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# Managing Pregnancy with Post Mitral Valve Replacement Presenting Late

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With the increased awareness and emphasis of institutional delivery, there has been an increase in trend of cases of valvular heart disease with pregnancy being reported to tertiary centers. Though rare, cases like post mitral valve replacement (MVR) with pregnancy are often a challenge in terms of management with an outcome of uneventful pregnancy and healthy baby. The management of women with prosthetic heart valves during pregnancy poses a particular challenge as there are no available controlled clinical trials to provide guidelines for effective antithrombotic therapy. Here we present a case of post MVR with pregnancy with an ultimate outcome of a healthy female and uneventful vaginal delivery.

**Keywords:** anticoagulants, mitral valve replacement, pregnancy.

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## INTRODUCTION

With progressive increase in early identification of cases of RHD and increasing facility for valve replacement in Nepal, there has been subsequent increase in number of cases with pregnancy being reported to tertiary centers. Management of such cases during pregnancy especially of woman on anticoagulant is often a challenge. The concerns about the use of anticoagulants during pregnancy is its teratogenicity, so consideration of appropriate anticoagulants as per gestational age and preventing dreadful complication like valve thrombosis has to be balanced. Similarly, possibilities of acute bleeding problems during delivery or postpartum and its management are all also equally important. Management and pregnancy outcome of such a case of pregnant woman who had mitral valve replacement (MVR) and on warfarin is discussed here.

## CASE

A 17 years old lady was referred to us for routine ANC check up at 30 weeks of gestation. She had undergone mitral valve replacement (MVR), a metallic valve, at the age of 14 years for RHD with severe MR, severe TR, mild PAH and NYHA Grade III. She was taking warfarin 5 mg and 2.5mg alternate days and oral penicillin (Tab. phenoxyl V 250 mg BD). She had been compliant with medication and her periodic INR was within 2.5 – 3. She was admitted for investigations and evaluation with the joint care of Obstetrician and Cardiologist. She had Paroxysmal supraventricular tachycardia (PSVT) during her stay in hospital and T. Diltiazem was added. Her ANC investigations were all within normal limits other than an USG report revealing single alive fetus with right sided renal hydronephrosis of fetal kidney. She was discharged with an advice to follow up in OPD. She was admitted at 36 weeks and at 37 weeks warfarin was switched over to Low molecular weight heparin (LMWH), 60 mg subcutaneous 12 hourly. At 37 weeks and three days period of gestation bimanual examination was performed to assess adequacy

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of pelvis. She was planned for induction of labor as her cervix was found to be favorable. Sweeping and stretching of the membrane was done and a single dose of Dinoprostone (PGE<sub>2</sub>) gel was put intracervical in the evening. The intravenous infusion of unfractionated heparin (UFH) was started at the rate of 1000 units/hour. She was provided epidural analgesia 6 hours after stopping UFH. The intravenous infusion of UFH was also stopped once she reached active stage of labor. She finally delivered a healthy female baby of 2.7 kg with Apgar score 7/10, 8/10. After eight hours post-partum, Tab. warfarin on usual dose and LMWH 60 mg subcutaneous (SC) BD was started and LMWH was continued till INR was restored to targeted range (INR 2.5 – 3) along with intravenous antibiotic prophylaxis for total of 5 days post-partum. On her fourth post-partum day her INR was 3.25 and LMWH was stopped. On ultrasound examination of baby's abdomen after birth hydronephrosis was not evident.

## COMMENT

In almost all areas of patient management after valve surgery, randomized trials and meta-analyses do not exist. Such randomized trials which do exist are very few in numbers, are narrowly focused with small numbers, have limited general applicability, and do not lend themselves to meta-analysis because of widely divergent methodologies and different patient characteristics.<sup>2</sup> Thus management of a pregnant woman who has undergone mitral valve replacement and who is on oral anticoagulants is indeed a big medical challenge. Some of the crucial issues in regards to the management of such a case that was encountered are discussed here.

The use of warfarin and its teratogenicity has been well documented, especially with its use during 6 – 12 weeks of pregnancy. The incidence of teratogenicity varies from 5-15%.<sup>3,4</sup> though this lady took warfarin throughout her pregnancy including the first trimester till 36 weeks, no congenital anomaly was detected. This may be because of low dose of warfarin. It has been mentioned that the warfarin dose if does not exceed 5 mg daily, the risk of embryopathies is extremely small.<sup>4</sup> Yet it is emphasized here that such a woman should be counseled strictly about the side effect of drug and its effect on pregnancy. When the patient presents late there is stress to both the clinician as well as to the mother of uncertainty of effect of drug on fetus, though anomalies can be ruled out to some extent by ultrasound, as in the case above.

