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## CLINICAL INFORMATION

# Total spinal block after lumbar plexus block: a case report

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**Abstract** Lumbar plexus block (LPB) is a suitable method for elder patients for lower extremity surgery. Many complications could be seen during LPB, but not as many as central block. In this case report, we aimed to report a total spinal block, an unusual complication. LPB with sciatic block was planned for a male patient, 76 years old, scheduled for total knee replacement due to gonarthrosis. The patient became unconscious after psoas compartment block with Chayen technique for LPB. The operation ended at 145th minute. The patient was admitted to intensive care unit until postoperative second day and discharged to home on fifth day of surgery. Main concern of patient monitorization should be an anesthesiologist. In this manner, we conclude that contacting to the patient should be ensured during these procedures.

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Lumbar plexus block (LPB) is a method of intraoperative anesthesia<sup>1,2</sup> and post-operative analgesia<sup>3,4</sup> for elder patients who have poor general condition or additional diseases for lower extremity surgery. Firstly, this block was implemented by the inguinal paravascular block technique by Winnie<sup>5</sup>; it has been modified as psoas compartment block by Chayen.<sup>6</sup> Various complications may occur during LPB, but not as much as the central block. These include epidural block with double-sided spreading, hypotension, nausea and vomiting, local anesthetic toxicity, retroperitoneal hematoma.<sup>7–9</sup> In this case report, we aimed to report a total spinal block, an unusual complication of LPB.<sup>10</sup>

### Case

A male patient, 76 years old, was scheduled for total knee replacement due to gonarthrosis. The patient had coronary artery disease, hypertension, and chronic renal failure and had no history of allergy, smoking and alcohol. The patient had no history of anesthesia, but once had local anesthesia for excision of basal cell carcinoma. Examination of the patient's airway was Mallampati class II. He had crepitation on basal of both lungs. Preoperative blood count: Hgb: 12.0 Htc: 37.3, Plt: 344,000, BUN: 40, Creatinine: 1.98, AST: 35, ALT: 9, Na: 138, K: 4.7, Ca: 9.9. Preoperative Cardiology, Internal medicine and Pulmonology consultations were completed.

LPB (40 cc) with sciatic block (10 cc) with 50 cc of %1 prilocaine and %0.25 bupivacaine were planned due to patient's both heart and lung diseases. The patient was monitored

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in the operating room, with HR: 60/bpm; TA: 120/72 mmHg and SpO<sub>2</sub>: 94%. The patient was sedated with 2 mg of midazolam. The patient was given oxygen by face mask at 4 L/min. After sterilization and covering, L4–L5 spinous processes and anterior superior iliac spine were identified. Local anesthesia with 1% prilocaine was administered superficially and profoundly in point determined. After that, 10 cm Stimuplex needle (1.5 mA stimulus) was inserted at the specified point for psoas compartment block. Verbal communication was maintained with the patient. Then quadriceps muscle was stimulated, and the stimulus was turned down by 0.2 mA. After stimulation failure of the muscle was seen at the level of 0.5 mA and aspiration, the local anesthetic solution was injected. At this time verbal communication and aspiration were maintained with every 5 cc injection, the patient was asked "Are you OK, do you have any pain?". The drug was given as a 40 cc for LPB and then we asked again the same question, but the patient said "I am OK, but I have some nausea". Thereupon sciatic block planned was abandoned, the patient was laid in the supine position and vital signs were re-evaluated: HR: 55–58/bpm, TA: 113/63 mmHg, SpO<sub>2</sub>: 100%. Next, we asked the patient "are you OK?". While the patient said "I am fine" loudly up to two minutes of injection, he said "I am fine but I cannot talk" with lip movements. Then the patient's verbal response was closed and eye opening response received only at approximately third minute of the injection. After that, no response had been received and the patient's respiration had become ineffective at approximately fifth minute of the injection. LMA insertion was decided and then 2 mg midazolam was administered. After LMA insertion, the patient was connected to mechanical ventilator. The patient's vital findings were: HR: 53–62/m, TA: 115–93/78–56 mmHg, SpO<sub>2</sub>: 98–100%.

