

CASE REPORT

REGIONAL ANESTHESIA

Transient bladder incontinence following ultrasound guided caudal epidural block

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Abstract

Caudal anesthesia is commonly used a regional anesthesia technique for sub-umbilical surgeries in pediatrics and for chronic pain management in adults. Ultrasound guided caudal epidural block improves the success rate with minimizes complications. We report a patient who underwent lateral sphincterotomy under ultrasound guided caudal epidural anesthesia and developed transient urinary incontinence with prolonged perineal sensory loss postoperatively.

Key words: Anesthesia, Caudal epidural, Ultrasound.

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1. Introduction

Caudal epidural block is commonly used for surgical anesthesia and post-operative analgesia in pediatric and adult. Neuraxial anesthesia causes transient impairment of bladder function.¹ Temporary or permanent neurological complications have been reported with attempted epidural injection.² Cauda equina syndrome is a rare complication following epidural anesthesia due to injury of sacral nerve roots.⁵ We report a case of overflow incontinence with perineal sensory loss developed postoperatively who underwent ultrasound guided caudal epidural block for lateral sphincterotomy.

2. Case Report

A 47-year-old male was scheduled for elective lateral sphincterotomy. On the pre-anesthetic checkup, he had a history of bronchial asthma for 10 years and was on regular treatment. The patient had no history of neurological disorder. His vital signs and laboratory findings (were normal and was assessed under ASA-PS-2. The patient was informed and consent was obtained, he was kept nil per oral for 8 h and was pre medicated with tab. ranitidine 150 mg, tab diazepam 5 mg. After shifting to operation theater, monitor (BPL Clear sign C12 Neo) was connected, IV access was secured and started on isotonic crystalloids. The patient was placed in the prone position, using ultrasound machine (aero scan CD25 Konica Minolta India) high frequency linear probe of 8.0 MHz was

placed in a transverse plane across the sacral cornua, sacral hiatus identified, 23G Quincke Babcock spinal needle (BD Needle) was inserted between the space of two cornua, the needle tip penetrate the sacrococcygeal ligament into the caudal epidural space [Fig:1]. To achieve a good amount of motor block and to facilitate comfortable lithotomy position, we administered 15 ml of 0.5% bupivacaine. The sensory block was assessed using the pinprick test. The sensory level of T10 was achieved 15 min after administering drug, surgery went uneventfully. Patient vitals were stable without major hemodynamic changes throughout the surgery. At the end of surgery, the patient was shifted to post-operative ward.

The patient was under observation in post-operative ward, and vitals were stable. 4 h 30 min later, he noticed a single episode of overflow urinary incontinence. The neurological evaluation revealed hypesthesia in the perineal region at the level of S1-S2, motor functions were normal. He was treated with inj. dexamethasone 8 mg IV stat, IV fluids-isotonic crystalloids, IV antibiotics and analgesics post operatively. The patient regained bladder function and sensory perception after 10 h 30 min postoperatively. He could void comfortably. The patient had no history of neurological disorder. All other systems were clinically normal. Caudal block provided analgesia for 6 h after which the patient had mild pain (VAS of 4) and he received inj. tramadol 50 mg IM. His post-operative stay was uneventful and was discharged on post-operative day 3.

3. Discussion

Neuraxial Anesthesia cause transient impairment of bladder function ranging from delayed initiation of micturition to urinary retention.¹ Micturition includes two phases, storage phase via sympathetic innervation (T11-L2) and voiding phase via parasympathetic innervation (S2-S4). The brain stem receives afferent impulse through pelvic splanchnic nerves. Voiding of urine occurs through the detrusor muscle contraction mediated by parasympathetic fibers. As urine enters the posterior urethra, pudendal afferents remove motor cortex inhibition which results in relaxation of pelvic floor and voiding of urine occurs.

Complications of neuraxial Anesthesia occur because of injury to sacral nerve due to trauma, ischemia and neurotoxic reaction. Nerve injury results in cauda



Figure 1: Longitudinal ultrasound view of sacral hiatus. Arrow show the line of insertion of needle

equine syndrome. Cauda equine syndrome ranges from mild form to severe form, which results in transient or permanent bladder dysfunction with motor and sensory loss.⁹

Local anesthetic dose and potency were related to duration of detrusor dysfunction.¹ Local anesthetics capable of inducing long-lasting structural and functional changes in neural tissue in a large dose, the sensation of bladder fullness was decreased with opioids.¹ Bladder disturbances are common when opioids are added as additives in central neuraxial blocks.^{1,13} Transient neurological toxicity might also occur due to the stretching of cauda equina in lithotomy position.¹

We administered 15 ml of 0.5% bupivacaine in caudal epidural space to achieve good motor block and sphincter relaxation.

The bladder problem mostly occurs in patients treated with high concentrations of bupivacaine for analgesia.¹²

Spinal cord injury occurs due to the significant elevation of pressure in the epidural space secondary to a mass effect due to hematoma, abscess and epidural blood patch.⁶

Lumbar spinal stenosis or lumbar disc disease increase risk of neurological complication following neuraxial anesthesia.^{7,11} Our patient did not have any history of back pain, numbness or claudication pathognomonic of lumbar spinal stenosis,³ no history of neurological

disorder or neurotoxic drug intake, we performed caudal epidural block without any difficulty and there were no signs of hematoma and abscess.

In this patient transient bladder incontinence with sensory loss likely due to bupivacaine neurotoxicity, resolved completely with medical intervention. MRI was not done, as patients recovered soon. Our patient did not receive any opioid in the intraoperative period.

