

Incidence of Postoperative Shoulder Pain after Laparoscopic Cholecystectomy

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Abstract: Background: The most common form of therapy for benign biliary illness is laparoscopic cholecystectomy. After laparoscopic cholecystectomy, pain is still a significant problem that can lead to extended hospital stays or readmissions. **Objective:** This paper contributes to assessing the incidence of postoperative shoulder pain after laparoscopic cholecystectomy. **Patients and Methods:** This paper was interested to study the incidence of postoperative shoulder pain after laparoscopic cholecystectomy, where focused on laparoscopic cholecystectomy, which included 60 cases within females and males. Where this study is considered a cross-sectional study was conducted between 16th July 2021 to 15th August 2022 in different hospitals in Iraq into ages above 40 to 65 years. This paper was conducted to analysis and produce all characteristics and demographic of data by the SPSS program. This paper was focused on the role of the drain in a decrease of shoulder pain into patients who do laparoscopic cholecystectomy. Where the methodology of the data was conducted with two groups. Which the first group presents patients without drain use, have 30 cases, while the second group presents the control group with drain use and have 30 cases. **Discussion:** It is interesting to note that the pain felt after a laparoscopy procedure is very different from the pain experienced after a laparotomy. In fact, patients reported more visceral pain after surgical laparoscopy than parietal (abdominal wall) pain after laparotomy. Gynecologists first noticed shoulder pain during early laparoscopic sterilization trials, which is a typical complaint after laparoscopic surgery. After laparoscopic cholecystectomy, the incidence varies, although it is often encountered by about a third of patients. It generally lasts two to three days. During standard-pressure laparoscopic cholecystectomy as well as low-pressure laparoscopic cholecystectomy, the mean postoperative pain scores at 6, 12, and 24 hours were 3.0, 3.9, 2.5, 2.0, 3.0, and 1.29, respectively. Finally, this study found that pain score was assessed by VAS, where the pain was found to decrease during extension of time surgery. **Conclusion:** Our results achieved successes for the patient through comparisons between Based on VAS scoring of pain degree, this study discovered that the pain score was evaluated using the VAS and that drain helps to decrease the shoulder pain into patients where our study found pains group still suffered of pain due to no drain use while controls group has got out of pain due to drain use.

Keywords: Post-operative laparoscopic; Shoulder pain; cholecystectomy; blood pressure; and Drain.

INTRODUCTION

The most common form of therapy for benign biliary illness is laparoscopic cholecystectomy. After laparoscopic cholecystectomy, pain is still a significant problem that can lead to extended hospital stays or readmissions [Cunniffe, M.G. *et al.*, 1998; Berberoglu, M. *et al.*, 1998]. Given the wide range of analgesic procedures, a unified strategy is required to offer standardized therapies to lessen pain. The goal of the Working Group is to provide precise guidelines for pain management following frequent but potentially unpleasant surgeries. [Kanwer, D.B. *et al.*, 2009]

Gynecologists first noticed shoulder soreness during their early laparoscopic sterilization experiences, which is a typical complaint after laparoscopic surgery [Rubinstein, L.M. *et al.*, 1976; Dixon, J.B. *et al.*, 2005]. Following laparoscopic cholecystectomy, the incidence varies, although it is often encountered by one-third of patients. The group consists of anesthetists and surgeons. [Joris, J. *et al.*, 1995]

The suggestions are supported by a systematic review and RCT literature review that is procedure specific [Alam, M.S. *et al.*, 2009]. The methodology takes clinical practice, analgesic strategy effectiveness, and side effects into account. This review updates one on laparoscopic

cholecystectomy that was first published in 2005. [Sarli, L. *et al.*, 2000]

Numerous new randomized controlled trials (RCTs) and reviews on techniques to lessen pain during laparoscopic cholecystectomy have been published since the last review [Bhardwaj, N. *et al.*, 2002]. This study expands on the data from the prior review to make additional suggestions for the treatment of pain following laparoscopic cholecystectomy. [Lepner, U. *et al.*, 2003; Kandil, T.S. *et al.*, 2010]

In our clinical practice, patients who have had arthroscopic surgery frequently complain of shoulder discomfort [Barczyński, M. *et al.*, 2003]. An interesting prospective investigation on the clinical state of shoulder discomfort following laparoscopic appendectomy was undertaken by the authors [Barczyński, M. *et al.*, 2002]. Low body weight was identified as the only risk factor for shoulder discomfort in their study as a result of a multivariate analysis. [Davidas, D. *et al.*, 1999]

The frequency of shoulder discomfort throughout this trial was unknown to us [Perrakis, E. *et al.*, 2003]. This paper contributes to assessing the incidence of postoperative shoulder pain after laparoscopic cholecystectomy.

