VOLUME-7, ISSUE-11, NOVEMBER-2018 • PRINT ISSN No 2277 - 8160

Original Research Paper

Anaesthesiology

AIRWAY COMPLIANCE IN LAPROSCOPIC SURGERY – PRESSURE CONTROL VENTILATION VS VOLUME CONTROL VENTILATION

Dr. Margi Barot* Third year resident, Department Of Anaesthesia, IKDRC-ITS BJMC, Ahmedabad , Gujarat *Corresponding Author

Dr. Sanjay Shekh Second Year Resident, Department Of Anaesthesia, IKDRC-ITS BJMC, Ahmedabad , Gujarat

ABSTRACT

INTRODUCTION: Laparoscopic surgery is one of the most important diagnostic and therapeutic tools in the present surgical era. Laparoscopic surgery has many benefits for patients, including minimally invasive surgery, reduced postoperative pain and fewer wound-related complications. Respiratory changes occur due to raised IAP and Trendelenburg positioning.

AIMS AND OBJECTIVES: Comparative effect of Volume control ventilation and pressure control ventilation on airway compliance in laproscopic surgery

- Airway compliance

(static and dynamic compliance)

MATERIAL AND METHODS: After the approval of ethical committee, 82 ASA grade 1 and 2 patients of age 18-65 years undergoing laproscopic surgery were included in study and randomly allotted in 2 groups :

Group P (n = 41) : pressure control ventilation mode

Group V (n = 41) : volume control ventilation mode

After induction of anaesthesia , airway compliance in terms of (static compliance Cstat , dynamic compliance Cdyn) were noted at T1 –baseline after induction , 10 minutes , 30 minutes , 60 minutes , 90 minutes after pneumogeneration , 10 minutes after cessation of pneumogeneration .

RESULT: Dynamic and Static compliance were significantly higher in group P as compared to group V after generation of pneumoperitoneum.

KEYWORDS :

INTRODUCTION

Laparoscopic surgery is an important diagnostic and therapeutic tools in the present surgical era. Laproscopic surgery is most routinely performed with general anesthesia. It facilitates proper decompression of the gastrointestinal tract (GI), and also establishes adequate muscle relaxation, pneumoperitoneum, and Trendelenburg position. These conditions improve exposure of the abdominal organs and reduces the risk of mechanical injury to the patient. However, they also induce specific and potentially deleterious pathophysiologic changes to the patient.(1)

The increased intraabdominal pressure during pneumoperitoneum has adverse cardiopulmonary and hemodynamics effects. Besides these effects, one of the most obvious ventilatory consequences is the increased peak airway pressure (P_{peak}) , reduced lung compliance and hypercarbia.

Volume control ventilation (VCV) is the conventional mode familiar to most of the anaesthesiologists. Recently pressure control ventilation (PCV) has been used more frequently. However, evidence on whether PCV is superior to VCV is still lacking.(2)

PCV limits the maximum airway pressure delivered to the lung, but may result in variable tidal and minute volume. PCV has been shown to improve arterial oxygenation and decrease peak airway pressure because of its decelerating inspiratory flow. Uniform distribution of inspired gas with PCV is the major cause of better arterial oxygenation.––(3)(4)

MATERIAL AND METHOD

- **Eligibility criteria :**

Patient aged > 18 years fulfilling our inclusion criteria and willing to participate in the study.

- **Participant recruiting criteria :**

Single blind randomization by sealed envelop method

- **Study place :**

Study was conducted in the department of anaesthesia at IKDRC-ITS

- **Sample size :**

41 cases in each group (VCV and PCV group) (Total 82 cases)

- **Study design :**

Prospective randomized comparative study

INCLUSION CRITERIA:

- Patients undergoing elective robotic renal transplantation.
- Age group of 20-50 years
- Patient giving valid informed consent

EXCLUSION CRITERIA:

- Patient refusal
- Morbid obesity
- History of asthma , chronic obstructive pulmonary disease, restrictive pulmonary disease
- Cor pulmonale
- Pulmonary hypertension
- Severe hepatorenal dysfunction
- Congenital heart disease

After the approval of Ethical committee of the institute and after obtaining an informed written consent from the patients, 82 patients of chronic renal failure age (between 18 to 75 years) scheduled for elective robotic renal transplantation were included in the study. All the patients underwent hemodialysis preoperatively. Special routine investigations like Serum potassium and ECG have been carried out and recorded. Patients were kept nil per orally before surgery and advised to take morning dose of antihypertensive drugs.

In the operating room, standard ASA monitors including ECG, non-invasive blood pressure (NIBP) and pulse oximeter for peripheral oxygen saturation (SpO_2) attached and an intravenous (IV) line were secured. Patients were premedicated using Inj. Glycopyyrolate 0.004mg/kg, inj Ondansetron 4 mg IV stat, Inj Fentnyl 2microgram/kg.

After pre-oxygenation with 100% oxygen for 3 min, patient was

induced with Inj thiopental 5-7mg/Kg and tracheal intubation was facilitated with inj Atracurium and a nasogastric tube inserted to decompress the stomach. Anesthesia was maintained with oxygen, air, isoflurane and continuous infusion of atracurium. Central venous catheter to measure CVP and an invasive arterial line for continuous BP measurement were secured. A baseline arterial blood gas (ABG) analysis was done. After induction of anaesthesia , airway compliance in terms of (static compliance C_{stat} , dynamic compliance C_{dyn}) were noted at T_1 –baseline after induction , 10 minutes , 30 minutes , 60 minutes after pneumogeneration.

STATISTICS

For intergroup comparisons, the distribution of the data were first assessed. Data were presented as mean± SD or proportion (%). Statistical analysis was performed on IBM@SPSS version 20.The baseline variables were compared between the two groups using student's t-test for independent variables and nominal data were calculated using Chi-square test.