

# 60 Year Old Male with Cholelithiasis with K / C / O COPD for Laparoscopic Cholecystectomy under Regional Anaesthesia

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**Abstract:** We report here in, 60 years old male with cholelithiasis with k/c/o COPD posted for laproscopic cholecystectomy. Patient managed for surgery under regional anaesthesia in order to prevent pulmonary complications following surgery, and are more susceptible to hypoxemia, laryngospasm, barotrauma, bronchospasm, and cardiovascular instability. COPD severity assessed with a preoperative exam, including a comprehensive medical history, spirometry, and measurement of arterial blood gas. It is well known that advanced COPD patients have adverse outcomes when given GA with tracheal intubation and intermittent positive pressure ventilation (IPPV). Epidural anesthesia is more advantageous than general anesthesia because it decreases anesthesia respiratory complications, specifically pneumonia, atelectasis, and hypoxemia, in patient at risk for pulmonary complications. This results in a quicker recovery and less postoperative pain.

**Keywords:** Cholelithiasis, laparoscopic cholecystectomy, COPD

## 1. Introduction

Laparoscopic cholecystectomy (LC) was approved for use in 1988, and since then, it has been used as the gold standard treatment method for symptomatic cholelithiasis. Patients undergoing LC are typically given GA and are intubated endotracheally in order to prevent respiratory embarrassment and aspiration due to pneumoperitoneum. However, recent studies have revealed that RA may be more beneficial than GA in these patients. During LC, insufflation with carbon dioxide (CO<sub>2</sub>) can cause pneumoperitoneum, in which the venous pressure is lower than the intra - abdominal pressure (IAP), preventing the resorption of CO<sub>2</sub> and causing hypercapnia.

Respiratory effects of pneumoperitoneum can be reduced lung volume, increased peak airflow pressure, and reduced pulmonary compliance. COPD severity should be assessed with a preoperative exam, including a comprehensive medical history, spirometry, and measurement of arterial blood gas. It is well known that advanced COPD patients have adverse outcomes when given GA with tracheal intubation and intermittent positive pressure ventilation (IPPV). These patients may have an increased rate of pulmonary complications following surgery, and are more susceptible to hypoxemia, laryngospasm, barotrauma, bronchospasm, and cardiovascular instability. Therefore, many believe that RA is a better choice than GA for these patients.

Additionally, it should be noted that spinal and epidural anesthesia (when given at the lumbar level) do not affect respiratory function.<sup>1</sup>

## 2. Case Report

We report patient 60 years old male with right upper abdominal pain since 2 months, aggravated after eating fatty meal, dull, radiated to right shoulder tip. Patient K/C/O

COPD since 10 years on irregular medication in the form of bronchodilator, dysnea on exertion, chronic productive cough, chronic smoker since 21 years, belong to lower socioeconomic status. On systemic examination, average built, METS > 4, SpO<sub>2</sub> 96%, RR 12/min, no accessory muscle used while breathing, prolonged expiration during quite breathing, hyperresonant chest, b/l decreased air entry, no rhonchi / crepts/wheeze. Cardiovascular and airway assessment adequate. Blood examination all parameters within normal range. Patient advised for PFTs FEV<sub>1</sub>/FVC 0.6%. Before patient taken into OT fresh informed consent, abstain from smoking overnight, nebulisation with Duolin in early morning. Difficult airway cart and anaesthetic drugs (inj magnesium sulphate, duolin respules also kept) prepared. Patient taken on OT table standard monitoring attached, IV line secured. Before the epidural anesthetic procedure was started, patient received a 20 - min infusion of 15 ml/kg of normal saline to prevent hypotension during the anesthetic procedure. Patient was then placed in a lateral decubitus position. Local anesthesia (30mg of 2% lidocaine) was injected into the skin. An 18 - gauge epidural needle was introduced into one of the following spinal spaces: D10 - D11. The anesthesia (6 mg/kg Xylocaine with 2% epinephrine and 1 lg/kg Fentanyl) was injected into the epidural space using the Gutierrez technique. An intramuscular sedative (Midazolam, 0.10±0.15 mg/kg) was also administered to patient to relieve anxiety. At this dose, the drug has a mild hypnotic and sedating effect and able the patient to continue breathing spontaneously. Approximately 15 min after the epidural anesthesia was administered, but before starting the surgical procedure, the level of analgesia was checked to ensure it was sufficient. Pulse oximetry and blood pressure were continuously monitored during the anesthesia and surgical procedures. Throughout surgery, patients' oxygenation was maintained with 100% oxygen by mask at a rate of 2 L/min. If a patient's blood pressure dropped, it was corrected by decreasing the intra abdominal pressure, increasing the infusion rate of crystalloids, or using vasopressor drugs. When a patient experienced shoulder pain, an additional 1 lg/kg Fentanyl was administered

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intravenously. To prevent infection, we administered one dose of a first - generation cephalosporin before the surgery and afterwards. Surgery went uneventful, patient shifted to PACU, advised for incentive spirometry, chest physiotherapy, deep breathing exercises.

### 3. Discussion

The main findings of this review are that laparoscopic cholecystectomy can be safely performed using epidural anesthesia and that this surgical protocol can eliminate the need for postoperative pain medication. One of the feared complications of performing laparoscopic (or open) abdominal surgery without general anesthesia is that the abdominal wall will not relax enough to allow surgeons to visualize the abdominal contents. In fact, many authors have encountered this problem. In contrast, abdominal relaxation was sufficient in our patient.

The negative effects of CO<sub>2</sub>pneumoperitoneum on lung respiratory function have been widely studied. With general anesthesia, mechanical ventilation prevents acidosis by washing the excess CO<sub>2</sub> out of the lungs. Because patient under epidural anesthesia do not normally receive mechanical ventilation, CO<sub>2</sub> partial pressure increases during surgery, which could potentially cause acidosis, which in turn could cause arrhythmias. However, this risk can be lowered by adequately oxygenating the patient. We did not observe any changes in heart rhythm in our patient, and not developed any acidosis. Anesthetic agents interfere with mucociliary transport. Mechanical ventilation and upper abdominal surgery both have adverse effects on respiratory mechanics (e. g., functional residual capacity, vital capacity, tidal volume, and closing volume). Because mucociliary clearance is an important pulmonary defense mechanism against infection, general anesthesia that uses inhalational or intravenous agents may harm patient with COPD. Furthermore, it has been shown that patient with COPD are at risk of developing pulmonary complications after upper abdominal surgery. Therefore, these patients may benefit from laparoscopic surgery performed under epidural anesthesia. The goals of anesthesia management in patients with COPD should be to avoid anesthetics that depress mucociliary transport, provide postoperative pain relief that can adequately prevent deterioration of respiratory mechanics, and ambulate the patient as early as possible. Epidural anesthesia is more advantageous than general anesthesia because it decreases anesthesia respiratory complications, specifically pneumonia, atelectasis, and hypoxemia, in patient at risk for pulmonary complications. This results in a quicker recovery and less postoperative pain.<sup>2</sup>

### 4. Conclusion

This article has demonstrated that laparoscopic cholecystectomy is not only feasible under epidural anesthesia but also decreases the need for postoperative analgesia. This approach should be considered as a valid option for patients with biliary colic who are poor candidates for general anesthesia due to cardio- respiratory or airway problems as well as for patients with other contraindications for general anesthesia.<sup>1 - 3</sup>

**Conflict of Interest - Nil**

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