After the surgical team had been informed about the situation, the surgical procedure was allowed. Mixture of 50% oxygen and 50% N<sub>2</sub>O with 0.5–1 sevoflurane in 4 L/min fresh flow has been used for maintenance of anesthesia. Neuromuscular blocker agent was not used. Approximately at the 50th minute of the skin incision (68th minute of the injection), cardiac rate lowered to 45, therefore 0.5 mg atropine was administered. There were no other anesthesia related problems. Approximately at 130th minute of incision (148th minute of injection), spontaneous respiration returned. The surgery was ended at 145th minute of incision (163rd minute of injection). At the end of the operation, the patient's tidal volume was 300–450 mL. LMA had been taken off following the patient's returning to consciousness, and then the patient had been taken to the recovery unit.

2000 cc crystalloid and 1000 cc colloid were administered to the patient perioperatively. Patient's urinary output was approximately 200 cc at the end of surgery. The patient was confused, disorientated and non-cooperative. In the recovery unit, the patient was given only 4 L/min oxygen by facial mask. The patient was monitored for 30 min. The patient was admitted to the intensive care unit because patient's SpO<sub>2</sub> was lowered to 74% in room condition. Other vital findings were TA: 102/63 mmHg, HR: 64/bpm.

After the operation, the patient was getting better. In the fifth hour after the operation, the patient was completely conscious, oriented, and cooperative. In the neurological

examination of fifth hour after the operation, the patient had a diffuse loss of feeling. The muscle power was 5/5 on the right upper extremity, while it was 4/5 on the left upper extremity and there was a minimal tremor in the upper extremity. The muscle power was 3/5 on the right lower extremity. The left side, operation side, could not be exactly evaluated. In the neurological examination of 24th hour after the operation, although the left side was not completely evaluated, the patient did not have any abnormality regarding sensorial and motor activity. The tremor in the upper extremity was disappeared. The patient was discharged from the ICU to the orthopedics clinic. In the postoperative 5th day, the patient was discharged from the clinic.

## Discussion

Peripheral nerve blockage can be preferred in the patient that have additional diseases, especially cardiovascular diseases, and/or the patients who have poor general condition, because it does not destabilize the hemodynamic balance.<sup>11</sup> We planned to perform peripheral nerve blockage in our patient because of the accompanying diseases and the physical finding of lungs.

Considering the events after the lumbar plexus blockage by Chayen method, with the entire quick onset and symptoms, we assumed involuntary spinal injection. However it is notable that no liquid had been identified in the aspiration before the injection. Chayen et al. reported only one patient, who had a major lumbar deformity, in a 100 patient series and had cerebral spinal liquid aspiration and they noticed and stopped the injection. In our patient, neither there was liquid aspiration, nor did the patient have a lumbar anomaly. However, it is also notable that our patient did not have a major hemodynamic instability, but moderate bradycardia. Hemodynamic stability of our patient did not make sense regarding total spinal blockage. On the other hand, considering the patient's older age and limited cardiac reserve, it is expected that the patients must be affected more severely. However intensive fluid resuscitation might have prevented the expected hemodynamic instability.

The patient has been evaluated for peripheral nerve blockage complications, including bilateral blockage by epidural spreading, hypotension, nausea-vomiting and local anesthetic toxicity.

Spreading through the spinal cord via epidural space is possible. In such condition, bilateral anesthesia occurs and hemodynamic data of the patient might be more severely affected. But we did not think such a spreading in our patient, because the progress was very fast.

Nausea in our patient may be related to the hypotension or local anesthetic toxicity. If it was due to local anesthetic toxicity, metallic taste and tinnitus would have been expected firstly. Besides this, there was not profound hypotension in our patient. Considering total spinal blockage, it can be thought that nausea occurred because of the dominance of vagal nerve.

In conclusion, total spinal block, rare complication of peripheral nerve blockages, should be noticed, even if aspiration is negative.

## Conflicts of interest

The authors declare no conflicts of interest.

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