INTUBATION IN AIR! - AN INNOVATIVE METHOD FOR MENINGOMYELOCELE EXCISION SURGERY: A CASE REPORT

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ABSTRACT: Meningomyelocele is a complex congenital spinal anomaly, resulting from neural tube defect during first 4 weeks of gestation. Early surgery should be performed because of risk of infection and to prevent further damage to nervous tissue.[1] Anaesthetic challenges in meningomyelocele include securing airway with proper positioning of child during intubation to avoid rupture of swelling and CSF leak, intraoperative prone positioning and its associated complications and accurate assessment of blood loss. Intubation has been performed in either lateral position or in supine position with sac protected by a doughnut shaped cushioned ring. Here is a case report of anaesthetic management of a 4months old child posted for lumbosacral meningomyelocele excision for which intubation was performed by positioning the child by a new method that is the child was held in air by 2 assistants during induction, intubation and following intubation child was put in prone position.

KEYWORDS: Lumbosacral meningomyelocele, intubation in air, prone positioning.

INTRODUCTION: Meningomyelocele is a congenital spinal anomaly resulting from failure of neural tube to fuse in fetus. There is herniation containing neural elements and CSF. Incidence is approximately 1 in 1000 live births.[2] The spinal cord is often tethered caudally by sacral roots, resulting in orthopedic and urologic symptoms during childhood if not surgically corrected. They have varying degree of motor and sensory deficits e.g. children with the lumbosacral meningomyelocele exhibit flaccid paraplegia, loss of anal, urethral, bladder sphincter tone. Associated congenital conditions include hydrocephalus, club foot, dislocation of hip, exstrophy of bladder and rarely cardiac defects.

CASE REPORT: A 4 month old male baby weighing 5 kg's presented with a cystic swelling in the lumbosacral region diagnosed to be meningomyelocele. He was posted for the surgical excision of the swelling.

Baby was delivered by caesarean section in view of imminent eclampsia in the mother at 38 weeks of the gestation. Baby cried immediately after birth and APGAR SCORE was 8 at 1st minute and weight of the baby was 2.5 kgs.

Systemic examination of the child was normal except that there was a small swelling in the lumbosacral region measuring 2x1 cm. Antenatal scan at the 5th month did not show any evidence of meningomyelocele nor did the further scans done at 7th month and term.

Mother gives history of gradual increase in size of swelling since birth to the present size.

The child had history of inability to move the lower limbs since birth, but there was no history of seizure, no increase in head size or bowel and bladder disturbances. There were no other congenital abnormalities associated.

Examination revealed:

Baby was afebrile, heart rate: 130 beats/m, respiratory rate: 32/m, SPO2: 98% with room air. No pallor, icterus, clubbing, cyanosis.

RS: Normal vesicular breath sounds heard in all lung fields.

CVS: S1, S2 heard no murmurs.

CNS: Child conscious and active, GCS 15/15

	Right	Right	Left	Left
	Upper limb	Lower limb	Upper limb	Lower limb
POWER	Normal	Decreased	Normal	Decreased
TONE	Normal	Decreased	Normal	Decreased
REFLEX	Normal	Decreased	Normal	Decreased

Spine examination: Soft, cystic swelling measuring 10x8cms in lumbosacral region skin over it was intact, but stretched, shiny, thin and about to rupture.

INVESTIGATIONS: HB=10gm%, HCT=31.8%, TC=11340 cells/Cumm, platelets 1.71 lacs/Cumm, coagulation profile normal, renal function test and serum electrolytes within normal limits.

ANESTHETIC MANAGEMENT: On the day of surgery, the child was kept nil orally for 4hrs in the morning and maintenance fluid was started.

The child was brought to the operating room and pulse oximeter, ECG, precordial stethoscope and temperature probes were attached. The child was dazed with O2 + N2O + Halothane and was held up in the air by 2 assistants, one holding the body and the other stabilizing the head and neck.

Injection glycopyrrolate 0.05mg and injection fentanyl 10microgms was given intravenously. After confirming mask ventilation, muscle relaxation was achieved with injection succinyl choline 2mg/kg and child was intubated with ETT size 4. During entire course of induction and intubation child was held up in the air, so as to avoid the contact of swelling with the table and thereby preventing rupture of Sac.

After confirmation of bilateral equal air entry by visualization of equal chest lift and ascultation, the tube was fixed insitu. Child was then put in prone position and eye padding was placed. Roles were placed under the chest and pelvis so that abdomen was free. Bilateral air entry was checked again after re-positioning. Anaesthesia was maintained on O2 + N2O (50%: 50%) + halothane 0.5%, injection atracurium. Child was transfused 100ml of ringer lactate solution during the course of surgery. The surgical excision took a total period of 1hr and 30mins. Intraoperative course was uneventful. After the procedure, once there was adequate attempts

thorough suctioning was done, and child reversed with injection neostigmine 0.25mg + injection glycopyrrolate 0.05mg and was extubated. The child was monitored in the recovery room in the post-operative period. The course was uneventful.

DISCUSSION: Meningomyelocele is hernial protrusion of meninges plus neural tissue resulting from congenital failure of neural tube to close.[3] Majority of meningomyelocele defect (80%) occur in lumbosacral area and neurological deficits distal to the defect are more severe. The clinical presentation will vary significantly according to anatomical defect involved. Orthopedic and Urologic symptoms may result in children with uncorrected meningoceles as a result of tethering of spinal cord by sacral nerve roots.[4, 5] Associated congenital conditions include clubfoot, Hydrocephalus, Exstrophy of bladder, prolapsed uterus, klippel feil syndrome and rarely cardiac defects.[6]

Children with meningomyelocele often present an Arnold Chiari type 2 malformation.[1] early neurosurgical repair of meningomyelocele will lead to restoration of normal configuration. To avoid rupture of the swelling, positioning of patient becomes very important during anesthesia. Blood loss is insidious especially if the sac is large and estimation of the same and replacement is important.

