A COMPARISON BETWEEN COMBINED SPINAL-EPIDURAL ANESTHESIA (CSE) WITH OR WITHOUT EPIDURAL SALINE ADMINISTRATION FOR CESAREAN SECTION

Primary Author: Geza Kiss MD
Robert Wood Johnson University Hospital

Co-Authors: Adil Mohiuddin, MD; Christine H Fratzola, MD; Fathima Aquila, MBBS; Raymond Amponsah, BA; Scott Mellender, MD; Shaul Cohen, MD; Stefanie Berman, MD;

INTRODUCTION: Epidural injection of 10 ml saline prior to catheter placement for CSE was safe and it reduced epidural vessel trauma [1]. We showed that epidural administration of local anesthetic solution for C/S by gravity via the needle was safe, had higher success rate, fewer paresthesias, and fewer epidural blood vessel punctures & lower sensory level when compared with the traditional injection through the epidural catheter [2].

OBJECTIVE: To determine whether administration of saline by gravity via the epidural needle into the epidural space after intrathecal injection of local anesthetic and before epidural catheter insertion is associated with fewer adverse effects. We conducted, with IRB approval, a prospective, randomized study of 229 consenting parturients who received CSE for elective C/S.

METHODS: In all patients the epidural space was located at L4-5 or L3-4 interspace using epidural needle in lateral decubitus position. Group I (n=115 â€œB. Braunâ€ 18g epi catheter was inserted 5cm immediately following administration of spinal solution via PENCAN 25g needle (B. Braun Medical Inc). Group II (n=114) 10 ml saline was administered by gravity into the epidural space following spinal solution injection. â€œB. Braunâ€ 18g closed-end epi catheter was then inserted 5 cm into the epi space. All patients received 10mg ropivacaine with 100ï¿½ -g epinephrine and 25ï¿½ -g fentanyl intrathecally. Increment epidural doses of 5-20ml of 0.75% ropivacaine with 5ï¿½ -g/ml epinephrine & 5ï¿½ -g/ml fentanyl were administered when spinal anesthesia was unsatisfactory.

Twenty minutes after the spinal injection, an investigator recorded: height, weight, parity, gestational age, APGAR score, the distance of the epidural space from the skin, the appearance of frank blood or CSF in the catheter, the presence & severity of paresthesia (0=none, 10=worst), sensory level, the incidence of side effects of the block, time to pain, and overall satisfaction. The catheter was observed for blood return both passively and after the application of negative pressure. If the parturient did not volunteer any symptoms or signs of paresthesia, she was then asked directly by observer. The sensory level was assessed with skin application of ice. When needed, additional local anesthetic solution was injected via the epidural catheter to achieve a satisfactory block. Upon arrival at PACU and after a negative aspiration test, 3 ml 1.5% lidocaine with epinephrine 5Âµg/ml was injected via epidural catheter. Following a negative test dose, the epidural catheter was connected to a portable Abbott Pain Management Provider (Abbott Laboratories North Chicago, IL 60064) for post C/S pain management. Patients were contacted by phone for week for possible complications of post dural puncture headache and transient radicular irritation.
Values are mean ± SD. P value < 0.05 was considered significant.

RESULTS: Groups did not differ in age, height, parity, duration of surgery, incidence of itching, sedation, hypotension or APGAR scores. 17 pts in GI (17%) & 23 pts in GII (25%) had unsuccessful S/A (failure to pierce dura) & had epidural anesthesia. No patient complained of shortness of breath or weak hand grip. All epi catheters were successful for post C/S epidural-PCA analgesia for 48hrs.

CONCLUSIONS: This data shows that epidural administration of 10ml saline by gravity before insertion of epidural catheter for CSE for C/S has a higher success rate, better quality of anesthesia, fewer epidural vessel puncture & fewer paresthesias than CSE without epidural saline administration.