PATIENTS AND METHODS

This paper was interested to study the incidence of postoperative shoulder pain after laparoscopic cholecystectomy, where focused on laparoscopic cholecystectomy, which included 60 cases within females and males. Where this study is considered a cross-sectional study was conducted between 16th July 2021 to 15th August 2022 in different hospitals in Iraq into ages above 40 to 65 years. This paper was conducted to analysis and produce all characteristics and demographic of data by the SPSS program. This paper was focused on the role of the drain in a decrease of shoulder pain into patients who do laparoscopic cholecystectomy, where the methodology of the data was conducted with two groups, which the first group presents patients without drain use and have 30 cases, while the second group presents control group with drain use and have 30 cases.

To follow that, this study was examine all demographic characteristics of cholecystectomy patients based on age, sex into male and female, and BMI within sections (24.60, 28.50, 30.80, and 32.70) there were found in Table 1, Table 2, and Table 3.

This paper was examined of cholecystectomy patients' causes, where include Gallbladder duct blockages, gallstones, infection, and Tumor as well. As this study was Examined of cholecystectomy patients' symptoms which are Nausea, Pain radiating to the right shoulder or back, Severe pain in the upper right part of the abdomen, and vomiting, all these outcomes were Clearfield in Table 4 and Table 5.

In deeded, all these previous studies were focused to analysis the distribution of patients' complications after the operation, while our study was contributed to compare between complications

of patients before and after the operation where complications before operations got on all these parameters which have Bleeding from the abdominal wall, Bleeding from tissues adjacent to the gallbladder, Injuries to the common, bile duct, and Spilled gallstones these were found in Table 6, while complications after operation were got Bile leaks, Bleeding from the abdominal cavity, Incisional hernia, Not exist, and Surgical wound infection where all these were exist in Table 7.

Moreover, this study was extended to assess difference cholecystectomy patients based on the bleeding rate in post-operative that find on Bleeding or Non-bleeding, which this result can be got in Table 8. This study was assessed of cholecystectomy patients of shoulder pain based on VAS scores within 4hrs, 8hrs, and 24hrs which can be seen in Figure 1. Besides to that, this paper was extended to Diseases associated with the patient before the cholecystectomy operation, which have Cholesterol, Diabetes, Heart disease, and Hypertension that; all details have been found in Table 9.

As well as this outcome were defining the Clinical distribution of the length of cholecystectomy patients into postoperative hospital stay in days which it can be got in Figure 2. To further of results, this result was assessed the Difference of cholecystectomy patients in comparison of pain distribution through pre-operative and post-operative in comparison between Postoperative shoulder tip pain and Preoperative shoulder tip pain, where this results have been found in Table 10. This paper was Conducting of operative time scoring on the patients' group, which that found in Figure 3.

RESULTS

Table 1: Distributions of cholecystectomy patients based on age

| Age | |
|-----|---------|
| N | 60 |
| | Ma |
| | Mi |
| M | 53.3500 |
| Me | 54.5000 |
| Mo | 46.00 |
| SD | 8.61183 |
| Var | 74.164 |
| Sk | -.196 |
| SSK | .309 |
| Ra | 29.00 |
| Min | 36.00 |
| Max | 65.00 |

| | |
|----|---------|
| Su | 3201.00 |
|----|---------|

Table 2: Distributions of cholecystectomy patients based on sex

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-----|--------|---------|---------|--------|--------|
| Val | Female | 18 | 30.0 | 30.0 | 30.0 |
| | Male | 42 | 70.0 | 70.0 | 100.0 |
| | T | 60 | 100.0 | 100.0 | |

Table 3: Distributions of cholecystectomy patients based on BMI

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-----|-------|---------|---------|--------|--------|
| Val | 24.60 | 13 | 21.7 | 21.7 | 21.7 |
| | 28.50 | 15 | 25.0 | 25.0 | 46.7 |
| | 30.80 | 23 | 38.3 | 38.3 | 85.0 |
| | 32.70 | 9 | 15.0 | 15.0 | 100.0 |
| | T | 60 | 100.0 | 100.0 | |

