

## Case Report and Review of Literature on Aneasthetic Management of 4 Day Old Neonate with Intestinal Obstruction

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**Abstract:** Intestinal obstruction is significant mechanical impairment or complete arrest of the passage of contents through the intestine. Symptoms include cramping pain, vomiting, obstipation, and lack of flatus. Diagnosis is clinical, confirmed by abdominal x-rays. Treatment is fluid resuscitation, nasogastric suction, and, in most cases of complete obstruction, surgery. We report a case of a 4 day old neonate with intestinal obstruction resulting in transient tachypnea and recurrent apnea

**Keywords:** Abominal distension, Transient tachypnea, apnea, Hyperkalemia, Hypothermia

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### I. Introduction

Neonatal intestinal obstruction is the most common surgical emergency in the neonatal period. Any newborn, who continues to vomit in the first few days of life, particularly if the vomitus contains bile and if the abdomen is distended, should have immediate investigation because intestinal obstruction in the newborn is a fatal condition unless promptly recognized and surgically corrected. Mechanical obstruction is divided into obstruction of the small bowel (including the duodenum) and obstruction of the large bowel. Obstruction may be partial or complete. About 85% of partial small-bowel obstructions resolve with nonoperative treatment, whereas about 85% of complete small-bowel obstructions require surgery.

### II. Case Report

A four day old male child weighing 2.7kgs, was delivered as a full term LSCS with APGAR score of 7/10 was admitted in the NICU on account of transient tachypnea developed on day1 for which the patient was intubated with ET tube no.2.5 and maintained on spontaneous ventilation. On Day 2 the child developed feed intolerance with abdominal distension with already existing tachypnea. As the abdominal distension kept on increasing an explorative laprotomy had to be done and it was planned on the 4<sup>th</sup> day till then the child was managed conservatively. On general examination, the child was afebrile, conscious with a pulse rate of 140beats/minute, regular. The respiratory rate was fluctuating between 52breaths/min to 88breaths/min with intermittent apneic spells. On systemic examination the abdomen was distended and no organomegaly. Respiratory and cardiovascular system findings were normal. Baseline investigations were done of which serum potassium was 5.5mmol/lit and radiograph of the abdomen was suggestive of distended stomach with progressively increasing small bowel obstruction and normal large intestine (Fig.1). Patient was given Grade IV of American Society of Aneesthesiologist with high risk consent taken and was shifted to the OT with oxygen and connected to Jackson Rees circuit. ECG electrodes, pulse oximeter, blood pressure cuff, and temperature probe were attached and baseline vitals were recorded and patient was covered with plastic sheet and drapes to prevent hypothermia. Patient was premedicated with injection glycopyrrolate and midazolam and induced with oxygen and air (50:50) and sevoflurane followed by injection ketamine and atracurium and maintained on controlled ventilation. Injection paracetamol was given as per weight for analgesia. Warm infusion of Normal Saline was administered in view of hyperkalemia at 10ml/hr through infusion pump. Intraoperatively the hemodynamic parameters were stable. At the end of surgery patient was given caudal block with injection 0.5% bupivacaine. Patient was reversed with injection neostigmine and glycopyrrolate but did not show good respiratory efforts and hence was shifted to NICU intubated. Post operatively arterial blood gas analysis was done which showed a pH 7.38 pCO<sub>2</sub> 35 and pO<sub>2</sub> 220 HCO<sub>3</sub> 18 mmol/lit and spO<sub>2</sub> 99%. Patient was observed for

24 hours in the NICU and patient showed active movements and adequate efforts of respiration with regular suctioning of oral cavity and E.T. tube and exubated after repeating an ABG which showed pH 7.34 pCO<sub>2</sub> 37 pO<sub>2</sub> 160 HCO<sub>3</sub> 19.5 mmol/lit and kept in lateral position for few minutes and shifted on to oxygen hood at 4l/min with nasogastric tube insitu.

### **III. Discussion**

Neonatal obstruction is diagnosed by a triad of bile stained vomiting, abdominal distension and failure to pass meconium. It can be due to variety of congenital abnormalities which is the commonest cause. It can be diagnosed antenatally by ultrasound scan suggestive of polyhydramnios as one of its factors and the 'bubble sign.' The abdominal radiograph is the most important investigation shows distension of the gut with multiple fluid levels. Neonatal obstruction may lead to rapid and serious metabolic problem. Many of the metabolic problems should be corrected before transporting the patient.

First and Foremost is fluid loss from vomiting, due to restriction of fluids and sequestration of fluids in the gut and peritoneal cavity leading to reduced circulating volume and reduced tissue perfusion.

Second is Glucose, the glucose stores are less in neonate, if glucose intake is impended and stress is there due to bowel obstruction and low tissue perfusion then the glucose stores will be exhausted and the neonate will switch to anaerobic metabolism causing severe hypoglycemic acidosis and leading to cerebral damage.

Thirdly, sick neonate is sensitive to hypothermia. Inadequate warming during examination, resuscitation and imaging can lead to hypothermia. Fourth, respiratory distress is a common problem in neonates with intestinal obstruction as inhalation of vomitus may lead to pneumonitis and atelectasis. Lastly, sepsis from gut organisms (due to transmigration of organisms through an ischemic or perforated gut wall) causes a rapid deterioration in all metabolic factors. Septicaemia with virulent gut organisms may lead to rapid demise of the neonate.

By checking the patient's heart rate and blood pressure, peripheral perfusion (capillary refill), and urine output, the adequacy of fluid resuscitation can be determined. Serum electrolyte levels should be closely monitored, because fluid shifts between the intravascular and extravascular spaces are common and require prompt responses. Replacement of fluid lost through third-space fluid sequestration should consist of 0.5% to normal (0.9%) saline.

### **IV. Conclusion**

Intestinal obstruction is a common Pediatric Surgical emergency at our center. It was observed that with careful induction and maintenance of anaesthesia the patient was hemodynamically stable throughout the surgery, also prevention of hypothermia resulted in better outcome for the neonate. In view of the above case it can be summarized that neonate if preintubated lead to better induction of anaesthesia with maintenance of oxygenation, especially in patients where tachypnea with recurrent apnea and raised serum potassium levels are present as in this case. In neonatal patients, with intestinal obstruction along with the transient tachypnea and recurrent apnea injection ketamine and injection atracurium can be safely used. Intraoperative prevention of hypothermia along with adequate fluid replacement lead to successful outcome.

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