Hypothermia is frequent considering the surface area of tissue exposed and age of the patient. Conservation of body heat is important for infants with meningomyelocele, particularly because autonomic control below the level of defect is abnormal.[7]

These babies present a potential risk of rupture of sac during induction and intubation. Various methods are described in literature i.e. intubation in lateral position or in supine position with doughnut or head ring placed around the swelling to prevent rupture. But these methods will not completely prevent rupture especially in large thin walled sac. Hence we have devised a new method wherein the baby was held in air by two assistants one was holding the back and the other supporting the head to facilitate induction and intubation. This method is particularly useful in cervical meningocele and encephalocele which we managed in earlier cases successfully.

CONCLUSION: Anaesthetic management of a case of meningomyelocele should focus on positioning during induction and intubation taking due care to prevent rupture of the sac, fluid management and maintenance of temperature. In our case a new position was adopted during induction and intubation i.e. intubation in air to avoid rupture of the swelling. The case was managed successfully without any complications.

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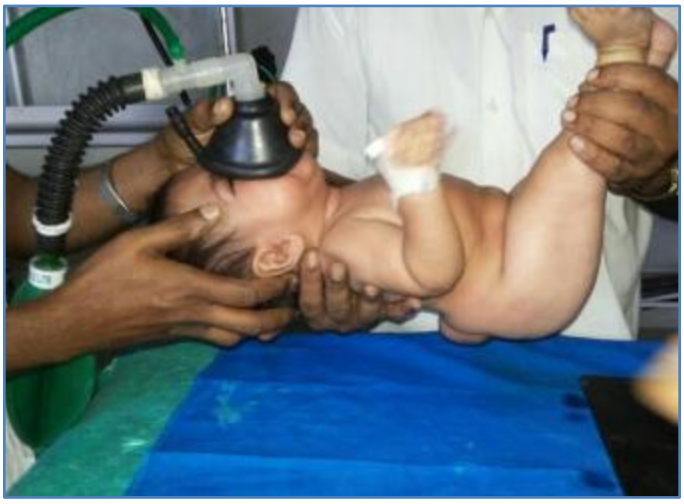

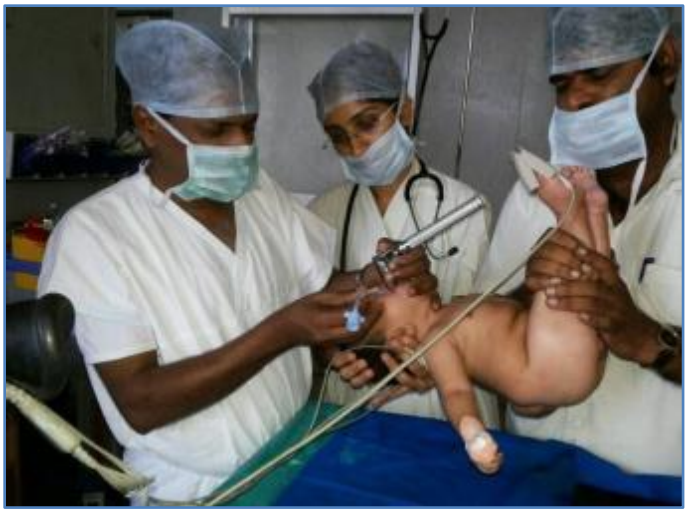

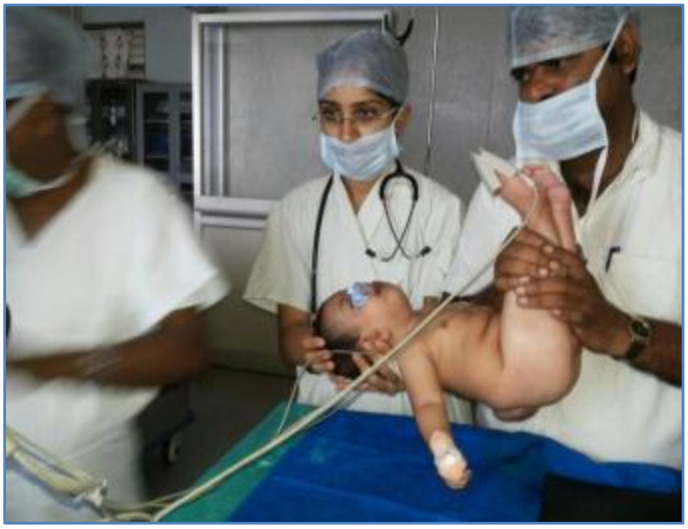

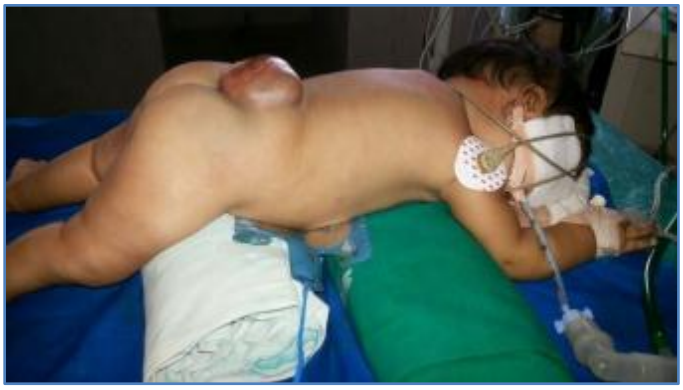

CASE REPORT

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