Table 4: Examination of cholecystectomy patients' causes

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-----|----------------------------|---------|---------|--------|--------|
| Val | Gallbladder duct blockages | 11 | 18.3 | 18.3 | 18.3 |
| | gallstones | 9 | 15.0 | 15.0 | 33.3 |
| | infection | 26 | 43.3 | 43.3 | 76.7 |
| | Tumor | 14 | 23.3 | 23.3 | 100.0 |
| | T | 60 | 100.0 | 100.0 | |

Table 5: Examination of cholecystectomy patients' symptoms

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-------|--|---------|---------|--------|--------|
| Valid | Nausea | 10 | 16.7 | 16.7 | 16.7 |
| | Pain radiating to the right shoulder or back | 25 | 41.7 | 41.7 | 58.3 |
| | Severe pain in the upper right part of the abdomen | 8 | 13.3 | 13.3 | 71.7 |
| | vomiting | 17 | 28.3 | 28.3 | 100.0 |
| | Total | 60 | 100.0 | 100.0 | |

Table 6: Examination of cholecystectomy patients into pre-operative complications

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-------|---|---------|---------|--------|--------|
| Valid | Bleeding from the abdominal wall | 9 | 15.0 | 15.0 | 15.0 |
| | Bleeding from tissues adjacent to the gallbladder | 18 | 30.0 | 30.0 | 45.0 |
| | Injuries to the common bile duct | 23 | 38.3 | 38.3 | 83.3 |
| | Spilled gallstones | 10 | 16.7 | 16.7 | 100.0 |
| | Total | 60 | 100.0 | 100.0 | |

Table 7: Examination of cholecystectomy patients into post-operative complications

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-------|------------------------------------|---------|---------|--------|--------|
| Valid | Bile leaks | 6 | 10.0 | 10.0 | 10.0 |
| | Bleeding from the abdominal cavity | 8 | 13.3 | 13.3 | 23.3 |
| | Incisional hernia | 10 | 16.7 | 16.7 | 40.0 |
| | Not exist | 30 | 50.0 | 50.0 | 90.0 |
| | Surgical wound infection | 6 | 10.0 | 10.0 | 100.0 |
| | Total | 60 | 100.0 | 100.0 | |

Table 8: Difference between cholecystectomy patients based on the bleeding rate in postoperative

| | | Freq, n | Per (%) | VP (%) | CP (%) |
|-------|--------------|---------|---------|--------|--------|
| Valid | Bleeding | 14 | 23.3 | 23.3 | 23.3 |
| | Non-bleeding | 46 | 76.7 | 76.7 | 100.0 |
| | Total | 60 | 100.0 | 100.0 | |

