Pregnancy with Previous Mitral Valve Replacement

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Mitral valve replacement has changed many lives of patients with severe mitral stenosis who were doomed due to severe haemodynamic complications. Successful pregnancy outcomes are now numerous. The study was carried out at Services hospital involving 7 pregnant patients with mitral valve replacement, as regards to its antepartum, intrapartum and postpartum management. The study showed the incidence to be 0.2% of all deliveries. Starr-Edwards was the most common (71.5%) prosthetic valve with good haemodynamic outcomes. Five (71.5%) patients remained in NYHA class II, showing the efficacy of valvular surgery and I. Five (71.5%) patients ended in vaginal delivery of healthy infants and 2 (28.5%) had evacuation. Six (85.7%) patients received anticoagulants. Oral warfarin was used in all of these six cases throughout the first trimester. One (14.3%) of these patients ended in spontaneous abortion. One (14.3%) patient had blighted ovum and intravenous heparin was replaced for warfarin 24 hours before evacuation at 12 weeks of gestation. The remaining 4 (57%) patients continued warfarin through second trimester, and replaced by subcutaneous heparin at 34 weeks in 3(42.8%) patients and at 36 weeks in one (14.3%) patient. Coagulation monitoring, which was carried out in only 3 (42.8%) cases, revealed ineffective thromboprophylaxis. Ampicillin and gentamycin was given intravenously at start of labour and then 8 hourly for 48 hours in 6 (85.7%) patients. Antenatal antibiotic prophylaxis was provided only to 1 (14.3%) patient by benzathaine penicillin (penidure-LA, Wythe) 1.2 x 106 units per month. Diuretics, digoxin and beta blockers were prescribed according to individual requirements of patients. Two patients developed pulmonary oedema treated effectively in the intensive care unitI.C.U. There was no mortality in this study. A concerted effort by all the concerned specialities in patients management is necessary to ensure safe outcome. The role of subcutaneous instead of intravenous heparin for prophylaxis in pregnancy should be evaluated by further studies.
Kay words: Mitral valve disease, pregnancy

Heart disease in pregnancy is a serious state for the patient and a worrying condition for the obstetrician. The prevalence and incidence of all heart diseases in pregnancy varies between 0.3% to 3.5%[1]. The patients usually seen in pregnancy with congenital heart disease, (mitral valve prolapse and atresia, atrial and ventricular septal defects, Eisenmenger syndrome and cyanotic heart diseases) are those who have had corrective surgery in childhood and who have haemodynamically stable status.

Rheumatic heart disease still remains the most common cardiac disorder in the third world despite being almost total eradication in the western countries. It is closely related to streptococcal pyogenes pharyngitis. The cardiac squeal of rheumatic fever remains the most common cause of valvular heart disease complicating pregnancy[2]. The dominant valvular lesion is usually has been mitral stenosis. With chronic rheumatic fever, fibrosis, thickening and contracture of leaflets lead to regurgitation[3].

The marked haemodynamic changes of pregnancy have a profound effect on underlying mitral stenosis. The most important consideration is increase in cardiac output (CO) by as much as 30% to 50% with a peak by mid pregnancy. Patients with normal cardiac function comply with these physiological changes without difficulty. The patients with cardiac disease however may be at a significant risk of morbidity and mortality when faced with these changes[4]. Sometimes pregnancy may unmask a previously asymptomatic cardiac condition.

Treatment of valvular heart disease, specially mitral valve problems has been deeply modified by the experience acquired since the introduction of valve replacement and the technical advances in this field in the last decade5. Prosthetic cardiac valves have been available for 35 years and during this period a great many design changes have been undertaken[6]. Harken et al and Starr accomplished the first successful valvular replacement in 1960. The porcine bioprosthesis became suitable for valve substitute in 1969. Anticoagulation is not required with this valve. The ball valve prosthesis developed by Starr-Edwards was the earliest to be applied clinically and has shown an excellent record of durability. Some of the first Starr-Edwards valves have been functioning successfully for 30-35 years. Tilting disc prosthesis (Bjork Shiley) was developed in 1972. Many other prosthetic valves have been evolved, including Lillehei-Kaster in 1971, Medtronic Hall in 1977 and Duromedics in 1982. In addition to material and design changes and improvements, there have been continuing advancement in the investigative techniques, operative management

and postoperative care[6].

