

CASE REPORT

Spinal anesthesia for inguinal hernia repair in an infant with congenital tracheomalacia

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ABSTRACT

Tracheomalacia is a rare and serious condition associated with high mortality in children receiving intensive care. There have been only a few reports of anaesthetic management of the patients with tracheomalacia.

We present a case report of a seven month old boy with congenital tracheomalacia, scheduled for right inguinal hernia repair under spinal anesthesia. During the operation the blood pressure, the peripheral oxygen saturation and the heart rate remained within the normal ranges. The recovery of motor block took 55 minutes after spinal anesthesia. We want to highlight that spinal anesthesia may be performed by skilled and trained practitioners in children with tracheomalacia or for other specific indications.

Key Words: Anesthesia; Spinal analgesia; Infant; Tracheomalacia

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INTRODUCTION

Tracheomalacia is a rare and serious condition associated with high mortality in children receiving intensive care.¹ Congenital tracheomalacia is characterized by a weakness of the tracheal wall due to softening of the supporting cartilage and hypotonia of the myoelastic element.² General anesthesia is often required for fiberoptic bronchoscopy to diagnose tracheomalacia or for many other surgical procedures due to lack of relative or absolute co-operation, which is required for caudal or spinal analgesia, by the pediatric population.³⁻⁶ There have been only a few reports of anaesthetic management of the patient with a tracheomalacia.^{5,7} We present a case report of a seven month old boy with congenital tracheomalacia, scheduled for right inguinal hernia repair under spinal anesthesia.

CASE REPORT

A seven month old boy, height 59 cm, weight 5 kg, with suspected congenital tracheomalacia, was scheduled for right inguinal hernia repair. Although he was born as a premature infant and had growth retardation, no other congenital abnormalities were detected. There was no evidence of external compression of the trachea, such as a mediastinal mass and no cardiovascular abnormality. Surgery was planned under spinal anesthesia. We applied eutectic mixture of local anesthetics (EMLA) cream to the patient's lumbosacral region 30 minutes before the procedure to alleviate discomfort associated with the lumbar puncture. No other premedication was given. Our patient was brought into the operating room as the first patient of the operation list. A blood pressure cuff, electrocardiograph and pulse oximeter were attached and intravenous (IV) access was secured.

The patient was placed in the lateral decubitus position with the table inclined to a 45-degree headup tilt. The lumbar puncture was performed with a midline approach using a 25G cutting point needle (Spinocan®, B. Braun, Germany). The most palpable intervertebral space was L5-S1 which was chosen for the lumbar puncture. The needle bevel was kept parallel to the dural fibers during insertion. Correct placement of the needle was verified by a free flow of clear CSF. Isobaric bupivacaine 0.5% (0.5 mg/kg) was injected for spinal anesthesia. After 4 minutes motor block was assessed and found to be adequate.

During the operation the blood pressure, the peripheral oxygen saturation and the heart rate remained within normal ranges. The operation lasted for about 40 minutes, after which the patient was administered paracetamol per rectum for postoperative analgesia. After the operation, the patient was transferred to the postanesthesia care unit for continuous monitoring of vital signs and recovery of motor block. The vital signs remained stable and the complete recovery from motor block took 55 minutes from the start of spinal anesthesia.

DISCUSSION

Tracheomalacia is a condition that may often require prolonged intubation and ventilation after general anesthesia. Anaesthetists may be called on to provide anesthesia for a range of procedures in children with this condition.

Premature infants, or children who were born prematurely, may be at risk of respiratory and cardiovascular complications throughout a surgical course. Use of intraoperative opioids, neuromuscular relaxants and volatile anesthetics may cause residual postoperative effects, such as respiratory depression and skeletal muscle weakness, thus increasing the incidence of adverse events in this category of patients. Even in infants without a history of apnea, general anesthesia may contribute to decreased upper airway muscle tone leading to upper airway obstruction and apnea postoperatively.⁸

Spinal anesthesia may be selected to avoid potential respiratory and neurologic effects in certain patient populations. Spinal anesthesia allows infants to be managed throughout the surgical procedure with minimal anesthetic medication, thereby avoiding intravenous opioids and volatile agents and their respiratory depressing effects.⁹

It is a common misperception that a spinal anesthetic may take longer to administer in a premature infant and, consequently, prolong the anesthesia and surgical times. Data regarding the anesthesia time, operating room time, nonoperating time, and surgical time between two groups of infants receiving general and spinal anesthesia revealed no significant differences in a clinical setting.¹⁰ Another study concluded that there was no significant difference in median anesthetic times between a group of infants administered a general anesthetic with sevoflurane and a group receiving spinal anesthesia.¹¹

The use of spinal anesthesia in a selected population with respiratory problems may decrease the incidence of many postoperative adverse events, allowing a less complicated surgical course and decrease the overall length of hospital stay. The greatest advantage of using a spinal anesthetic in this high-risk population is the avoidance of sedatives, opioids and volatile anesthetics. It is also advisable to avoid preoperative medication that may increase the risk of intraoperative and postoperative adverse events.⁹ In our patient, no premedication was given and the child was operated upon without any adverse event and shifted to postanesthesia recovery unit.

CONCLUSION

In conclusion, spinal anesthesia in children may be performed by skilled and trained practitioners for a selected group of infants and children, in which general anesthesia is considered to be associated with a high risk unless no contraindication is detected e.g. coagulopathy, sepsis, local infection at the site of lumbar puncture, intracranial hypertension, neurologic diseases and hypovolemia.

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QUOTATIONS

“Teaching is the highest form of understanding.” – **Aristotle**

“Rest satisfied with doing well, and leave others to talk of you as they please.” – **Pythagoras**

“Doing your best is more important than being your best.” - **Shannon Miller**

“To be fond of learning is near to wisdom.” – **Confucius**

“You may never know what results come of your actions, but if you do nothing, there will be no results.” – **Gandhi**

“Education is not filling a bucket, but lighting a fire.” - **W. B. Yeats**

“We learn from failure, not from success!” - **Bram Stoker**

“Never look back unless you are planning to go that way.” - **Henry David Thoreau**

“In science the credit goes to the man who convinces the world, not the man to whom the idea first occurs.”-**Sir Francis Darwin** (1848 - 1925), *Eugenics Review*, April 1914

“The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.” -**Sir William Bragg** (1862 - 1942)