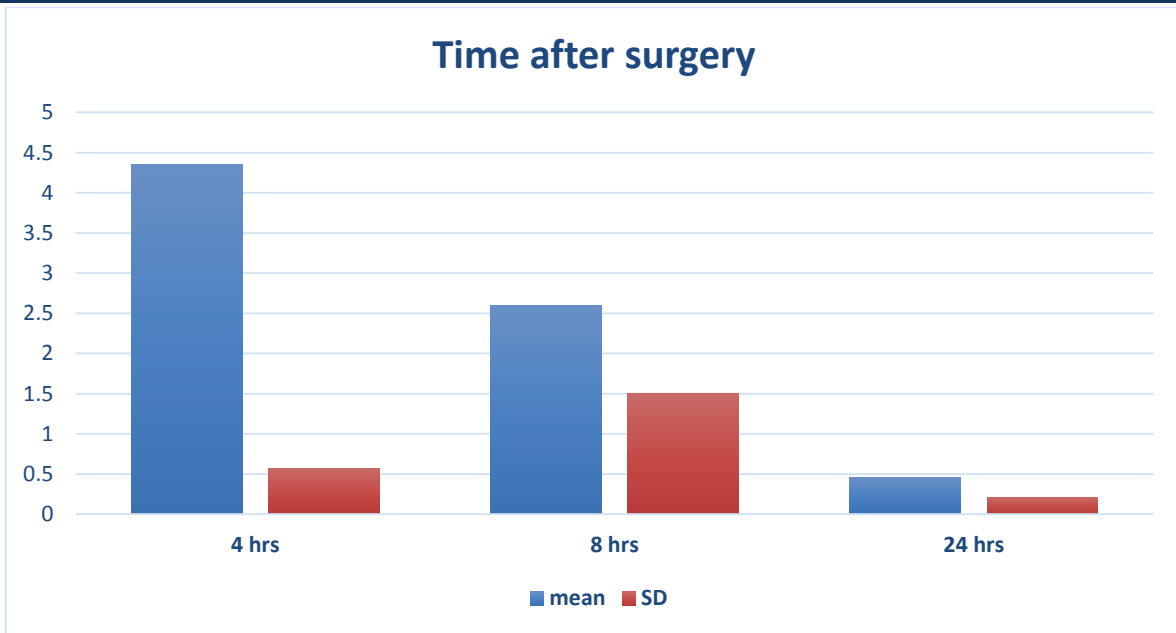


Figure 1: Assessment of cholecystectomy patients of shoulder pain based on VAS score

Table 9: Diseases associated with the patient before the cholecystectomy operation

| Val | | Freq, n | Per (%) | VP (%) | CP (%) |
|-----|---------------|---------|---------|--------|--------|
| | Cholesterol | 9 | 15.0 | 15.0 | 15.0 |
| | Diabetes | 26 | 43.3 | 43.3 | 58.3 |
| | Heart disease | 10 | 16.7 | 16.7 | 75.0 |
| | Hypertension | 15 | 25.0 | 25.0 | 100.0 |
| | T | 60 | 100.0 | 100.0 | |

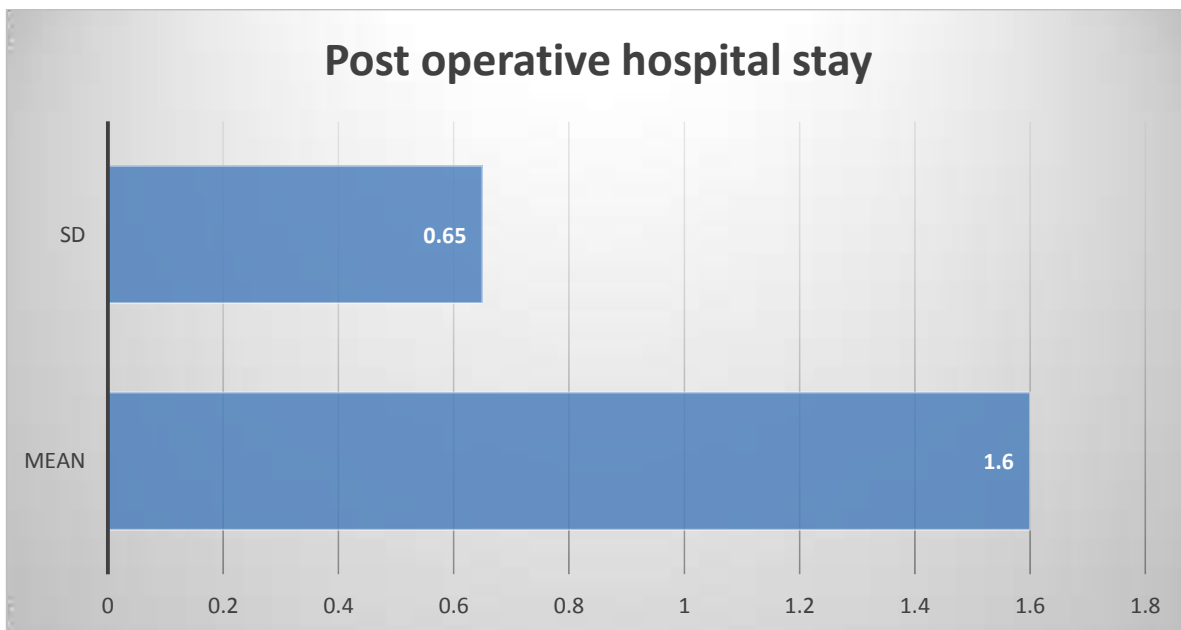


Figure 2: Clinical distribution of length of cholecystectomy patients into postoperative hospital stay in days

