Classical Laparoscopic Cholecystectomy (CLC) versus Mini Laparoscopic Cholecystectomy(MLC). Is It Worthy?

Yasser Fawzy Zidan, Sahir Mahir Al-Azawii, Muthanna Asaad Al-Sharbaty

ABSTRACT:

BACKGROUND:

Laparoscopic chohecystectomy is the standard operation for cholelithiasis and replaced the classical open cholecystectomy as it has better outcome.

OBJECTIVE:

The purpose of this study is to make a comparison between classical laparoscopic cholecystectomy (CLC)and Mini laparoscopic cholecystectomy (MLC).

PATIENTS AND METHODS:

This study was conducted in Al-Jumhoori Teaching Hospital during the period from 10th February till 15th may 2019. It involved 30 patients with symptomatic gallstones randomly divided into 2 groups (the first group treated with CLC while the second group treated with MLC);the intra and post operative complications were recorded for comparison.

RESULTS:

Thirty patients involved in this study and divided randomly in two groups ;Group (A) age (average 38 years)and their BMI (average 36 kg\m^2) underwent CLC ,while group (B) age (average 28 years) and their BMI (average 31kg\m^2). The mean operative time in CLC was 42 minute while MLC recorded time was 51minutes. The MLC group has less post operative pain, better cosmetic results with comparable hospital stay ,but two cases converted from MLC to CLC.

CONCLUSION:

MLC can be performed safely and although it takes more time than CLC ,but has less post operative pain and more patient satisfaction with comparable hospital stay

KEYWORDS: Mini laparoscopic cholecystectomy, needlescopic cholecystectomy, scarless cholecystectomy.

INTRODUCTION:

Laparoscopic surgery is a revolution in surgical operations, this new chapter of surgical history allows surgeons to perform different procedures though small incisions [1]. Laparoscopic cholecystectomy (LC) was first introduced by Mune followed by a spread in France and the USA, Later on, LC became the gold standard treatment for cholelithiasis and the most commonly performed elective procedure [2,3].

Minimal invasive procedures continued to evolve and surgeons kept on trying their best to perform the same procedures using fewer incisions to minimize trauma, pain, hospital stay time and body distortion.

However, decreasing the number of operation ports to 3, 2, or eve a singe port may compromise surgery and makes it difficult to perform [4,5,6].

Mini Laparoscopic Cholecystectomy(MLC) on the other hand, exposes patients to minimum trauma without affecting vision or ergonomics. A number of trials have been performed but they were limited due to the cost of small instruments, poor vision and small jaws they provided. Modern instruments overcome all these imitations and offer convenient tools for this type of operations [7].

Al-Jumhoori Teaching Hospital, Mosul, Nineveh\ Iraq

The old routine operations of open cholecystectomy have been replaced by CLC (Classical Laparoscopic Cholecystectomy) as it leads to less pain and shorter hospital stay with better cosmetic results. This is due to the fact that it has minimal invasion as compared with open surgery. It is therefore reasonable to suggest that performing surgery through MLC may offer better outcomes [8.9].

AIM OF STUDY:

The aim of this study is to compare between classical laparoscopic cholecystectomy (CLC) and Mini laparoscopic cholecystectomy (MLC) in terms of intra operative and post operative results.

PATIENTS AND METHODS:

This study was conducted in Al-Jumhoori Teaching Hospital during the period from 10th February till 15th may 2019. It involved 30 patients with symptomatic gallstones randomly divided into 2 groups (15 patients in each group).

- Group (A); their age 22-57 years (average 38 years) and their BMI 27-42 kg/m^2 (average 36 kg/m^2). They had CLC which was performed by two (10 mm) ports and two (5 mm ports). Pneumoperitoneum was performed by verse needle, and after intra-abdominal assessment, the procedure started by opening a nip in the peritoneum near infundibulum of gall bladder and Calot's triangle.

Dissection was done by hook and Maryland to identify the critical view of safety (cystic artery was identified and controlled by monopolar cautery or clips and the cystic duct was identified and double clipped before division). Finally, the gall bladder was removed from epigastric 10 mm port.

