

# Sequential CSE versus Standard CSE in the Morbidly Obese Parturient Presenting for Elective Cesarean Delivery

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## Introduction

Although the ED95 for spinal bupivacaine has been demonstrated to be equivalent in obese and non obese parturients (1), the consequences of inadvertent high spinal blockade in the morbidly obese patient undergoing elective cesarean delivery are best avoided. The sequential combined spinal epidural (CSE) technique is a catheter based neuraxial technique, which allows for slow, controlled induction of neuraxial anesthesia for cesarean delivery (2). Direct comparison of sequential CSE versus standard CSE in the morbidly obese parturient may reveal the superiority of one technique over the other in this high-risk population.

## Methods

This is a prospective, randomized, controlled, double blinded trial comparing sequential CSE to standard CSE technique in parturients with body mass index (BMI)  $\geq 40$  kg/m<sup>2</sup> presenting for elective cesarean delivery. Patients were randomly assigned to receive either 7.5 mg or 12 mg of 0.75% hyperbaric bupivacaine administered with fentanyl 10 mcg and morphine 150 mcg intrathecally. The primary endpoint was the number of epidural catheters that required test dose administration. Secondary endpoints included spinal blockade level, degree of hypotension from baseline, nausea and or vomiting, dose of epidural local anesthetic administered, dose of vasopressor given, and incidence of high spinal or block failure.

## Results

We have enrolled 55 patients to date, with 24 and 31 randomized to the standard and sequential CSE dose, respectively. There was no significant difference in BMI, height, age, estimated gestational age (EGA), or length of surgery between groups. Median spinal blockade level at 15 minutes was T1 in both groups ( $p=0.35$ ) [Figure 1]. 13% of patients in the standard CSE group and 29% of patients in the sequential CSE group required the epidural test dose ( $p=0.045$ ) at  $78 \pm 29$  and  $49 \pm 20$  minutes following spinal administration, respectively. 13% of patients in the standard CSE group and 23% of patients in the sequential CSE group required dosing of the epidural catheter ( $p=0.17$ ) with significantly higher epidural lidocaine requirements in the sequential CSE group ( $p=0.046$ ). No significant difference in nausea and vomiting, hypotension from baseline, or vasopressor use was demonstrated between the two groups [Figure 2]. There were no high spinals or block failures in either group.