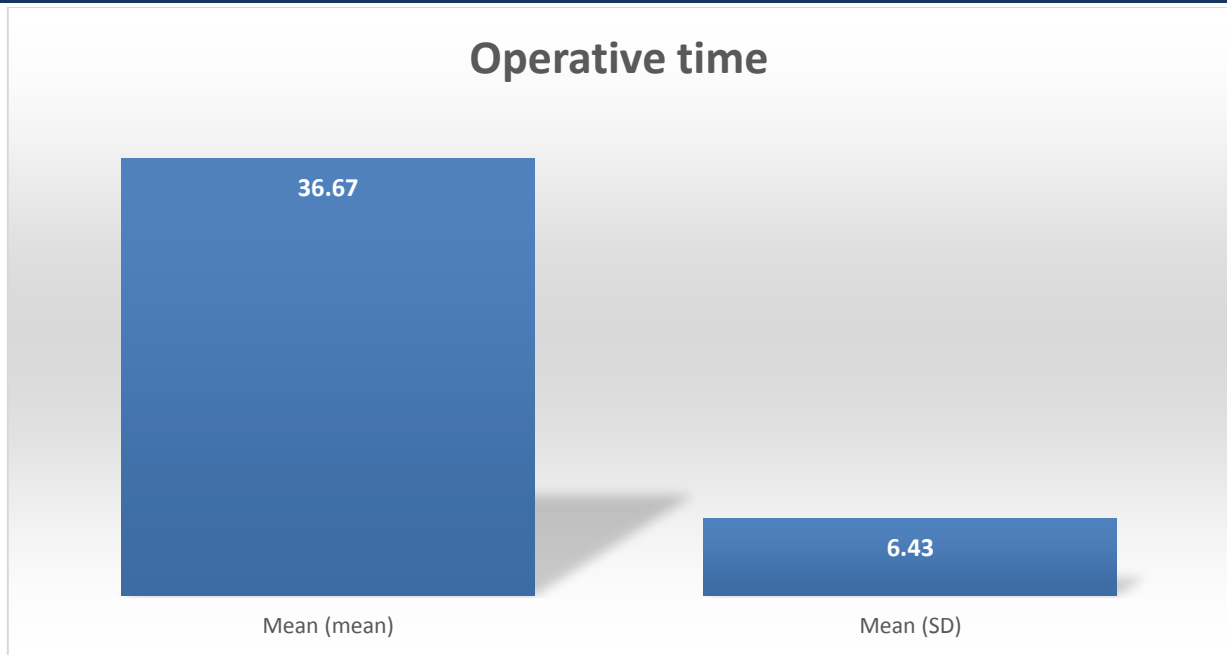


Figure 3: Conducting of operative time scoring on patients’ group

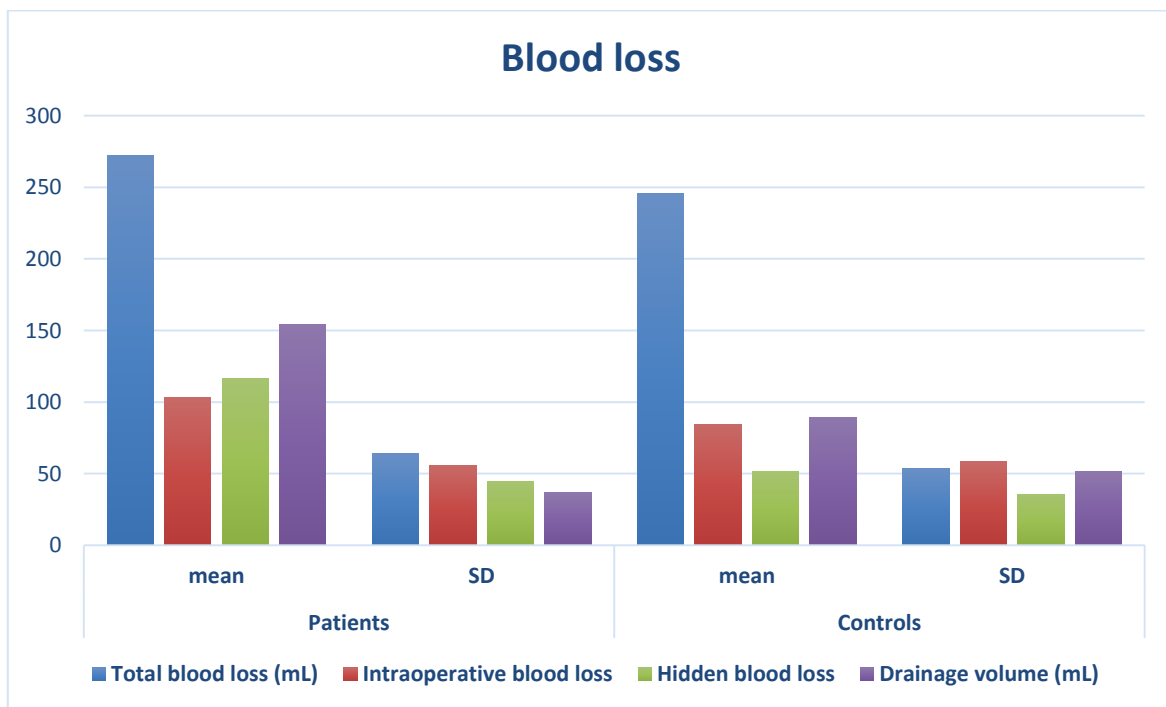


Figure 4: Comparison between patients’ group and controls through blood loss

Table 11: Assessment of shoulder pain for patients who used drain and without drain after surgery by VAS scoring

| Parameters | Patients (without drain) | Controls (with drain) | P-value |
|---------------|--------------------------|-----------------------|---------|
| VAS score < 5 | 8 (13.3%) | 27 (45%) | 0.004 |
| VAS score ≥ 5 | 22 (36.7%) | 3 (5%) | 0.00627 |
| Total | 30 (50%) | 30 (50%) | |

DISCUSSION

Cholecystectomy is considered an effective factor in shoulder pain, as it shows negative effects on patients over the age of 40 years. The results

showed that men were more suffering and injured than women. The results showed that age, weight, and the general anesthesia used in the operation had the greatest effect on the severity of the pain, which caused bleeding in some cases.

Moreover, the results showed that patients with cholecystectomy showed exaggerated complications due to the fact that associated factors such as sugar and cholesterol were more affected, which caused. Clinical results showed that the length of stay was high for some patients.

Surgeons who need adequate exposure for laparoscopic procedures used to cite the adage "the higher the pressure [Yeh, C.C. *et al.*, 2008], the better the view," according to research in Germany. However, maintaining elevated intra-abdominal pressure throughout treatment is associated with a number of unfavorable outcomes, including shoulder discomfort afterward. Compared to open cholecystectomy, laparoscopic cholecystectomy causes less postoperative discomfort and requires fewer pain relievers. However [Myers, M.B, 1962], post-laparoscopy discomfort in some individuals may be significant or even severe, necessitating the use of opioid medication.

