ORIGINAL ARTICLE

Comparative Study of Rectus Muscle Retraction vs. Muscle Cutting in Mini Open Cholecystectomy

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ABSTRACT

Aim : To compare two techniques being used for open cholecystectomy in terms of operative time, post-operative wound hematoma, hospital stay and incisional hernia.

Method. This is a prospective randomized clinical trial of 100 patients. They all underwent mini open cholecystectomy with two different techniques from January 1, 2017 to December 31, 2017.

Results: Mini open cholecystectomy with rectus muscle retraction have significant advantages over muscle cutting incision in terms of operative time, postop pain, wound hematoma, hospital stay & incisional hernia.

Conclusion: Muscle retracting mini open cholecystectomy is good option for patients who opt to undergo open cholecystectomy due to some reasons with less pain and reduced hospital stay and less morbidity.

Keywords: mini open cholecystectomy

INTRODUCTION

Cholelithiasis is one of the most prevalent condition all over the world and particularly in Pakistan. Significant number of cholecystectomies is being performed annually at major institutions. This procedure is ranked 4th in the tally of operations for 2016 and 6th in 2017. Laparoscopic procedure or minimal invasive technique has greatly replaced the old open cholecystectomy. Latest modification in open procedure is the mini open muscle sparing technique. Cholecystectomy is the most common surgery performed by general surgeons. This technique has gained popularity during the last decade. However its implementation is slow and gradual. Mini open cholecystectomy has the comparable results with Laparoscopic cholecystectomy. There is minimal trauma and invasiveness noted in this procedure. This can be compared with laparoscopic procedures[4,12]. Several authors have described this technique in the literature[13,18].

Rectus muscle sparing mini open cholecystectomy is gaining importance in many institutions with the passage of time. Due to its edge over the standard open cholecystectomy, mini open is becoming popular in the field of biliary surgery. Peripheral hospitals do not have proper facilities for laparoscopic cholecystectomy. In this scenario mini open cholecystectomy is the good option. In this way this is becoming the reasonable alternate in terms of operative time, hospital stay and post-operative morbidity. The study patients were divided in to two groups as group A having cholecystectomy with rectus muscle retracting technique and second group with muscle cutting technique. Development of post-operative incisional hernia incidence is also minimum with technique[19,20].

Due to limited facilities at peripheral hospitals, mini open cholecystectomy is wonderful option for the surgeons and patients to have the benefit of minimal excess surgery. We will be comparing the right subcostal incision with rectus muscle sparing and the right subcostal incision with muscle cutting. These two different techniques are to be compared in terms of operative time, hospital stay & post-operative morbidity.

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METHODS

This 100 patients study was conducted at Avicenna hospital Lahore during January 2017 to 31 December 2017.These patients were divided in to two groups on the basis of even and odd numbers on the OPD register. Group A with 50 students with even out patients number were subjected for muscle sparing mini open cholecystectomy.

Other fifty patients in group B, with odd outpatient numbers were prepared for rectus muscle cutting cholecystectomy. Procedure was explained to them and consent obtained for the surgery. A standard operative technique for both groups was carried. Follow up was done on the first, second, 7th post-operative day and after three months for incisional hernia. A standardized follow up data sheet was prepared for all patients. Statistical Package for the Social Sciences (SPSS) was used to analyze the data collected for this study. All patients diagnosed with cholelithiasis reported in OPD from February 1, 2017 up to December 31, 2017 were the participants in this study.

Exclusion Criteria:

- Acute cholecystitis with more than 3 mm wall thickness.
- Choledocholithiasis with cholelithiasis.
- Obstructive jaundice
- Obese patients

RESULTS

This study was conducted from January 1, 2017 up to December 31, 2017 at Avicenna Hospital Lahore. Participants were 100 patients admitted through outpatient department.

Demography. Participants in this study were having age range from thirty to sixty five years (Table 1).Maximum number of patients were between 35 to 45 years. The mean age for this study was 47.5 years. Similarly as per gender there are 20 males and 80 female participants in this study (Table 2). This indicates that cholelithiasis is more common in females.

Pain control: For measurement of pain, visual analog scale was used ranging from 1 to 10.

