

# Anaesthesia Management of Patient with Idiopathic Thrombocytopenic Purpura - A Case Series

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## Abstract

Idiopathic thrombocytopenic Purpura (ITP) is an autoimmune disorder where platelets are being destroyed prematurely by the reticuloendothelial system. Here we described perioperative management of two patients suffering from ITP with cancer undergoing surgery. Anaesthesia management of a patient with severe thrombocytopenic purpura includes the institution of general anaesthesia, platelet transfusion preferably single donor to prevent allo-immunization, intravenous immune-globulin or steroid to cut platelet destruction, monitoring for haemorrhagic complications, abstinence from use of no steroidal anti-inflammatory drug (NSAIDs) or other platelet lowering drugs and avoidance of airway trauma, nasal intubations and intramuscular injections.

**Keywords:** Anaesthesia; Idiopathic Thrombocytopenia; Platelet

## Introduction

Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disorder in which platelets are being destroyed prematurely by the reticulo-endothelial system which results in peripheral thrombocytopenia [1,2]. Usually it is acute and self-limited in children, but may be chronic in adults. Anaesthetic management of patients suffering from ITP undergoing surgery is quite challenging in view of increased risk for perioperative complications because of their thrombocytopenia. In this article, we discussed perioperative management of two patients suffering from ITP undergoing surgery. We obtained written consent from both the patient for the publication of the case report.

## Description

### Case 1

The First patient was a 22 years old female patient with the body weight of 49 kg and a body mass index (BMI) of 20.08 kg/m<sup>2</sup>, scheduled for laparoscopic bilateral salpingo-oophorectomy. She was a known case of chronic ITP and on the oral contraceptive pill (Ethinyl-estradiol and Drospirenone) and eltrombopag (Haematopoietic growth factor) 25 mg orally. She had a history of menorrhagia for last eight months during menstruation. During the evaluation of menorrhagia, she was diagnosed to have ITP. Her 2D echocardiogram was reported to have a restrictive ventricular septal defect with a left to right shunt with the pressure gradient of 90 mm Hg. She was treated for her ITP with a short course of Dexamethasone and Daps one. During the course of treatment, her platelet count raised from 2000/c.mm to 200000/c.mm. She also received the red blood transfusion as her haemoglobin dropped below 6 gm/dl. In preoperative evaluation her platelet count was 40000/c.mm. Other blood reports and imaging were within normal limit. On clinical examination, there was multiple ecchymotic lesion due to the mosquito bite. All the other systemic examinations were normal. Premedication was given with Cap Pantoprazole and Domperidone (aspiration prophylaxis) and Tab Lorazepam 1 mg at night before surgery. Preoperative heart rate was 98/min and blood pressure was 122/74 mm Hg. After shifting the patient in the operation theatre all the standard monitors were attached and one wide bore iv cannula was inserted. Then 4 mg iv Dexamethasone was administered as she was on Dexamethasone and 4 units of Random Donor Platelets (RDP) were transfused before induction to raise her platelet count. After preoxygenation with 100% FiO<sub>2</sub> 10 lit/min of oxygen for 3 minutes, anaesthesia was induced with iv Propofol 100 mg and Rocuronium 50 mg followed by atraumatic intubation with direct laryngoscopy. A nasogastric tube was inserted after preparing the nostril with Xylometazoline nasal drop. An arterial line was inserted in the left

radial artery with a single prick. Anaesthesia was maintained with 40% oxygen and 60% air mixture with Sevoflurane maintaining MAC above 1 and an intermittent bolus of injection Atracurium. For analgesia injection Paracetamol 1 gm, injection Fentanyl 100 mcg and Tramadol 100 mg iv were administered slowly. Injection Diclofenac (NSAIDs) was avoided. Any intramuscular injection was also avoided. Operation continued for 2 hrs. Haemodynamically patient was absolutely stable throughout the surgery. Total crystalloid infused was 1500 ml and the total blood loss was 200 ml. Patient's trachea was extubated at the end of surgery. Extubation was smooth and uneventful. Post-operatively steroid and eltrombopag were continued. Patient's platelet count was 80000/c.mm postoperatively. No further platelet transfusion was required. There was no haemorrhagic complication. Postoperative pain was controlled with inj Paracetamol 1 gm four times daily, Fentanyl 25 mcg iv SOS and inj Tramadol 50 mg two times daily.

