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Research Article

**ANALYSIS OF ANAESTHETIC CHALLENGES IN REPAIR OF  
ACUTE AORTIC DISSECTION RUPTURING INTO THE  
PERICARDIUM IN A PREGNANT WOMEN****Dr Muhammad Hamid Raza<sup>1</sup>, Dr Danial Ahmed<sup>1</sup>, Dr Awais Ghulam Nabi<sup>2</sup>**<sup>1</sup>Ex-House Officer Allied Hospital Faisalabad, <sup>2</sup>Tehsil Headquarters Hospital Sillanwali District Sargodha.**Article Received:** October 2020    **Accepted:** November 2020    **Published:** December 2020**Abstract:**

**Introduction:** Aortic dissection (AoD) during pregnancy is rare and life threatening for both mother and fetus. Aortic dissection typically occurs in the third trimester of pregnancy or during the early postpartum period.

**Aims and objectives:** The main objective of the study is to analyze the anaesthetic challenges in repair of acute aortic dissection rupturing into the pericardium in a pregnant women.

**Material and methods:** This descriptive analysis was conducted in Allied Hospital Faisalabad during June 2019 to November 2019. This was basically a case study, we report 6 cases in hospital during this period. The mean age of these pregnant women at admission was 30.2 years (range, 24 to 36 years). Apart from 1 primigravida, all women were multigravidae. Symptoms at admission ranged from dyspnea and pain in the left hemithorax, to severe decompensation with hypotension, anuria, and coma.

**Results:** Five patients underwent surgical intervention. Four with a type A dissection were all operated on emergently. A cesarean section was performed in 2 at the same operative session, before the aortic repair in both. Cesarean section was done 5 days after aortic repair in the third patient and 16 weeks later in the fourth patient. There was no maternal morbidity, but 3 patients suffered major complications. The immediate postoperative course in one of the patients with the type A dissection was complicated by severe, recurrent intestinal bleeding and perforation, necessitating gastric resection.

**Conclusion:** It is concluded that cesarean section with concomitant aortic repair is recommended for pregnant women with a type A dissection, depending on the gestational age.

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**INTRODUCTION:**

Aortic dissection (AoD) during pregnancy is rare and life threatening for both mother and fetus. However, according to the International Registry of Acute Aortic Dissections, being in the peripartum period of pregnancy confers a risk for AoD of 0.2%.<sup>3</sup> Aortic dissection typically occurs in the third trimester of pregnancy or during the early postpartum period [1]. Aortic dissections often develop among individuals with connective-tissue disorders associated with abnormalities of the aortic wall, such as those present in familial thoracic aortic aneurysm/dissection, Marfan syndrome, Loeys-Dietz syndrome, vascular Ehlers-Danlos syndrome, and bicuspid aortic valve disease or Turner syndrome [2].

The association between pregnancy and type A aortic dissection is an uncommon presentation. Risk factors include a bicuspid aortic valve or a connective tissue disorder. In addition to being a life threatening surgical emergency, management could be complicated due to the hemodynamic changes that occur late in pregnancy, and the implications of the management strategy on fetal survival [3].

Acute aortic dissection during pregnancy, particularly during the third trimester, accounts for half the cases in women under the age of 40 years [4]. The presence of a pre-existing aortopathy secondary to a connective tissue disorder increases the risk for dissection. Becker and colleagues<sup>6</sup> found that pregnancy carries a mortality of 1.5%, whereas fetal mortality is up to 16.2%. This is mostly dependent on the maturity of the fetus, and some reports suggest that cardiopulmonary bypass may cause intrauterine fetal death [5].

**Objectives:**

The main objective of the study is to analyze the anesthetic challenges in repair of acute aortic

dissection rupturing into the pericardium in a pregnant women.

