Original Research Paper

Volume : 5 | Issue : 9 | September 2016 • ISSN No 2277 - 8179 | IF : 3.508 | IC Value : 69.48

Management of an Open Thoracoabdominal Traumatic Wound After 13 Hours of Accident with Involvement of Multiple Organ in A Paediatric Patient- An Experience

Medical Science

KEYWORDS : Paediatric Trauma, Delayed presentation, thoracoabdominal trauma, anaesthetic care, no residual complication

Dr Pallavi Singh

ABSTRACT

Paediatric tauma present significant challenges to the anaesthesia provider for initial stablization in the emergency department, providing sedation and monitoring for imaging, emergent sugical procedures, intensive care unit management of these patients and pain control during hospitalization. This case report presents the anaesthetic care and management of a 13 year old male weighing 30kg who got stuck into a JCB machine causing a thoracoabdominal trauma and presented to us after a long 13 hours in restless but conscious condition with unstable vitals. Though, with rigorous resuscitation, proper surgical intervention, vigilant monitoring and optimum care, the child could be discharged with no residual complication.

Introduction:

Trauma remains the leading cause of death in paediatric age group across the world. World over injury is the 7th cause of mortality and abdomen is the third most common injured organ. Abdominal injuries require surgery in about 25% of cases. 85% of abdominal traumas are blunt character.[1] Mortality from chest trauma increases with the presence of abdominal (20%) or head injury (35%).[2]

Case History:

A 13 year old male with thoracoabdominal trauma due to JCB machine was brought to our hospital after 13 hours of injury in a restless but awake condition. Heart rate of the patient was 154 beats/min, BP was not recordable, respiratory rate 35/ min, SpO_2 90% on room air. On auscultation, bilateral crepts was heard all over the chest with decreased air entry on the left side. Patient had an avulsive wound over the back of the left side of thorax, evisceration of spleen, injury over hypochondrium and scrotum, multiple rib fracture, multiple perforations in proximal stomach (fig. 1). Primary resuscitation was started in the emergency room. Two large bore cannula was secured and IV fluids were started. Patient was intubated with ETT no. 6.0 and put on ventilator with PRVC mode. On investigation, Hb of the patient was 7.3g/dl. Patient was taken up for exploratory laprotomy with thoracotomy under ASA grade V_E (fig 2, 3). Before induction patient was started on inotropic support with noradrenaline, adrenaline and vasopressin to maintain the hemodynamic stability. Standard monitoring was done with ECG, IBP, pulseoximeter, temperature and urine output. BP at induction was 66/40 mm Hg. Patient was induced with Inj. Ketamine 30 mg, Inj fentanyl 50 mcg and Inj atracurium 30 mg. Patient was maintained with O_2, N_2O (50:50) and Sevoflurane (1-2%). Adequate volume replacement was done with 3 liters of crystalloid, 500ml of colloid, 400 ml of FFP and 700 ml of PRBCs. Intraoperative pain management was done with 50 mcg Inj fentanyl and Inj paracetamol 1gm. During the surgical procedure, proximal gastrectomy and repair of other stomach wound was done. Left lower lobe lung lobectomy was done (fig 3). Diaphragm was repaired and ribs were approximated with the help of steel wires. Spleen was only given a support as there was no major injury to it. Thoracoabdominal muscles were repaired by the plastic surgeon and after feeding jejunostomy and drains at place, chest along with abdominal wall was closed. Total blood loss was 500ml and urine output was 800 ml during the 4 hours surgical procedure. Postoperatively, BP was 100/60 mmHg and HR was 120 beats/ min on noradrenaline, adrenaline and vasopressin infusion. Patient was shifted to ICU with ventilatory support, inotropic support and muscle relaxant infusion. In due course of time, the inotropic support was tapered off and the patient could be extubated after 36 hours of ventilatory support. After 4 days, he was shifted to the ward with vigilant care. Postoperative analgesia was given with multimodal approach. During the 4 days of ICU stay, patient was given 1000ml of PRBC and 400ml of FFP. On the 15th postoperative day, patient was discharged with no residual complication.

Discussion:

Anaesthetists may be involved in several aspects of paediatric trauma, management and the quantity of their input can have a significant effect on the long term outcome. Paediatric age group has its own challenges related to airway, breathing and circulation. All paediatric trauma should be considered at risk of aspiration particularly one with thoracic injuries, because of which rapid sequence induction with cricoid pressure is recommended. Pulmonary contusion results in bleeding and fluid leakage into the lung tissues, which can become stiffened and lose its normal elasticity. The water content of the lung increases over the first 72 hours after injury, potentially leading to frank pulmonary edema. A change in BP occurs only after there is a 30- 40% decrease in estimated blood volume which is 70 ml/kg in this age group. Evisceration of abdominal organs in this patient reflects major trauma with significant blood loss. Therefore, in a patient with thoracic injury as pulmonary contusion, multiple rib fractures having risk of pulmonary edema along with major abdominal trauma with a significant blood loss requires a calculated volume replacement with optimum amount and also titrating the doses of vasopressors to maintain the haemodynamic stability.

CONCLUSION:

Even though the prior comprehensive action in the golden hour of injury can save lives but active resuscitation with life saving surgical procedures and proper postoperative care as a team work can save a paediatric patient even after a delayed presentation.

Fig 1: an open thoracoabdominal trauma with evisceration of contents.

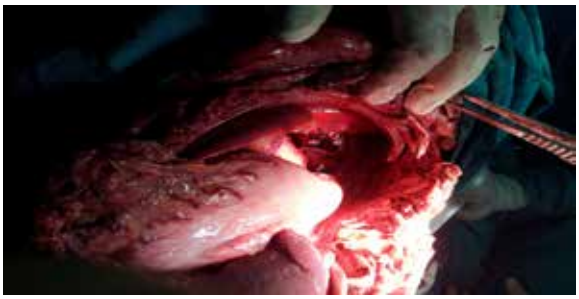

Fig 2: exploratory laprotomy with thoracotomy done.

Fig 3

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