There are no clear cut guidelines in regards to which drug to be considered, LMWH or UFH as a part of treatment especially after 36 weeks of pregnancy. For pregnant woman who is taking warfarin, switch over to heparin after 36 weeks of pregnancy is considered essential. So the patients should be admitted to hospital in advance

and switched over to intravenous unfractionated heparin. Though the use of UFH has been considered superior (Recommendation class IIa, Level of evidence C) to LMWH (Recommendation class IIb, Level of evidence C),<sup>5</sup> LMWH was used in our case till the induction of labor was decided. This had the advantage of patient being ambulatory and 6 hourly monitoring of APTT was not required. Vaginal delivery is recommended if the patient is not on oral anticoagulation at the onset of labor, there is no significant prosthetic dysfunction or no other significant cardiovascular disease such as involvement of another valve site, impairment of left ventricular function, aortic dilatation, etc. and a specialist obstetric anesthetist is available to provide epidural anesthesia.<sup>6</sup> Labor was induced in this lady to allow vaginal delivery as oral anticoagulant had been stopped 3 days back. As per American Heart Association (AHA) recommendation for anticoagulant regimen in pregnant women with mechanical prosthetic valve, warfarin should be discontinued starting 2 to 3 weeks before planned delivery and continuous intravenous UFH given instead.<sup>7</sup>

The timing of placement of epidural catheter for analgesia for pain relief during labor to reduce stress on heart and the timing of starting anticoagulant after removal of epidural catheter is also an important issue. A gap of 4 hours to use epidural after stopping UFH and a gap of 6 hours to start UFH after removal of epidural catheter is recommended to avoid bleeding problem. For LMWH, the interval of drug to epidural catheter insertion is 10 hours and catheter removal to drug iteration of 6 hours is advisable.<sup>8</sup> In this case epidural catheter was inserted 4 hours after stoppage of UFH as she was in active stage of labor and removed immediately after delivery and LMWH was started 8 hours after removal.

In order to cut short second stage of labor the application of instrumental delivery and its effect on fetal outcome was even a bigger challenge because of the risk of hemorrhage in the fetus. The fetal effect is not seen in case of heparin as it does not cross placenta. Particularly with use of warfarin, concern exist in the third stage of labor and delivery, because the immature fetal liver does not metabolize warfarin as rapidly in mother, whereas reversal of anticoagulant in fetus may take around one week because of immature fetal liver.<sup>7</sup> So not only the instrumental delivery but also the vaginal delivery is contraindicated within one week because of the risk of fetal hemorrhage.<sup>7</sup> Though this lady underwent vaginal delivery on her fourth day of warfarin cessation but the fetal outcome was normal. Another important concern was regarding use of LWMH or UFH for post-partum anticoagulant management. LMWH was started for the same reason as above together with warfarin 8 hours after delivery. It takes 2-3 days for action of warfarin to appear. So both drugs are recommended until INR reaches its desired level.

Appropriate consideration of anticoagulant according to gestational age and close monitoring can greatly minimize dreadful complication like valve thrombosis in pregnant woman with valve replacement and outcome of pregnancy is generally satisfactory both in terms of maternal and fetal outcome. As this patient presented in the third trimester only, the recommended switch over to heparin during first trimester had not been done. Though the ultimate outcome was good in this patient, counseling regarding strict follow up is must to avoid stress during care of such patients. A standard protocol as per evidence based medicine led forward by joint effort of Obstetrician, Cardiologist and Anesthesiologist can minimize the chaos in management of such cases and guide in standard care of such patients.

## REFERENCES

1. Chan WS, Anand S, Ginsberg JS. Anticoagulation of pregnant women with mechanical heart valves: a systematic review of the literature. *Arch Intern Med.* 2000 Jan 24;160(2):191-6.
2. Butchart TG, Barwolf CG, Antunes MJ, Tornos P, Caterina RD, Cormier B, et al. Recommendations for the management of patients after heart valve surgery. *European Heart Journal.* 2005;26:2463-71.
3. Swiet M. Cardiovascular problems in pregnancy. In: Chamberlain G, Steer PJ, editors. *Turnbull's Obstetric.* 3rd ed. London: Churchill Livingstone; 2001.
4. Vitale N, De FM, Santo LS, Pollice A, Tedesco N, Cotrufo M. Dose dependent fetal complications of warfarin in pregnant women with mechanical heart valves. *J Am Coll Cardiology.* 1999;33:1637-41.
5. ESC Committee Guidelines. Guidelines on the management of valvular heart disease. *European Heart Journal.* 2007;28:230-68.
6. Hall FDR, Oliver J, Rossouw GJ, Grove D, Doubell AF. Pregnancy outcome in women with prosthetic valves. *J Obst Gynaecol.* 2001;21:149-53.
7. Bonow RO, Mann DL, Zipes DP, Libby P, editors. *Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine.* 9th ed. Philadelphia: Elsevier Science; 2011.
8. Breivik H, Bang U, Jalonen J, Vigfusson G, Alhuhta S, Lagerkranser M. Nordic guidelines for neuraxial blocks in disturbed haemostasis from the Scandinavian society of anaesthesiology and intensive care medicine. *Acta Anaesthesiol Scand.* 2010;54:16-41.