The patient was highly satisfied with surgical anesthesia and post operatively he felt mild inconvenience due to urinary incontinence. This patient was part of the trail assessing the feasibility of ultrasound guided caudal epidural anesthesia in adults for anorectal procedure.⁴

4. Conclusion

Transient bladder incontinence is reported after neuraxial anesthesia and caudal epidural injection.⁸ Our patient had transient bladder incontinence with perineal sensory loss following ultrasound-guided caudal epidural anesthesia, the patient had normal bladder function and sensory perception after 10 h 30 min post operatively.

Neurotoxicity can be prevented by reducing the concentration of local anesthetic used. Preoperative assessment for lumbar spinal stenosis and other neurological disorders prevent complications with neuraxial anesthesia.

5. Conflict of interest

Nil declared by the authors

6. Authors' contribution

PP-Conduct of study and Manuscript preparation.

PV-Concept, Conduct of study, Manuscript editing.

NB- Conduct of study and Manuscript editing

7. References

1. Choi S, Mahon P, Awad IT. Neuraxial anesthesia and bladder dysfunction in the perioperative period: a systematic review. *Can J Anaesth*. 2012;59:681–3. [PubMed] DOI: [10.1007/s12630-012-9717-5](https://doi.org/10.1007/s12630-012-9717-5)
2. Epstein NE. The risks of epidural and transforaminal steroid injections in the Spine: Commentary and a comprehensive review of the literature. *Surg Neurol Int*. 2013;4:S74-93. [PubMed] DOI: [10.4103/2152-7806.109446](https://doi.org/10.4103/2152-7806.109446)
3. Liu K, Liu P, Liu R, Wu X, and Cai M. Steroid for epidural injection in spinal stenosis: a systematic review and meta-analysis. *Drug Des Devel Ther*. 2015 Jan 30;9:707-16. [PubMed] DOI: [10.2147/DDDT.S78070](https://doi.org/10.2147/DDDT.S78070)
4. Vadhanan P, Rajendran I, Rajasekar P. Ultrasound-guided caudal epidural anesthesia in adults for anorectal procedures. *Anesth Essays Res*. 2020;14:239-42. DOI: [10.4103/aer.AER_60_20](https://doi.org/10.4103/aer.AER_60_20)
5. Shields LBE, Iyer VG, Zhang YP, Shields CB. Acute cauda equina syndrome following orthopedic procedures as a result of epidural anesthesia. *Surg Neurol Int*. 2018 Apr 10;9:81. [PubMed] DOI: [10.4103/sni.sni_492_17](https://doi.org/10.4103/sni.sni_492_17)
6. Palomero-Rodríguez MA, Palacio-Abinzada FJ, Campollo SC, Laporta-Báez Y, Mendez Cendón JC, López-García A. Transient bladder and fecal incontinence following epidural blood patch. *Saudi J Anaesth*. 2015 Oct-Dec;9(4):467–9. [PubMed] DOI: [10.4103/1658-354X.159478](https://doi.org/10.4103/1658-354X.159478)
7. Hebl JR, Horlocker TT, Kopp SL, Schroeder DR. Neuraxial blockade in patients with preexisting spinal stenosis, lumbar disk disease, or prior spine surgery: efficacy and neurologic complications. *Anesth Analg*. 2010 Dec;111(6):1511-9. [PubMed] DOI: [10.1213/ANE.0b013e3181f71234](https://doi.org/10.1213/ANE.0b013e3181f71234)
8. Bilir A, Gulec S. Cauda equina syndrome after epidural steroid injection: a case report. *J Manipulative Physiol Ther*. 2006 Jul-Aug;29(6):492.e1-3. [PubMed] DOI: [10.1016/j.jmpt.2006.06.005](https://doi.org/10.1016/j.jmpt.2006.06.005)
9. Jain M, Srivastava U, Saxena S, Singh AK, Kumar A. Cauda equina syndrome following an uneventful spinal anaesthesia. *Indian J Anaesth*. 2010 Jan;54(1):68-9. [PubMed] DOI: [10.4103/0019-5049.60505](https://doi.org/10.4103/0019-5049.60505)
10. Basaranoglu G, Comlekci M, Pekel AF, Kosker T, Inan B, Saitoglu L. Transient urinary incontinence after subarachnoid anesthesia with 0.5% heavy bupivacaine. *Anesth Analg*. 2006 Oct;103(4):1051. [PubMed] DOI: [10.1213/01.ane.0000239054.79161.13](https://doi.org/10.1213/01.ane.0000239054.79161.13)
11. Seo YT, Kong HH, Lee GJ, Bang HJ. Persistent cauda equina syndrome after caudal epidural injection under severe spinal stenosis: a case report. *J Pain Res*. 2017 Jun 12;10:1425-1429. [PubMed] DOI: [10.2147/JPR.S134636](https://doi.org/10.2147/JPR.S134636)
12. Vercauteren MP, Van Den Bergh L, Kartawiadi SL, Van Boxem K, Hoffmann VL. Addition of bupivacaine to sufentanil in patient-controlled epidural analgesia after lower limb surgery in young adults: effect on analgesia and micturition. *Reg Anesth Pain Med*. 1998 Mar-Apr;23(2):182-8. [PubMed] DOI: [10.1097/00115550-199823020-00012](https://doi.org/10.1097/00115550-199823020-00012)
13. Kamphuis ET, Kuipers PW, van Venrooij GE, Kalkman CJ. The effects of spinal anesthesia with lidocaine and sufentanil on lower urinary tract functions. *Anesth Analg*. 2008 Dec;107(6):2073-8. [PubMed] DOI: [10.1213/ane.0b013e318187bc0e](https://doi.org/10.1213/ane.0b013e318187bc0e)