Pain score span was between 5 to 8 for both groups with mean score remained 6.5. On the first post-operative day. Pain score was more in group B patients as compared with

group A patients. (Table 3).On the second postoperative day, the range of the recorded pain score was from four to seven. On the second day, the mean pain score was 6. At one week post operatively, the mean pain score was 2 as per (Table 1)

For Group A patients, there was decreasing trend in pain intensity. Most of the patients had minimum pain of 4 and 5 score on second day as compared with group B patients which had maximum numbers of patients with score 6 and 7 pain. (Table 2)

One week post operatively, the maximum no. of patients in group A had minimum pain score of 1 and 2.On the other hand, majority of group B patients had persistent high pain with score 3 and 4. At the end of one week of surgery there was obvious difference in pain score in group A and group B patients (Table 3)

We can see that pain on the first post-operative day in group A patients was having low score like 7 and 8. Whereas group B patients were having pain score with higher no with score 7 and 8. Pain on the second postoperative day was also having lower score for Group A patients. The pain experienced by the patients after one week was still significantly lower for Group A patients as compared with group B patients. Thus pain score graph with group A patients was reasonably lower. This is beauty of this incision.

Postoperative hematoma was also noted in group B patients in10 cases as compared with group A patients having nil.

Operative time: Range of operative time was between 30 to 90 minutes in both groups. The average operating time for all the patients in group A remained was 45 minutes. (Table 6).Similarly average operating time for group B was 60 minutes. The length of the operation was also statistically in favor of Group A.

Hospital stay: There was range of hospital stay between 1 to 4 days. (Table 7).The majority of the patients in group A remained hospitalized for 1 to 2 days where as patients in group B had hospital stay from 3 to 4 days due to having more pain..

Incisional hernia: Overall incisional hernia remained around 3%.All three cases were noted in group B cases. Whereas we lost three patients during the follow up.

Table 1:

Pain score on Day 1	**5.00**	**6.00**	**7.00**	**8.00**
Group A (50)	20	15	9	6
Group B (50)	10	18	10	12

Table 2

Pain score on Day 2	**5.00**	**6.00**	**7.00**	**8.00**
Group A (50)	15	20	8	7
Group B (50)	7	8	15	20

Table 3

Pain score on week 1	**1.00**	**2.00**	**3.00**	**4.00**
Group A (50)	20	25	4	1
Group B (50)	5	10	15	20

Table 4:

Overall operating time (min)	**30**	**45**	**60**	**90**
Group A (50)	10	33	5	2
Group B (50)	5	15	20	10

Table 5:

Length of hospital stay (days)	**1**	**2**	**3**	**4**
Group A (50)	20	22	6	2
Group B (50)	7	13	21	9

DISCUSSION

Mini open cholecystectomy is the latest addition in to various methods used for cholecystectomy. Muscle sparing mini open cholecystectomy in comparison with rectus muscle cutting technique is quoted less frequently in the literature. Its results are comparable with laparoscopic cholecystectomy. This technique has its role to play in the biliary surgery.

The present study is to compare and contrast the outcome complications resulted in two techniques for cholecystectomy. There is significant difference in terms of operative time, post-operative wound pain, hospital stay and late complications such as incisional hernia. The patients in group A needed minimum amount of analgesia as compared with group B patients. This is due to muscle cutting effect in group B patients. The findings in this study are comparable with the study published by Assalia in 1993.This also indicated minimum requirement of analgesics in mini open cholecystectomy with muscle sparing incision[1]. Thus post-operative pain is minimum with this technique[2].

Similarly chances of hematoma formation are more in muscle cutting incision[3]. Another favorable point for this technique is about common bile duct can easily be assessed with this technique[4]. Hospital stay is also minimum in patients with muscle sparing incision with resultant less post-operative pain and minimum incidence of hematoma formation. Thus patients in group B has long duration of hospital stay[5] with increased incidence of hematoma formation (Table 7)[2,3]. There is no need of conversion of procedure in this technique. This surgery can be undertaken with previous abdominal surgery[6]. .For obese patients mini open procedure is generally not good. These patients can be recommended for laparoscopic cholecystectomy[22].

Operative time is short in muscle sparing mini cholecystectomy as extra time is saved which is utilized for muscle cutting incision (Table 4). All the drawbacks of the open cholecystectomy can be overcome by this muscle sparing technique. In view of decreased hospital stay and decreased pain, cost of the surgery will be reduced[21]. The overall comparison of two techniques revealed that muscle retracting technique is far better than muscle cutting in terms of operative time, post-operative pain, wound hematoma, length of hospital stay & incisional hernia. This is happily tolerated by the patients but counseling is needed to explain the procedure.

