

Intrinsic Obstetric Palsy: Case Report and Literature Review

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ABSTRACT

Maternal neurological injuries may be intrinsic to the labour and delivery process or may result directly or indirectly from obstetric or anaesthetic intervention. This intrinsic obstetric palsy is a rare complication of labour but can have devastating impact on a previously healthy mother. A 23-year-old gravida1, para0 who had epidural for labour analgesia, was augmented for slow progress and had a normal vaginal delivery. She was diagnosed post delivery with intrinsic obstetric palsy involving several peripheral nerves and lumbosacral nerve roots with a guarded prognosis. In this article we have discussed the risk factors and mechanisms of intrinsic obstetric palsy and proposed further investigation into the potential protective role of ambulatory analgesia i.e. CSE (Combined Spinal Epidural) or LDI (Low Dose Infusion).

Keywords: Ambulatory analgesia, Combined spinal epidural, Epidural, Low dose infusion, Postpartum

CASE REPORT

A 23-year-old gravida1, para0 came in spontaneous labour at 38+6 weeks. She smoked 3 cigarettes per day and had a past history of appendectomy. At 4cm dilatation she requested an epidural for labour analgesia. She received a first dose of premix 0.125% bupivacaine and 5-microgram fentanyl along with a background infusion of 0.0625% bupivacaine and 2.5 microgram/ml of fentanyl. Two top ups of lignocaine and one of clonidine were required. The patient didn't ambulate and had a urinary catheter inserted. Her labour was augmented with oxytocin for slow progress. She advanced to full dilatation in 6 hours. Lithotomy position was adopted during the entire period of active pushing of 58 min as per patient request. A 2840 gm baby was born by spontaneous vaginal delivery. No instrumental assistance or maneuvers were required to deliver the head or the body.

On day one postpartum she complained of pain at the site of epidural, weakness and decreased sensation in the right leg. The impression of the acute pain services was that of residual clonidine effect from her top up. An urgent MRI with suspicion of central neuraxial lesion done at six hours was normal. Physical and occupational therapy were engaged in the ongoing management. Pregabalin was added to analgesics and anti-inflammatory drugs.

The neurology team noted femoral and sciatic nerve neuropraxia and prescribed duloxetine for neuropathic pain. The repeat MRI on day six showed subtle right sciatic and femoral nerve signal hyper intensity but no evidence of nerve compression or focal mass was seen. She continued to have regular neurology review and daily physiotherapy and occupational therapy.

The multidisciplinary team meeting conducted on day 24 decided to do an EMG for further prognostic information, which revealed involvement of multiple peripheral nerves, the sciatic and femoral nerves, lumbosacral plexus or nerve roots. The presence of active denervation suggested that the recovery was guarded. On day 31 the patient had made slow progress but as mobility was improved she was discharged with ongoing rehabilitation at home, outpatient follow up with neurology and pain team and appropriate assistive device.

DISCUSSION

The vast majority of nerve injuries associated with child birth can be attributed to the labour and delivery process itself and hence referred

to as intrinsic obstetric palsies [1]. Neurologic complications for those that receive an epidural block or anaesthesia occur at a low rate of 1 in 13007 patients, whilst those caused by the obstetric procedure itself or other causes can occur at rate of 4-6 times that [2].

Women with postpartum nerve injury are more likely to be nulliparous, have prolonged second stage of labour and have had an assisted vaginal delivery [3]. During vaginal delivery; pressure from the fetal head can be an additional factor causing nerve damage [4]. Neuraxial analgesia indirectly contributes to obstetric palsy by several mechanisms. It prolongs the second stage with longer head compression, causes a sensory block preventing sensation of impending nerve injury and causes a motor block preventing self-repositioning. More awkward or strained positioning might be tolerated for greater periods, resulting in peripheral nerve compression or stretch [5].

The mechanism of injury is related to nerve compression or a stretch injury at a vulnerable site. This usually results in a segmental demyelinating nerve injury with the axon remaining intact. Axonal injury may occur with severe prolonged compression or in patients who have a pre-existing neuropathy [6]. The median duration of symptoms is 6-8 weeks with resolution or improvement. Based on the duration of symptoms, it is likely that these nerve injuries are secondary to minor degrees of axon loss or focal demyelination [1].

Prompt recognition and evaluation is essential. A detailed history of delivery and specific symptoms and thorough neurological examination are required. Early MRI will reveal epidural abscess or haematoma requiring surgical intervention. The role of EMG is limited to involvement of large nerve fibers but has prognostic significance. Early multidisciplinary care is essential for quicker recovery.

Wong et al., have proposed changing the position of the lower extremities frequently during prolonged pushing, avoidance of prolonged thigh flexion, avoidance of extreme thigh abduction and external rotation, and shortened active pushing time by allowing the fetus to descend to the perineum without active maternal pushing [3,7].

Epidural analgesia is widely accepted by labouring women as the most effective method of providing pain relief. Traditional epidural techniques employing high concentration of local anaesthetic (at least 0.25% bupivacaine) are associated with prolonged labour,

augmentation with oxytocin and increased incidence of instrumental delivery secondary to a dense block. Newer regional techniques use low concentration of local anaesthetic often in combination with opioids, which provide excellent analgesia while maintaining motor function. Combined Spinal Epidural (CSE) consists of injecting analgesic and/or local anaesthetic into the intrathecal space along with placement of an epidural catheter that delivers low dose local anaesthetic with an opioid and claims faster onset of analgesia with minimal motor block allowing mobilization in labour [8]. Considering the mechanisms that can indirectly contribute to intrinsic obstetric palsy, ambulatory labour analgesia may be a better option. Ambulatory labour analgesia can overcome the motor block, sensory block and awkward positioning. Irrespective of ambulation, the preservation of motor function in the lower body and perineum may be enough to assist voluntary and involuntary maternal efforts to expel the fetus in the second stage of labour, without the assistance of gravity [9]. The Comparative Obstetric Mobile Epidural Trial demonstrated a reduced instrumental vaginal delivery rate with CSE and Low-Dose Infusion relative to high dose epidural technique, in nulliparous women [10]. But no study has been able to demonstrate either an association between the level of ambulation a woman actually achieved after an epidural placement in the second stage and mode of delivery [9, 11].

Benefits of CSE v/s traditional high dose epidural are decrease time from first injection to effective analgesia, less rescue analgesia, decreased instrumental deliveries and less urinary retention [8]. There are no differences between the two for post dural puncture headache (PDPH), pruritus, hypotension, caesarean section, Apgar at 5 minute etc. [8]. There are no significant differences between CSE and low dose infusions for mode of delivery, augmentation with oxytocin, urinary retention, rescue analgesia, maternal satisfaction, PDPH, umbilical cord pH etc. [8]. CSE has risks similar to epidural e.g. PDPH, maternal hypotension, itching, etc. [8]. CSE has become easier to perform with newer techniques and equipment. It still has rare serious risks of meningitis, compression of spinal cord by blood clot, damage to nerve roots, inadvertent administration of epidural dose of local anaesthetic intravenous or intrathecal causing convulsions and high block [8]. Both CSE and LDI have the risk of injury due to ambulation hence a labouring parturient should never walk alone, a support person and

telemetry allow for ambulation in labour to be safe [9]. There are no meaningful conclusions regarding rare complications like nerve injuries or meningitis [8] because there are no studies in literature that have investigated into the rare neurological complications. Hence the number needed to prevent such complications cannot be predicted and requires further research.

CONCLUSION

Further studies are required to explore the association of ambulatory labour analgesia with effect of ambulation on duration of second stage, mode of delivery and prevention of intrinsic obstetric palsies.

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