## Case 2

A 48 years old male, a known diabetic was on treatment for peripheral T cell lymphoma and received autologous stem cell transplant 10 months back. He came to emergency with the history of bleeding in stools and haematemesis since last 3-4 days. At the time of admission, he was alert, conscious, but pale and severely weak. His haemoglobin was 3.4 gm/dl and Platelet count was 8000/c. mm. Three units of Packed Red Blood cell and four units of Random Donor Platelets were transfused overnight and subsequently, he was treated with iv Immunoglobulins (IgG), Methylprednisolone, Daps one, Rituximab, and Eltrombopag. Total Parenteral Nutrition (TPN) was started as he was kept nothing per mouth due to GI bleeding and shifted to ICU. As his total leucocytes count was dropping, he received Granulocyte Colony-Stimulating factor (G-CSF) intermittently. His gastrointestinal (GI) bleeding ceased completely, after he received activated factor 7 (novo 7) 90 mg/kg 6 hourly. Anasarca was gradually improved so shifted back to ward. His platelet count was still hovering between 2000 to 6000 /c.mm. However, all the medical intervention failed to raise his platelet count and GI bleeding restarted. Hence, a decision to do splenectomy was taken after a multidisciplinary team discussion and counselling the patient and patient party. Pneumococcal vaccine was given. During the pre-anaesthetic evaluation, no obvious bleeding spots were found in mouth or sclera. There was no abdominal organomegaly or ascites. Haemoglobin was 6.5 gm/dl, CT angiography of abdomen reported diffuse bleeding in the small intestine and there was no splenomegaly on ultrasonography. Just before shifting to operation theatre, 4 units of RDP were transfused. He had already triple lumen central venous catheter in the right internal jugular vein in situ. After attaching multipara monitor, anaesthesia was induced with iv Propofol 2 mg/kg, Fentanyl 100 mcg and Rocuronium 50 mg. Atraumatic tracheal intubation was performed with 8 mm internal diameter endotracheal tube. Anaesthesia was maintained with Sevoflurane, Oxygen and air mixture. Injection Morphine 6 mg iv was used for analgesia. The NSAIDs were avoided. Well-lubricated 14 Fr nasogastric tube was inserted through right nostril after administering vasoconstrictor nasal drop. IV infusion of Tranexamic acid 1 mg/kg/h was started, which was continued in the postoperative period. The right lateral position was given with left arm elevated. Laparoscopic procedure was started. While dissecting at the splenic hilum, there was bleeding from the splenic artery. When every attempt to control the bleeding by ligasure failed, it was converted to open procedure. After removal of spleen 4 units of Random Donor Platelet and 2 units of Packed Red Blood cell (PRBC) were transfused. In the intraoperative period, arterial blood gas was within normal limit. His trachea was extubated at the end of surgery after full neuromuscular recovery. Total blood loss was 1600 ml. Post-operatively patient was shifted to the intensive care unit (ICU) for monitoring. The platelet count improved slowly over 6 days to 73000/c.mm. Recovery was otherwise uneventful and he was discharged in stable condition. Total transfusion support was 41 units of PRBC, 38 units RDP and 11 units fresh frozen plasma (FFP) during the whole length of stay. At the time of discharge his platelet count was 73,000 /cmm and haemoglobin was 9.8gm/dl.

## Discussion

The first-line therapy for ITP is the administration of Corticosteroids (prednisolone 1 mg/kg) and IV IgG at 1-2 g/kg total given over 1-5 days [3-6]. Subsequent maintenance therapy includes an oral combination of danazol (10-15 mg/kg) and azathioprine (2 mg/kg) [7]. For patients' refractory to medical treatments, splenectomy remains the only curative option [8]. Severe thrombocytopenia in ITP may need platelet transfusion before surgery [6]. Each unit of RDP is expected to raise the platelet count by 3000-5000/cmm. Thromboelastography could be helpful in this scenario, but it was not available with us. Antifibrinolytic agents i.e. aminocaproic acid and tranexamic acid may help to stabilise clots that have already formed. Thus they help to reduce operative blood loss and blood transfusions. Non-steroidal anti-inflammatory drugs (NSAIDs) and intramuscular injections should be avoided. Anaesthetic technique of choice is general anaesthesia. IV immunoglobulins or steroids should be continued till surgery. Platelet transfusion is usually required perioperatively till ligation of splenic artery. NSAIDs or other platelet lowering drugs are avoided. Airway related maneuver should be gentle and atraumatic. Nasal intubation and intramuscular injections are best avoided [9,10]. Monitoring for haemorrhagic complications should be continued into the postoperative period. Additional monitoring is dependent on the type of surgery. Arterial and central venous lines should be considered in patients with expected bleeding due to surgery.

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