



Service Priorities and Programmes Electronic Presentations

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Submitting author: Miss Wing Sze CHONG

Post title: Registered Nurse, Prince of Wales Hospital

Cardiopulmonary Bypass During Pregnancy: The Prince of Wales Hospital First Experience

Chong WS(1), Yung EP(1)

(1) Division of Cardiothoracic Surgery, Department of Surgery, Prince of Wales Hospital

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Introduction

Heart disease in pregnancy is one of the main causes attributes to maternal and fetal mortality. Cardiac surgery during pregnancy is well-known associated with high mortality for both mother and fetus with rates of 15% and 33% respectively. Recent literatures reviewed that the effect of cardiopulmonary bypass in cardiac surgery during pregnancy may contribute to adverse maternal and fetal outcomes. Positive outcome of cardiac surgery with the use of cardiopulmonary bypass in pregnancy will be achieved by clinical optimization and modification of cardiopulmonary bypass for both mother and fetus throughout the perioperative period.

Objectives

(1) To report our hospital first two experiences of cardiac surgeries with the use of cardiopulmonary bypass in pregnancy during 2015-16; (2) to discuss the related clinical optimization and modification of cardiopulmonary bypass provided by perfusionists and other disciplines.

Methodology

Various clinical optimizations and cardiopulmonary bypass modifications were performed to ensure positive fetal-maternal outcomes. Fetal protection strategies include high pump flow rates (Cardiac Index $>2.8\text{L}/\text{min}/\text{m}^2$), high perfusion pressure greater than 70mmHg, pulsatile perfusion, maintenance of normothermia, minimal bypass time, high maternal oxygen saturation and hematocrit ($>25\%$), normal maternal serum potassium level and continuous fetal heart rate monitoring by an obstetrician.

Result

The Prince of Wales Hospital have successfully performed the first two open heart surgeries with the use of cardiopulmonary bypass during pregnancy from September

2015 to April 2016. In September 2015, a 19-year-old woman of gestational age 21 weeks with subacute *Streptococcus milleri* endocarditis have successfully received an emergent mitral valve replacement. The second case was a 29-year-old woman of gestational age 16 weeks with *Streptococcus viridans* infective endocarditis complicated with cardiogenic shock and acute pulmonary edema and successfully received an emergent mitral valve replacement on April 2016. Both cases reported no fetal or maternal concerns until post operation day 7 and had successfully delivered at 37 weeks of gestation.

With no maternal and fetal complications, two emergent mitral valve replacement surgeries with the use of cardiopulmonary bypass during pregnancy were successfully performed. Perfusionists were in unique position to provide proactive assessments and interventions to ensure safe cardiopulmonary bypass to the patients. These experiences demonstrated the positive outcome of multidisciplinary management of cardiac surgery patient in pregnancy by appropriate clinical optimization and modification of cardiopulmonary bypass throughout the perioperative period. These experiences also addressed specific service needs of pregnant women and provided valuable references on the management of cardiac surgical patient during pregnancy in Hong Kong.