

# ANESTHETIC MANAGEMENT OF A NEWBORN WITH A CERVICAL MENINGOMYELOCELE

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## Abstract

Anesthesia of a newborn poses different types of challenges to the anesthesiologist. Cervical meningomyelocele adds to the difficulty with positioning and airway problems. We report a case of successful management of such a case.

**Keywords:** neonate, cervical myelocele, anesthesia.

## Introduction

Myelomeningocele (MMC) a complex congenital spinal anomaly, results from neural tube defect during first 4 weeks of gestation. Cervical meningocele is an extremely uncommon congenital spinal anomaly and the incidence is 3- 5 % among spina bifida cystic<sup>1</sup>. Usually children don't present with the neurological manifestations at birth but the surgical exploration is warranted to prevent the future neurological deterioration<sup>2</sup>. In this report, we present a neonate with the lower cervical meningocele which was successfully surgically treated.

## Case Report

A term female baby weighing 3.07 kg was born at 40<sup>+4</sup> weeks of pregnancy to a healthy primi mother of nonconsanguineous marriage for an indication of fetal distress and thick meconium stained liquor by emergency caesarean section. Immediately after birth, the child cried vigorously with the Apgar score of 8/10 and 9/10 in the 1<sup>st</sup> and 5<sup>th</sup> minute respectively. Vitals were stable and the systemic examination was also normal. Head circumference was 33cm and the baby moved all four limbs normally. Baby was kept in neonatal intensive care in view of a neck swelling and the thick meconium stained liquor. Regarding the past medical history, mother consumed folic acid tablets regularly from 2<sup>nd</sup> month of conception. Her antenatal ultrasound at the 7<sup>th</sup> month of pregnancy revealed a swelling in the neck. Subsequent ultrasound confirmed the same. No history of any teratogenic drug consumption during the pregnancy and no similar complaints in the family. In the NICU, baby was started oral feeds and she tolerated well. A single soft fluctuant swelling 5X5cms at summit over midline back over lower cervical region with a skin deficient thin membrane was noted. The ultra sonogram confirmed the lesion as Occipital myelomeningocele lesion with mildly dilated lateral ventricles. There were no other obvious anomalies. The surgeons decided

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to excise and repair the cervical myelomeningocele. Baby was kept NPO for 6 hours on the day of surgery and maintenance fluids were maintained at the rate of 12 ml/hr. On the day of surgery baby was brought to the operating room (OR) and placed on the OR table with a warmer under the baby. Spo<sub>2</sub>, ECG, NIBP, rectal temperature, capnography were the monitors used. 12ml/hour of 1/5 of RL (100ml of 5% dextrose with 400ml of RL) was infused through the 50ml syringe. The patient's baseline values were HR=140/min, Spo<sub>2</sub>=100% with a BP of around 70/50 which was measured with an appropriate sized cuff. Injection atropine 60 µg and fentanyl 6 µg were given intravenously. Intubation with size 3.0 tracheal tube was done after inhalational induction with sevoflurane. To get the ideal supine position, gauze bandages were kept below the chest and abdomen to compensate for the swelling in the back of neck (see fig. 1). This mimicked a normal supine neonate. Atracurium 1mg was the non depolarizer used. After proper careful precautions, the patient was switched to prone position. Dystrophic meninges were excised and transfixed followed by a water tight dural closure. The recovery was smooth with all four limbs moving. Blood loss during the procedure was very minimal (5 ml). The procedure lasted for 90 minutes and throughout the intraoperative period baby's vitals were stable. Baby was then shifted to NICU for further monitoring. Postoperatively baby was moving all four limbs and vitals were stable with a good cry and normal feeds.



## Discussion

Anesthesia in prone paediatric patients, especially in neonates poses the highest risk of complications. Safe anesthetic management depends on complete appreciation of the physiological, anatomic and pharmacological characteristics of the neonates. As spinal surgery is a major surgery in children, preoperative considerations has to be done in a vigilant approach<sup>3</sup>. The child should be evaluated for the associated abnormalities such as VACTERL. Early closure of the meningocele and myelocele, typically within the first day of life is recommended to reduce the bacterial contamination of the exposed spinal cord and subsequent sepsis, which is the most common cause of death in this population during the newborn period<sup>4</sup>.

Intubation and mechanical ventilation is generally considered for all the spinal surgeries. Induction can be done either intravenous or by inhalational<sup>4</sup>. We preferred inhalational intubation. We intubated the newborn in the supine position and switched over to the prone position for the procedure. To compensate for the cervical swelling during the supine positioning, gauze bandages were kept below the abdomen and chest which gave us an optimal supine position for intubation. Preferred muscle relaxant is usually a non depolarizing muscle relaxant. Atracurium was used being the ideal one in neonates. Meticulous attention should be given while placing the child in prone position to avoid life threatening complications<sup>5</sup>. Prone position was carefully given to reduce intra-abdominal pressure and pressure on eyes. Routine monitoring

during the surgery were done in our patient. Children are more susceptible to hypothermia because of little subcutaneous fat, and greater surface area to body mass ratio which makes them vulnerable to apnea, bradycardia, hypotension, and acidosis<sup>6</sup>. Hypothermia also prolongs recovery from neuromuscular block, impairs platelet function, and leads to a higher incidence of wound infections. We used warming mattresses, hot air warming blankets and warmed intravenous fluids to avoid hypothermia<sup>7</sup>. Blood was reserved preoperatively but not used. Postoperative care was provided with local anesthetic infiltration around the wound and IV paracetamol. Our case was different in our airway technique, strict adherence to

basics in maintenance of temperature, oxygenation and fluid therapy.

## Conclusion

Neonates are prone for anesthetic complications. Safe and better management can be provided by fully understanding the age related pathophysiology while planning the anesthetic technique. Anesthetic management should focus on the positioning, fluid management and maintenance of temperature. The case is presented for its rarity and its successful management.

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