

# Analgesia and Anesthesia with a 23-Gauge Continuous Spinal Catheter

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## Introduction

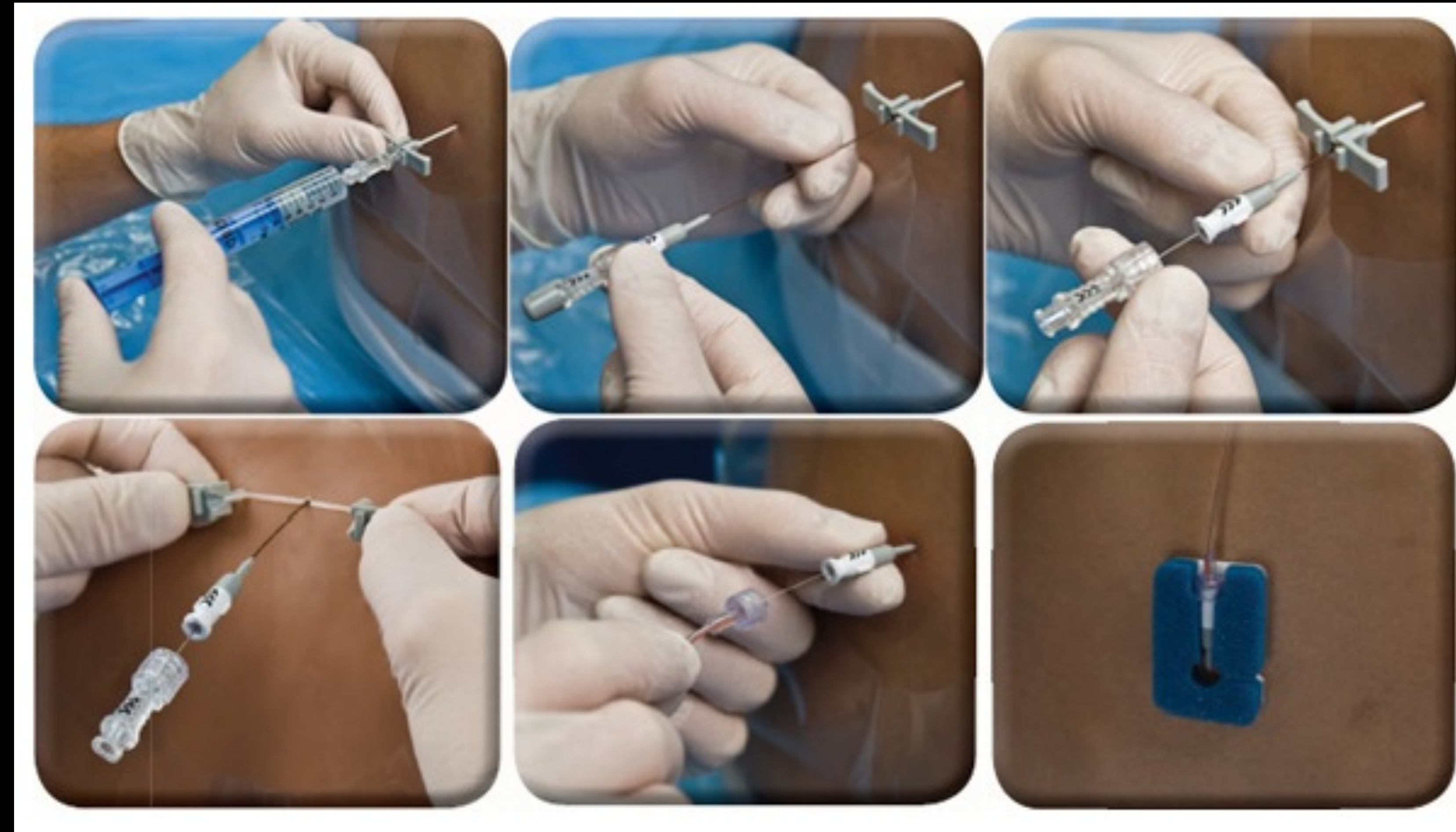
Continuous spinal delivery of local anesthetics and narcotics offers flexibility in obstetric patients for labor analgesia as well as for the transition to anesthesia for Cesarean delivery. We describe our experience using a new "over-the-needle" spinal catheter in seven parturient. A 23g Wiley spinal catheter was threaded into the intrathecal space over a 27-g wire through an 18-g peel-away introducer needle. All patients received an initial bolus of 0.25% bupivacaine. A standard solution of 0.125% bupivacaine and 2 µg/ml fentanyl was used for continuous infusion. Pre- and post-catheter placement mean arterial pressures (MAP) were recorded and patients were evaluated for headaches, paresthesia, or neurological deficits after the catheter removal.

