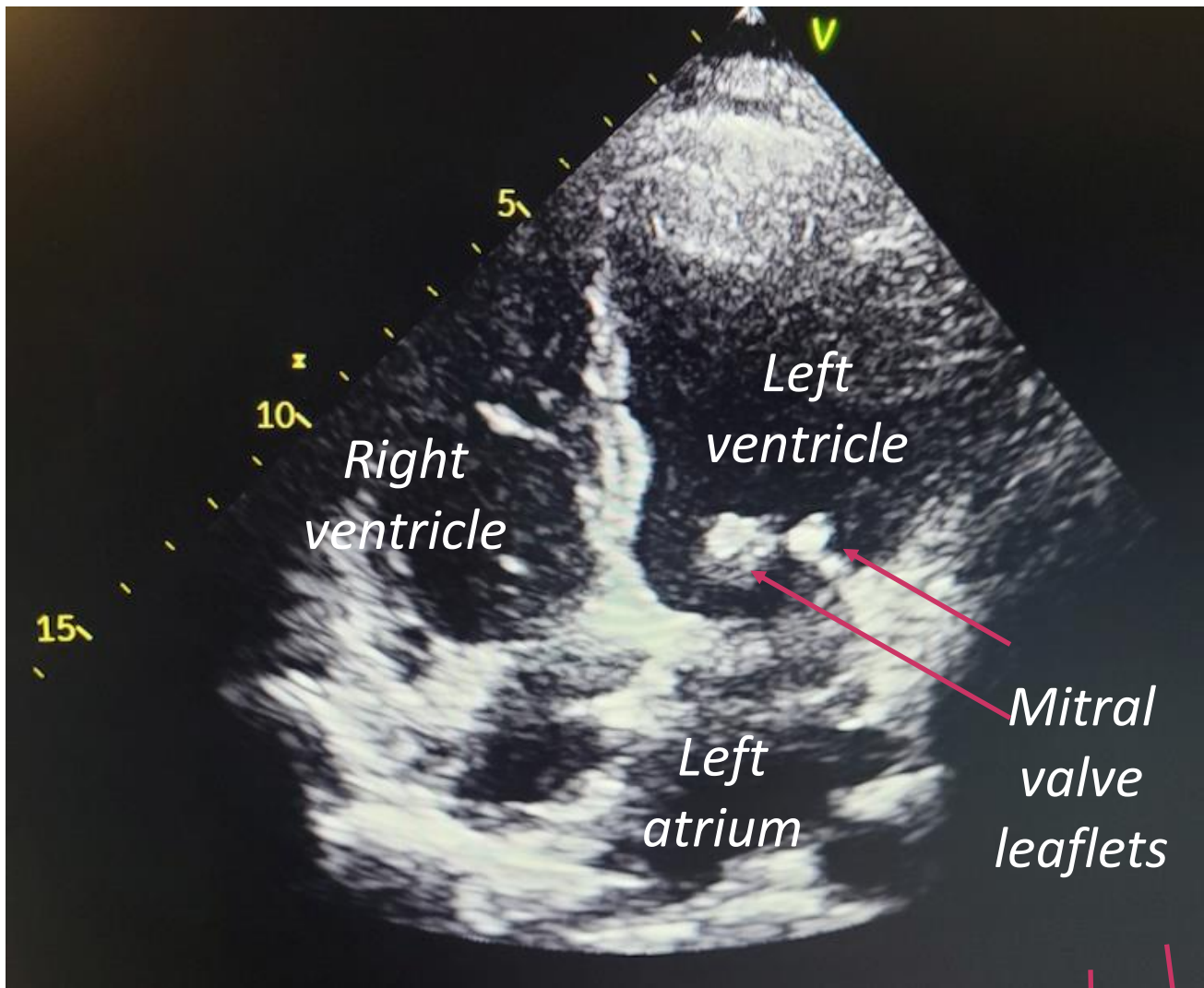


Figure 1a) An apical view of the thickened mitral valve leaflets associated with rheumatic heart disease seen between the left ventricle and left atrium. The narrowed mitral valve opening in diastole can be seen.