CONCLUSION

There are clear benefits noted in the technique with muscle sparing mini open cholecystectomy. Other benefits are decreased post-operative pain, hematoma formation and operative time with decreased hospital stay in favor of technique with muscle sparing. There is adequate evidence to say that this muscle sparing mini open cholecystectomy

is much better option with negligible complications and minimum wound sepsis.
It is concluded that muscle sparing technique is for better.

REFERENCES

1. Syrakos, T, Antonitsis,P, Zacharakis, E, et al. Small-incision (minilaparotomy) versus laparoscopic cholecystectomy: a retrospective study in a university hospital. Langenbeck's Archives of Surgery, Volume 389, Number 3, 2004.
2. Assalia A, Schein M, Kopelman D, Hashmonai M. Minicholecystectomy vs conventional cholecystectomy: a prospective randomized trial--implications in the laparoscopic era. World J Surg. 1993.
3. Schmitz R, Rohde V, Treckmann J, Shah S. Randomized clinical trial of conventional cholecystectomy versus minicholecystectomy. Br J Surg. 1997 December
4. Barkun JS, Barkun AN, Sampalis JS, Fried G, Taylor B, Wexler MJ, et al. Randomised controlled trial of laparoscopic versus mini cholecystectomy. The McGill Gallstone Treatment Group. Lancet 1992; 340(8828):1116–9.
5. Kunz R, Orth K, Vogel J, Steinacker JM, Meitinger A, Bruckner U, et al. Laparoscopic cholecystectomy versus minilap- cholecystectomy. Results of a prospective, randomized Study. Chirurg 1993; 64(5):427–8.
6. Leget WP. Ambulatory cholecystectomy without disability.
7. Arch Surg 1990; 125:1434–5.
8. Olsen DO. Mini-lap cholecystectomy. Am J Surg 1993; 165(4):440–3.
9. McMahon AJ, Russell IT, Baxter JN, Ross S, Anderson JR,
10. Morran CG, et al. Laparoscopic versus minilaparotomy Cholecystectomy a randomized trial. Lancet 1994; 343:135–8.
11. Timoshin AD, Vinnitsky LI, Shestakov AL, Poroikova MV, Vorobyeva NT. Assessing the severity of surgical injury at Various access cholecystectomy. Annali Khirurgii 1999; 6:112–5.
12. Shalimov AA, Kopchak VM, Dronov AI, Todurov IM, Khomiak IV, Chernyi VV, et al. Cholecystectomy by minilaparotomy access. Retrospective analysis of the 10-year Work. Klin Khir 2001; 5:12–5.
13. Ros A, Gustafsson L, Krook H, Nordgren CE, Thorell A, Wallin G, et al. Laparoscopic cholecystectomy versus minilaparotomy cholecystectomy: a prospective, randomized, Single-blind study. Ann Surg 2001; 234(6):741–9.
14. Ros A, Carlsson P, Rahmqvist M, Ba¨ckman K, Nilsson E. Nonrandomised patients in a cholecystectomy trial: Characteristics, procedures, and outcomes.BMCSurg 2006; 6:17.
15. Dubois F, Berthelot B. Cholecystectomy through minimal Incision. Nouv Presse Med 1982; 11(15):1139–41.
16. Moss G. Mini-trauma Cholecystectomy. J Abdom Surg 1983; 66:76.
17. Merrill JR. Minimal trauma cholecystectomy (a no touch Procedure in a well). Am Surg 1988; 54:256–61
18. Pelissier EP. A technique of cholecystectomy by minilaparotomy without cutting muscles. Ann Chir 1990; 44: 521–3.
19. Prudkov MI, Beburishvili AG, Shulutko AM. Minilaparotomy with elements of open laparoscopy in surgical treatment of calculous cholecystitis. EndoskopocheskaiaKhirurgiia 1996; 2:12–7.
20. Shulutko AM, Danilov AI, Markova ZS, Kornev LV. Minilaparotomy in surgical treatment of calculous Cholecystitis. Khirurgiia (Mosk) 1997; 1:36–7.
21. Rozsos I, Rozsos T. Micro and modern minilaparotomy Cholecystectomy. Acta Chir Hung 1994; 34:11–6.
22. Weber DM. Laparoscopic surgery: an excellent approach in Elderly patients. Arch Surg 2003; 138(10):1083–8.
23. Morton CE. Cost containment with the use of ''minicholecystectomy'' and intraoperative cholangiography. Am Surg 1985; 51(3):168–9.
24. Goco I, Chambers L. Dollars and cents: Minicholecystectomy and early discharge. South Med J 1988; 81:162.