## Case Report

- Patient #1: 21 yo gravid G3Po with gestational hypertension. Initial 2 mL bolus of 0.25% bupivacaine, followed by 1 mL/hr demand-only dose of 0.125% bupivacaine and 2 µg/ml fentanyl solution. She had breakthrough pain during labor remedied by start of a 1 mL/hr infusion plus the demand dose. She was able to push to complete delivery. The catheter was pulled 8.3 hrs after placement without complications. Her baseline MAP was 96 mmHg and it was 61 mmHg at the lowest, a decrease of 34%.

- Patient #2: 19 yo G1Po. Initial bolus of 1 mL of 0.25% bupivacaine, and 1 mL/hr continuous infusion started when pain recurred (45 min later). She was able to push to complete delivery 5.3 hours after placement. Her catheter was removed upon delivery and she developed a post-dural puncture headache that was successfully treated with a blood patch. Her baseline MAP was 91 mmHg and it was 90 mmHg at the lowest.

- Patient #3: 25 yo G2P1 with PROM. Initial bolus of 1 mL of 0.25% bupivacaine with no relief. An additional 1 mL bolus of 0.25% bupivacaine plus 20 µg fentanyl given. Infusion was started at 2 mL/hr immediately but held an hour later because of dense motor block. Infusion was restarted 1.8 hrs later at 1 mL/hr with two additional 1 mL bolus of 0.25% bupivacaine. Delivery was at 7 hrs after placement, and the catheter was discontinued 12.3 hours after placement without issues. Her baseline MAP was 96 mmHg and it was 73 mmHg at the lowest, a decrease of 24%.



- Patient #4- A 21 yo G1Po was given a 1.5 ml bolus of 0.25% bupivacaine for adequate pain relief followed by a continuous infusion at 1.5 mL/hr. Due to fetal heart deceleration, she was taken for urgent cesarean section. She was bolused with 4ml of 0.5% bupivacaine and 20 µg fentanyl in divided doses via the catheter achieving sufficient surgical block at T6. Blood pressure was 118/78 mmHg and 114/89 mmHg after surgical block. It decreased to 92/50 mmHg with administration of pitocin, but vasopressors were needed. Her catheter was pulled 12.3 hours after placement without issues.

- Patients #5-7:

-19 yo G1Po. Three attempts were made during spinal catheter. The patient delivered 17.3 hours after catheter placement. After removal the patient had pain and numbness on bilateral medial thighs without bowel or bladder incontinence. These symptoms lasted for 24 hours and resolved without intervention. The patient had MAP decrease of 21%.

-28 yo G1Po. A step-up rate of 1.5 mL/hr was required 3 hours after catheter placement. It was changed to 1 mL/hr 7 hrs later. She had a prolonged labor that resulted in forceps delivery 11.9hrs after catheter placement. Her largest drop in MAP was 11%. The catheter was removed 12 hours after placement and no issues were noted.

- 20 yo G1Po. The infusion rate was changed four times (to 1.5, 0.5, 1.5, and 1 mL/hr) during her 7-hr labor course. The catheter was removed 12 hrs after placement. Her largest MAP decrease was 17%.

## Current protocol

1 mL bolus of 0.25% bupivacaine with 20 µg fentanyl followed by immediate infusion with 0.125% bupivacaine and 2 µg fentanyl at 1 mL/hr. Breakthrough pain was treated with 1-2ml of 0.25% bupivacaine. The spinal catheter is to remain in patient for at least 12 hrs.

## Discussion

The Wiley spinal catheter is approved by the FDA for intermittent injections but we believe a continuous infusion provides better pain control than frequent boluses, in addition to improved hemodynamic stability. Motor block is a potential complication in some patients with the concentration of local anesthetics used. Lower concentrations of local anesthetics, or narcotics only solutions, may help reduce motor block.

The decision to leave the spinal catheter in place for 12 hours is arbitrary, as we typically leave an epidural catheter in place for 24 hrs if the dura is inadvertently punctured by a 17-g needle. Since the Wiley catheter is smaller at 23 -g, we feel it was probably adequate to allow a 12-hr indwelling time to prevent a dural puncture headaches. Our patients who had the catheter in place for 8 hours and longer did not develop dural puncture headaches.

## References

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