# Epidural Haematoma in a Child - A Case Report

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Abstract: Neuraxial blockage is an excellent modality in current practice of paediatric anaesthesia. Spinal and epidural anaesthesia can either be administered alone or as an adjunct to general anaesthesia for perioperative pain management. The utility of neuraxial or regional anaesthesia in paediatric population has been established with rare occurrence of complications. We would like to report an occurrence of spinal epidural haematoma in a child following an epidural anaesthesia.

Keywords: spinal epidural haematoma, complications, regional, anaesthesia

## 1. Introduction

Neuraxial blockage is an excellent modality in current practice of paediatric anaesthesia. Spinal and epidural anaesthesia can either be administered alone or as an adjunct to general anaesthesia for postoperative pain management[1].

The utility of neuraxial blockage in paediatric anaesthesia has been established. It generally has a high safety profile, with rare occurrence of complications [2].

Spinal epidural haematoma is considered one of the rare possible complications of this procedure. To date, its incidence is unknown. We would like to report an occurrence of spinal epidural haematoma in a child following an epidural anaesthesia.

## 2. Case

A 5-year-old girl presented to paediatric surgical department with history of generalized pruritus for 2 weeks, along with jaundice for 5 days. Diagnosis of choledochal cyst was made after a series of investigation performed. Preoperative coagulation profile showed prothrombin time (PT) of 13 seconds, international normalized ratio (INR) of 1.3, and activated partial thromboplastin time (aPTT) of 46 seconds.

Emergency excision of choledochal cyst and hepaticoduodenostomy was performed, with epidural anaesthesia as postoperative pain management modality.

Epidural catheter was inserted at L1/L2 level, and it was removed on day 2 postoperatively, at which time a 1 cm swelling was noted to be present at the epidural injection site. She also developed back pain that radiates to her bilateral lower limb, which was worse on the right side, with later progressed to bilateral lower limb weakness within days with motor power of 3 from L2 to S1 bilaterally.

Urgent MRI scan of the spine revealed L1/L2 posterior epidural haematoma causing spinal canal stenosis (Figure 1). At this time, repeated international normalized ratio (INR) was found to be 2.02.



Figure 1(a) Sagittal view of T2 weighted image showing epidural haematoma at L1/L2 level; (b) Axial view of T2 weighted image showing epidural haematoma at L1/L2 level; and (c) Contrasted MRI image showing epidural haematoma at similar level of the spine

Apart from that, the child developed hypovolemic shock with abdominal distension at day 4postoperatively. Abdominal ultrasound was suggestive of anastomotic leak. Hence, emergency L1 hemilaminotomy and deroofing of L2 was done by us, in the same setting with laparotomy, evacuation of clots and diathermies of bleeders for the anastomotic leak excision of choledochal cyst by the pediatric surgical team. Intraoperatively, there was blood clot 2cc at the level of L1/L2 (Figure 2), and it was completely evacuated.

Postoperatively, neurology improved with power of 4 from L2 downwards bilaterally, except that she was unable to dorsiflex her right ankle.

On follow up at about 2 months post operatively, the power of the left lower limb returned to normal, while that over the right side was generally 4-5. Right foot drop was still present, which subsequently resolved during follow-ups.



Figure 2: Intra-operative finding of laminotomy of L1/L2 (white arrow) with subsequent evacuation of haematoma at that level

# 3. Discussion

Epidural haematoma is rare but it can cause permanent neurologic dysfunction. In general, it can be classified according to its aetiology - traumatic, spontaneous and those associated with bleeding disorder or systemic disease[3].

Although considered safe & effective in providing regional anaesthesia in paediatric population, epidural haematoma has been known to be one of the complications of epidural anaesthesia[4]. However, its occurrence is rare and its true incidence in children is unknown[5].

A similar case of epidural haematoma has been reported[6] in 2017 following an epidural anesthesia. In this and our case, both patients are at risk of coagulopathy with surgery being performed because of acute liver dysfunction. In both cases, neurology improved subsequently.

Whenever a child presents with back pain and neurological deficit, especially in the setting of epidural catheterization, the diagnosis of epidural haematoma must be excluded. Clinical presentation of epidural haematoma is similar to that of spinal cord injury. It is often difficult to perform a complete neurological assessment in a child, therefore a high index of suspicion is mandatory.

Epidural haematoma must also be suspected in those who are at risk of developing liver dysfunction during the perioperative period. Therefore coagulation profile should be regularly monitored and ensured to be in optimum level before proceeding with neuraxial catheterization.

MRI is the modality of choice to rule out epidural haematoma due to its superiority in soft tissue differentiation compared to CT scan[7]. However, CT also offers acceptable results and is more widely used in the current setting.

When confirmed, an urgent decompression and evacuation of haematoma must be performed to reduce morbidity. Options of surgical intervention include hemi laminotomy and hemilaminectomy, depending on the size of the haematoma. In both our case and the case previously

mentioned, evacuation of haematoma was performed within 24 hours of the onset of neurological deficits.

## 4. Conclusion

The true incidence epidural haematoma in paediatric population is rare, and is underreported, more so in the case of epidural haematoma as a complication of neuraxial anaesthesia. However, it is undoubtedly one the established complications of this anaesthetic technique. When performing neuraxial catheterization, extra caution must be exercised with regards to the technique, monitoring of patient's coagulation profile and also identifying those at risk of developing acute liver dysfunction.

Physicians and surgeons must be aware of its clinical presentation and means of investigation, due to its urgent nature of intervention in order to minimize morbidity.

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