Symptomatic heart failure remains the primary indication for mitral valve replacement, when medical measures are unsuccessful[13]. With successful repair many of these women now are likely to attempt pregnancy. In some instances surgical correction of valvular lesions have been performed even during pregnancy with good outcome.

The pregnant patients with artificial valve have an increased incidence of thromboembolism and infective endocarditis so life long anticoagulation is required in form of warfarin, however due to its teratogenesis heparin is given in first trimester and in last 4 weeks of pregnancy. Modified Hirsch's regimen7 is not applicable now days due to teratogenic effects of warfarin. Similarly to avoid the risk of endocarditis, vigorous antibiotic cover is given during, antenatal period, labour and surgical procedures[8].

With the rapidly changing face of cardiac surgery in our set-up, we have started to see cases of successful mitral valve replacement presenting with pregnancy. This study was conducted to evaluate the incidence, outcome and complications of pregnant patients who have had earlier mitral valve replacement.

Material and method

This study was carried out at Services Hospital during the period 15.8.95 to 14.8.96. The patients presenting in labour ward with pregnancy and with history of mitral valve replacement were included in the study. Booking status of the patient was disregarded. The patients who had undergoing valvotomy, comissurotomy, valvuloplasty and surgical correction of congenital lesions were excluded from the study. The patients undergoing therapeutic termination were also excluded. A detailed account of the present, past and menstrual history were obtained. Information regarding social status and parity was also collected. The events of pregnancy, labour and puerperium were also recorded and any adverse event noted. The information was obtained according to a specially designed Performa and the data obtained was pooled on a computer database. The results were compiled and analysed.

Results

During the period of study 7 patients with pregnancy and mitral valve replacement were analysed. Age distribution is shown in table-1. Minimum parity was zero and maximum was 5 with mean figure of 1.5 ± 2. Four (57%) patients were booked at teaching hospital (with 1-2 visits only) and 3(42.9%) were un-booked. Two (28.5%) patients had previous home deliveries, 1(14.3%) had previous hospital delivery and 1(14.3%) had both hospital and home deliveries. Six (85.7%) patients were uneducated.

Table 1: Patient distribution

Criteria	Min	Max	Mean±SD
Age	21	35	26.88±4.64
Gravida	1	6	2.2±1.57
Para	0	5	1.1±1.57
Abortions	0	1	0.2±0.39

Table 2: Type of valve

Type	No. of patients	Percentages
Starr-Edwards	5	71.5
Bjork Shiley	1	14.3
Porcine	1	14.3

Table 3. Obstetric outcome

Outcome	n=	Percentage
Blighted ovum	1	14.3
Spontaneous abortion (,20wks)	1	14.3
21-37 weeks	4	57
38 weeks	1	14.3

The types of valve prosthesis are shown in table 2, majority (71.5%) being of Starr-Edwards type. Table 3 reveals obstetric out come of these patient. No foetal congenital anomalies were noted. 4(57%) patients had preterm delivery. NYHA functional cardiac class is shown in table IV. showing the efficacy of valvular surgery. Five (71.5%) patients were delivered vaginally out of which 2 (28.5%) patients developed signs and symptoms of pulmonary oedema for which they were treated in the intensive care unit (I.C.U).

Drug therapy is evident by table V and table VI. 6 (71.5%) patients received anticoagulants. All these (71.5%) patients continued warfarin in the first trimester. One (14.3%) of these patients ended in spontaneous first trimester abortion. One (14.3%) patient had blighted ovum at 12 weeks of gestation and intravenous heparin was replaced for warfarin 24 hours before evacuation. The remaining 4 (57%) patients continued oral warfarin through second trimester and replaced by subcutaneous heparin at 34 weeks in 3 (42.8%) cases and at 36 weeks in 1 (14.3%) patient (table 6). There were no maternal side effects or increased tendency to bleed. Coagulation control was monitored by prothrombin time (PT), activated partial thromboplastin time (APTT) and platelet count in 3 (42.8%) cases. They all revealed inadequate anticoagulation. INR was not carried out in any of these patients.

Regarding antibiotic prophylaxis only 1(14.3%) patient was given Benzathaine penicillin (penidure-LA, Wythe) 1.2 x 106 units per month during, the antenatal period. The other 6 (85.7%) of 7 cases received ampicillin (2 gm) and gentamycin (120 mg) intravenously in single