

ABSTRACT

Background

Laparoscopic cholecystectomy is one of the most common general surgical procedures performed in the world. Early post-operative shoulder and abdomen pain due to residual carbon-dioxide gas is a common problem. Active gas aspiration could be investigated as a possible means of resolving this issue.

Objectives of the Study

1. To evaluate the effect of active gas aspiration in patients undergoing Laparoscopic Cholecystectomy on shoulder pain and upper abdominal pain
2. To evaluate the effect of active gas aspiration in patients undergoing Laparoscopic Cholecystectomy on hospitalisation durations.

MATERIALS AND METHODS

Study Centre

Institute of General Surgery, Madras Medical College and Rajiv Gandhi Government General Hospital, Chennai

Duration of Study

1st October 2017 to 1st September 2018

Study Design

Randomised Control Study

Single Blinding (Patient)

Sample Size

50 in each group { $n = Z^2 \frac{1-\alpha}{2} P(1-P) / e^2$ P=3% e= 5% Z=1.96}

INCLUSION CRITERIA:

- All patients undergoing Laparoscopic Cholecystectomy for cholelithiasis between 20 to 85 years.

EXCLUSION CRITERIA

- ASA physical status of 3 and 4,
- Pregnancy
- History of Drug /alcohol abuse, chronic painkiller support
- Active cholecystitis
- Malignancy
- Severe pre-operative pain
- Abnormal liver function tests
- Surgeries in which drains were used

Patients were divided into 2 groups, group Test/I (n=50) and group Control/II (n=50) randomly and with appropriate consent and information. All patients underwent a standard Laparoscopic Cholecystectomy. The intra-abdominal gas pressure was set at a level of 12mm Hg and monitored during the operation. Test group underwent active gas aspiration at the end of the procedure.

Results:

Active gas aspiration did not produce any significant reduction in upper abdomen pain scores. However active gas aspiration produced significant pain reduction in shoulder pain scores at 8, 12 and 24 hrs. There was no difference in hospitalisation duration due to active gas aspiration at the end of Laparoscopic Cholecystectomy.

In patients whose operating duration times exceeded 120 minutes, active gas aspiration did not produce any significant reduction in upper abdomen pain scores. In patients whose operating duration times exceeded 120 minutes, significant pain reduction in shoulder pain scores at 8, 12 and 24 hrs. Moreover, significant reduction hospitalisation duration was seen in the group which underwent active gas aspiration at the end of Laparoscopic Cholecystectomy.

Conclusion:

Active gas aspiration is an effective and simple means of reducing the CO₂ gas in the sub-diaphragmatic space. It does not involve any extra cost. There is significant reduction in shoulder pain scores when active gas aspiration is performed. We advocate active gas aspiration at the end of Laparoscopic Cholecystectomy be adopted as a standard practice all over the world.

Key words: shoulder pain, laparoscopic cholecystectomy, active gas aspiration ,post-operative pain