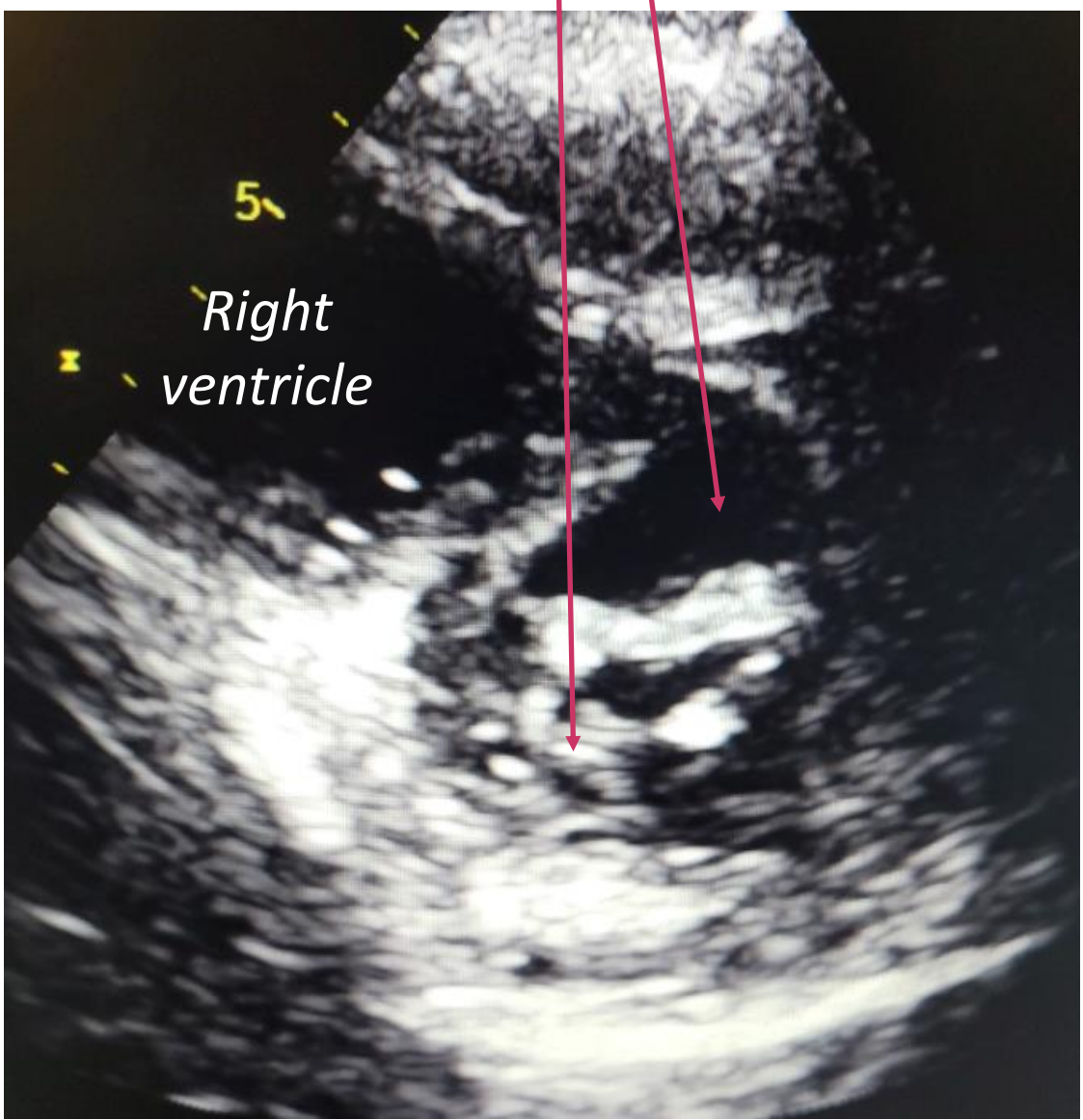


Figure 1b) A parasternal short axis view of the classic "fish mouth" aperture seen in mitral stenosis.

Anaesthesia and Delivery

- Invasive lines (radial arterial line, pulmonary artery catheter sheath and 4-lumen central line) were inserted under local anaesthetic. Aortocaval compression was avoided.
- A plan for a low dose spinal (1ml 0.5% heavy bupivacaine and diamorphine) with epidural top-up was made to prevent rapid drop in systemic vascular resistance, with phenylephrine infusion for vasopressor support.
- 40mg of furosemide was administered parenterally to promote diuresis, in anticipation of increased pre-load with uterine contraction and autotransfusion following delivery.
- Unfortunately, regional anaesthesia failed to achieve an adequate sensory block to proceed to CS. A general anaesthetic was conducted with careful induction with alfentanil, titrated propofol and rocuronium. Maintenance was with Sevoflurane in oxygen/ air mix.
- A live infant was safely delivered and admitted to NICU on nasal CPAP. Blood loss was 300ml, and oxytocin was given slowly as 5units over 10 minutes and then 40units in 50ml over 4 hours to encourage uterine tone.
- Postoperatively, the patient was transferred to intensive care. With strict fluid balance, adequate electrolyte levels and gentle sedation weaning, she was extubated the next day.
- She was rapidly stepped down to CCU and was deemed fit for discharge 10 days later.

DISCUSSION

- RHD is the predominant cause of MS in women of childbearing age in both developed and developing nations¹.
- This case posed two clinical issues: deteriorated valvular cardiac disease in pregnancy and the need for expedited delivery in a patient who was not haemodynamically optimised.
- These were coupled with a paucity of medical information, but collaborative multidisciplinary team (MDT) working enabled a safe plan of care.
- This patient's symptoms and TTE findings placed her between class III - IV of the modified WHO classification for maternal cardiovascular risk².
- Consideration was given to performing the operative delivery in the co-located cardiac centre; although on the same site, there were inherent risks of transfer and preparation for both maternal and neonatal support.
- Meticulous planning within the limited time available, diuresis, slow postoperative weaning in critical care, and active MDT input meant a good outcome for both mother and baby.
- The question of whether a "separate space technique" , or higher dose spinal, might have improved chances of success is also of interest for this case. However failure of regional anaesthesia did not offset delivery as plans for such an event were already prepared for.