**MATERIAL AND METHODS:**

This descriptive analysis was conducted in Allied Hospital Faisalabad during June 2019 to November 2019. This was basically a case study, we report 6 cases in hospital during this period. The mean age of these pregnant women at admission was 30.2 years (range, 24 to 36 years). Apart from 1 primigravida, all women were multigravidae. Symptoms at admission ranged from dyspnea and pain in the left hemithorax, to severe decompensation with hypotension, anuria, and coma. Other patient characteristics, including associated risk factors. Mainly transesophageal echocardiography was used as the diagnostic technique in the patients with the type A dissection; angiography was used in those suffering type B aortic dissection, after a type A dissection was first ruled out on the basis of echocardiographic findings.

**Statistical analysis:**

The data was collected and analyzed using SPSS version 21.0. All the values were expressed in mean and standard deviation.

**RESULTS:**

Five patients underwent surgical intervention. Four with a type A dissection were all operated on emergently. A cesarean section was performed in 2 at the same operative session, before the aortic repair in both. Cesarean section was done 5 days after aortic repair in the third patient and 16 weeks later in the fourth patient. There was no maternal morbidity, but 3 patients suffered major complications. The immediate postoperative course in one of the patients with the type A dissection was complicated by severe, recurrent intestinal bleeding and perforation, necessitating gastric resection.

**Table 01:** Characteristics of patients

Variable	Patient No.					
	1	2	3	4	5	6
Patient						
Age (y)	24	28	28	31	36	34
Gravida	2	6	2	6	4	1
Para	1	5	1	4	1	0
Systemic disease	Marfan's	None	Marfan's	None	None	None
Hypertensive	+	No	No	+	No	+
Aortic regurgitation <sup>a</sup>	IV	I	0	IV	I-II	0
Gestation (wk)	32	24	35	29.5	37.5	22
Dissection type <sup>b</sup>	A	A	B	A	A	B
Operation						
Type	Bentall	Sup AAR	None	Sup AAR	Sup AAR	Re DA
Lowest blood temperature (°C)	25	32	NA	28	25	NA
Perfusion time (min)	112	110	NA	150 + 105	93	NA
Aortic cross-clamp time (min)	62	80	NA	88 + 58	71	NA

**DISCUSSION:**

Bleeding is relatively common during the post-bypass period and after cardiac surgery, especially in patients with re-do surgery, prolonged bypass time, and recent anti-platelet agent use. The incidence of the bleeding complications are more in parturient due to gestational thrombocytopenia and dilution coagulopathy. It is a cause of a significant morbidity and mortality, prolonged ICU and hospital stay and increased cost [6].

Studies suggest that the action of rVIIa is dependent on sufficient levels of coagulation factors (>30%), specifically fibrinogen (>50-75 mcg/dl), Factor V and Factor X (> 5-10%) and sufficient platelet count (50x10<sup>9</sup>/ml) [7]. If pH is below 7.2, the proportion of patients responding to rVIIa decreases. Hypothermia decreases its effect at core body temperature below 33°C. Current recommendations, however, consider the use of rVIIa in refractory haemorrhage in cardiac surgery appropriate in cases in which significant clotting factor replacement therapy has occurred. The suggested dose is 41-90 mcg/kg. The dose may have to be repeated in 2 to 4 hours if bleeding persists [8].

Although rFVIIa is expensive, it would appear to be cost effective when compared with the combined cost of large amounts of blood and blood products. Moreover, the risks of transfusion e.g. incompatibility, and infection cannot be ignored [9]. The earlier use of rFVIIa may also help to conserve the already diminishing blood pool and stores. It is important to note that the use of recombinant factor VIIa requires attention to replacement of deficient coagulation factors, red cells, fibrinogen, and platelets in addition to more general measures such as avoidance of hypothermia, acidaemia, and ongoing surgical bleeding [10].

**CONCLUSION:**

It is concluded that cesarean section with concomitant aortic repair is recommended for pregnant women with a type A dissection, depending on the gestational age. The maternal hemodynamic status will determine the sequence of the two procedures. Medical treatment

is advised for patients with a type B dissection, but surgical repair is indicated if complications such as bleeding or malperfusion of major side branches occur.

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