It is interesting to note that the pain felt after a laparoscopy procedure is very different from the pain experienced after a laparotomy. In fact, patients reported more visceral pain after surgical laparoscopy than parietal (abdominal wall) pain after laparotomy. Gynecologists first noticed shoulder pain during early laparoscopic sterilization trials, which is a typical complaint after laparoscopic surgery. After laparoscopic cholecystectomy, the incidence varies, although it is often encountered by about a third of patients. It generally lasts two to three days.

Esmat, et al., (2006) [El-Labban, G. *et al.*, 2012] concluded that laparoscopic low-pressure cholecystectomy resulted in significantly less postoperative shoulder tip discomfort than normal-pressure laparoscopic cholecystectomy.

During standard-pressure laparoscopic cholecystectomy as well as low-pressure laparoscopic cholecystectomy, the mean postoperative pain scores at 6, 12, and 24 hours were 3.0, 3.9, 2.5, 2.0, 3.0, and 1.29, respectively [Sugrue, M. *et al.*, 2018]. Finally, this study found that pain score was assessed by VAS, where the pain was found to decrease during extension of time surgery.

Our paper found that the controls group outcomes shown changes of outcomes than the patients' group, where VAS score ≥ 5 got 22 (36.7%) where those without drain, while the control group has 3

(5%) but a VAS score < 5 achieved successfully with controls where 27 (45%) while patients who did not use drain found 8 (13.3%).

CONCLUSION

Although cholecystectomy has detrimental consequences on people over the age of 40, however, our results achieved success for the patient through comparisons between the patients' group who suffered of pain and without used a drain and another group drain. The findings indicated that men were more hurt and in pain than women. The findings demonstrated that age, weight, and the kind of general anaesthetic used during the procedure had the biggest influence on the level of discomfort, which occasionally resulted in bleeding. Based on VAS scoring of pain degree, this study discovered that the pain score was evaluated using the VAS and that drain helps to decrease the shoulder pain into patients where our study found pains group still suffered of pain due to no drain use while the controls group has got out of pain due to drain use.

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