Figure 1

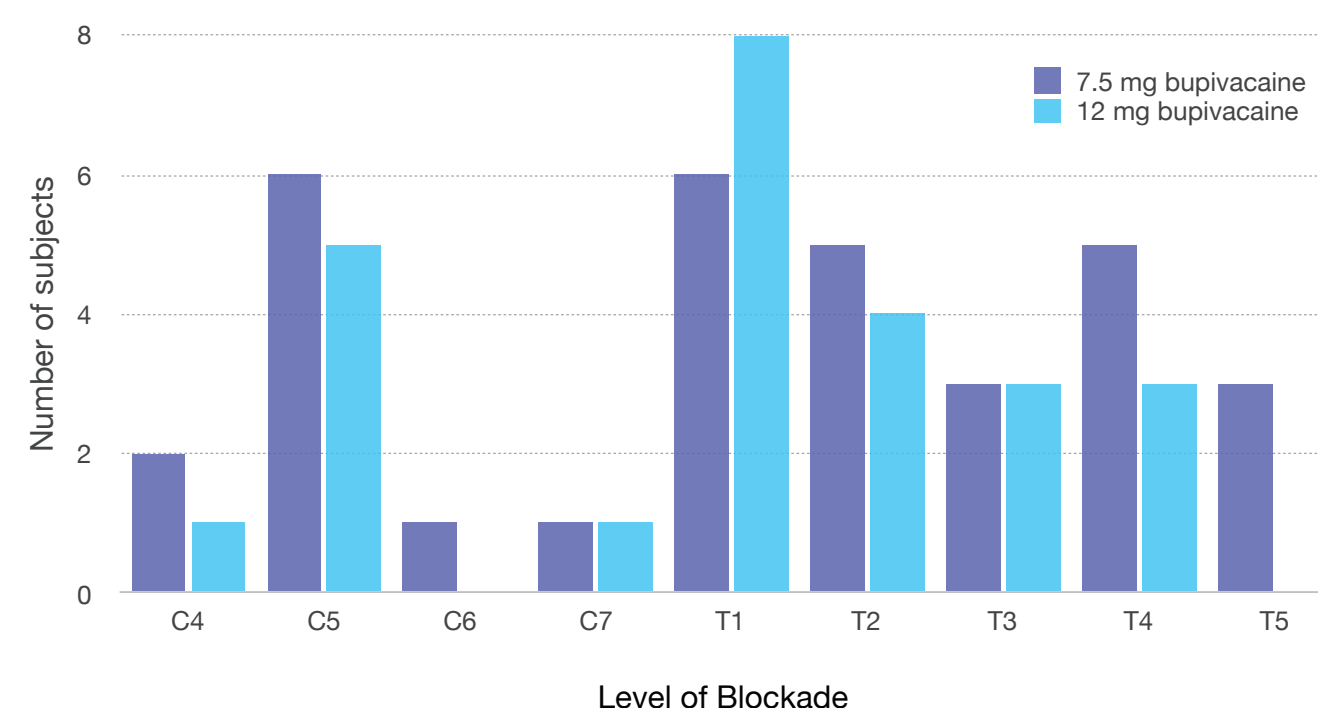
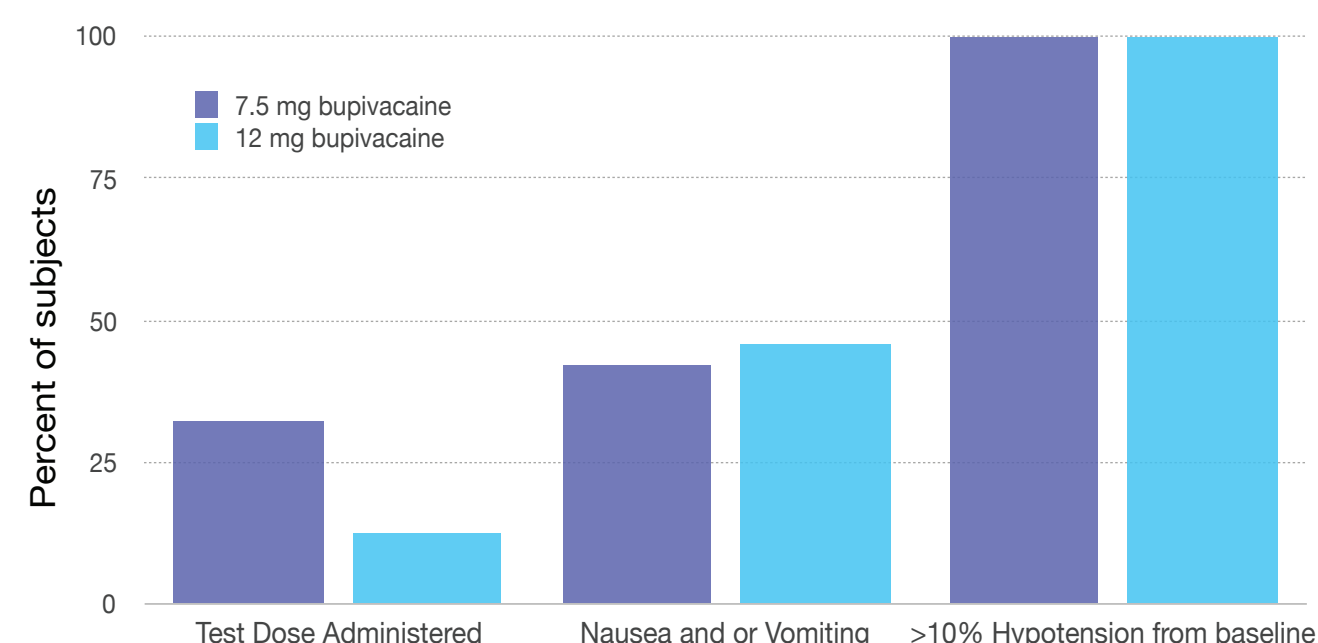


Figure 2



## Discussion

We were able to demonstrate a significant increase in test dose administration and epidural local anesthetic requirements in the sequential CSE group. Although sequential CSE technique has been shown to offer less hypotension during induction of neuraxial anesthesia (4), we have not been able to demonstrate this finding in our class III obese patient population. Significant hypotension at least 10% or greater from baseline was observed in both groups, and supports the findings of prior studies (3).

Our findings support the use of catheter based neuraxial techniques for cesarean delivery in these parturients, as 13% of those receiving the standard CSE also required epidural supplementation. Data collection is ongoing. We have not seen any high spinals or epidural catheter failures; therefore we cannot currently argue that one technique is safer than the other in the class III obese parturient.

## References

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2. Roofthoof E. Current Opinion in Anaesthesiology 2009; 22:341-46.
3. Hogan QH et al. Anesthesiology 1996; 84:1341-9.
4. Brizzi A et al. Minerva Anesthesiology 2005 Nov; 71(11): 701-9.