

CASE REPORT

OPEN CHOLECYSTECTOMY UNDER COMBINED SPINAL- EPIDURAL AN EXPERIENCE WITH ROPIVACAINE

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ABSTRACT: Cholecystectomy employing combined spinal epidural technique with lignocaine and /or bupivacaine as the local anaesthetic agent has been reported. Here we report a patient with cardiac as well as pulmonary disorders who underwent open cholecystectomy under combined spinal epidural technique with Ropivacaine as sole local anaesthetic agent.

KEYWORDS: Open Cholecystectomy, Lung Disease, Combined Spinal Epidural Technique, Ropivacaine.

INTRODUCTION: Time has changed. Traditionally, Cholecystectomy-open or laparoscopic, is done under general anaesthesia supplemented with muscle relaxants. Regional anaesthesia has not been very popular, as surgery requires extensive sensory and motor block and surgical manipulation around the diaphragm could interfere with adequate spontaneous ventilation. However, general anaesthesia also has its own limitation viz. pulmonary complications, more so in patients with chronic pulmonary conditions. In order to avoid such complications in general anaesthesia, regional anaesthesia can be contemplated.

Thoracic-epidurals have been safely employed in such circumstances with Lignocaine and/ or Bupivacaine as the local anesthetic. Here we report a patient with compromised pulmonary and cardiac status who underwent an open cholecystectomy under Combined Spinal and Epidural (CSE) technique using Ropivacaine as sole local anaesthetic agent.

CASE REPORT: A 63 year old male suffering from chronic calculous cholecystitis was posted for open cholecystectomy. He was Grade-1 Hypertensive, on Atenolol 50mg daily. Though a non-smoker, but he gave history of prolonged exposure to cement factory dust being a resident of that area and had lost his wife to some respiratory ailments a few months ago. His height was 155cms, weight -75KG, PR- 60/min, BP-124/82mmHg, RR-16/min, thoraco- abdominal, but breath sounds were inaudible in right inframammary, infra-axillary and infra-scapular area. In the rest of the areas, breath sound was vesicular with no adventitious sounds.

ECG revealed Left Bundle Branch Block, while the Echocardiography study was normal. Chest X-ray showed a thin walled lesion abutting the right chest wall with evidence of cicatrization and multiple calcifications in the adjoining areas, and elevation of the right dome of diaphragm. Loculated Pleural effusion with calcification or Pulmonary Koch's was suspected. But sputum was negative for acid fast bacilli and ultrasound of chest ruled out any extra-pulmonary mass, consolidation or pleural effusion.

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CT-scan of thorax both plain and contrast showed evidence of loss of lung volume with fibro-reticular pattern in right lower lobe, ground-glass pattern in right upper lobe and bronchiectatic changes in right lower lobe. No evidence of pleural effusion was seen but there was mild thickening of pleura along the lateral thoracic wall. His pulmonary function test impression was- moderate to mild obstruction with early small-airway obstruction and low vital capacity. Apart from mild derangement of liver function tests, his other blood bio-chemistry was within normal limits.

In view of his pulmonary status and anticipating perioperative complications, it was decided to undertake the operation under Combined Spinal and Epidural technique though it is not a popular procedure amongst surgeons as well as anaesthesiologists for open cholecystectomy. He was advised to continue his antihypertensive medications and Inj Deriphylline was started three times a day intra muscularly.

On the day of operation, after recording his pulse rate, blood pressure, respiratory rate, SpO₂, ECG and temperature, an IV line was secured and he was preloaded with 500ml Lactated Ringer's solution. Epidural space was located in right lateral decubitus position by loss of resistance technique and 16 ml of 0.75% Ropivacaine was deposited into the epidural space after negative aspiration tests, and 4ml of Ropivacaine was then deposited in the sub-arachnoid space through a 27G Quincke needle. Oxygen 6 liters/min was supplemented by Hudson's face mask throughout surgery. Sensory block of T6 was achieved within 15min of CSE and the patient was positioned for operation. Surgery lasted for about 180mins, without any problem. One bolus 10ml of 0.75% Ropivacaine top-up was injected via the epidural-catheter intra-operatively at about 120mins. All vital parameters were monitored continuously throughout the operation and remained within normal limits. His MAP was maintained around 70 to 80 mmHg. He was infused with one pint of HES, one liter of 0.9% NS and one liter of Lactated Ringer's solution and 100ml of Inj Paracetamol 1gm in the intra-operative period. Total intra-operative blood loss was about 500 ml (s).

At the end of surgery patient was shifted to ward with advice for oxygen supplementation via face mask, Inj Deriphylline, and prop-up position for the next 24 hours. Inj Paracetamol infusion (IV) was also continued 100ml (1gm) 6 hourly. As no further supplements were required except the one top-up in OT, and the patient appeared quite comfortable, the catheter was removed the next day morning. His hospital stay was uneventful.

DISCUSSION: In open cholecystectomy intubation and general anaesthesia with relaxants has always been the preferred technique. But in patients with significant pulmonary disorder it carries risk of baro-trauma, bio-trauma, pneumonia, post-operative hypoxemia, impaired cardiac performance etc.^[1] These can be combated by employment of central neuraxial blocks. Spinal anaesthesia provides rapid and profound block but the level of block is difficult to maintain as it is usually a single-shot technique, so there is chance of surgery outlasting the block time (spinal micro-catheter concept is yet to come to force). Epidural blocks can provide titratable levels for prolonged periods as well as post-op analgesia, but, at times block could be inconsistent with missed segments, inadequate motor-block etc necessitating supplements and or conversion to

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GA. Combined-Spinal-Epidural provides the dexterity of quick and profound block as well as top-up drugs via the epidural catheter, helping in prolongation of duration.^[2, 3]

CSE techniques can pose complications like those seen with SAB or epidural alone.^[2, 3, 4] In patients with end-stage COPD, awake thoracic-epidurals have been reported to be quite a safe technique.^[5, 6] Elzarek E. and Thornton M. et al reported high-risk patients with severe pulmonary disease who underwent open cholecystectomy under thoracic-epidural anaesthesia only ^[7]. Laparoscopic cholecystectomies under central neuraxial blocks in patients with pulmonary pathology have been described.^[8,9] In 2006 von Zundert et al used CSE technique for cholecystectomy in a patient with severely abnormal respiratory function successfully.^[10] They also employed CSE technique in lower-thoracic regions proving its safety in laparoscopic surgery.^[11]

Interestingly, all the cases reported have used 2% Lignocaine and 0.5% Bupivacaine as the local anesthetic agent. Lignocaine confers a rapid and dense block while Bupivacaine provides a prolonged sensory block. Ropivacaine marketed as 0.75%, is less cardio-toxic compared to Bupivacaine, provides better motor block, which is concentration dependent for its effect. As this patient also had LBBB, instead of Lignocaine or Bupivacaine in combination or individually, Ropivacaine 0.75% was considered to be safe owing to its pharmacological characteristics hence was employed as the sole agent for CSE (As per the product monograph of Ropivacaine it should not be mixed with other drugs).

CONCLUSION: In patients with pulmonary disorders, open cholecystectomy can be performed employing CSE technique with Ropivacaine as the sole local anaesthetic drug.



Image 1



Image 2

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