- Group (B): 19-42 years (average 28 years) and their BMI 23-41 kg/m^2 (average 31 kg\m^2). They had MLC performed using one (10 mm) invisible trans umbilical port and three (3mm) ports with 2.7 mm instrument from Karl Storz ^{R}. These ports were positioned a little higher than that of CLC to avoid damage to instruments. The principles of safety were also applied in MLC with a difference that the cystic artery was identified and controlled by monopolar cautery used proximally and distally before division and the cystic duct was identified and ligated by intra corporeal knots 2/0 silk before division. Finally, the gall bladder was removed from its bed using monopolar cautery and extracted from the umbilical port (during extraction 3 mm telescope was used in the lateral port meaning that the gall bladder was removed under direct vision).

These patients were asymptomatic in the last 3 weeks and their ultrasound examination shows no signs of acute cholecystitis, they were prepared for surgery after informing them and taking their consent and the operation was performed under general anesthesia by the same surgical team.

The 3mm port was not sutured and the umbilical wound was sutured by subcutaneous 2/0 vicryl. Drain was not routinely used and post-operative analgesia was given in the form of paracetamol 1gm vial and pain assessment was performed using visual analogue scale(VAS).

The videos of all surgical procedures were recorded in addition to operative time, intra and post-operative complications in addition to hospital stay and cosmetic results. Permission from Ethical local committee in Ninwa health sector and informed consent from patients were obtained after full discussion of the procedures and available options. Post-operative assessment was performed and the patients were followed up for 1 month.

RESULTS:

Age and BMI: The thirty patients involved in this study and divided randomly in two groups have different age and BMI values. Group (A) age 22-57 years (average 38 years and their BMI 27-42 kg\m^2 (average 36 kg\m^2) while in group (B), the ages were 19-42 (average 28 years) and their BMI 23-41 kg\m^2 (average 31kg\m^2) and there is statistically significant difference between both groups with a p-value 0.0086 and 0.0041 respectively.

Operative time: the MLC takes more time to be performed. The operative time in CLC was 21-71 minutes (average 42 minute) while MLC recorded time was 29-69 minutes (average 51minutes). The first 4 cases take longer time as they are the beginning of a learning curve as shown in figure (1). Although MLC is 20% longer in time, but this difference is not statistically significant (p-value 0.0532).

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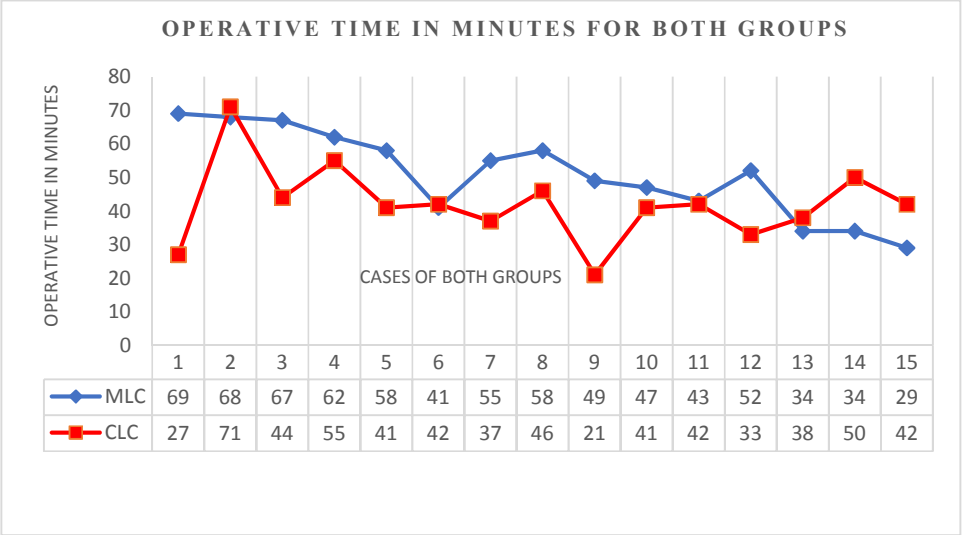


	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
MLC	69	68	67	62	58	41	55	58	49	47	43	52	34	34	29
CLC	27	71	44	55	41	42	37	46	21	41	42	33	38	50	42

Figure (1):Shows operative time in both groups.

Post-operative pain: depending on the visual analogue scale, the pain score in CLC was 4-9 (average 7) while in MLC it was 3-7 (average 5). This means that there is a statistically significant difference (p-value 0.0035).

Hospital stay: the MLC patients stayed in hospital for 8-23 hours (average 13 hours) while it was 6-23 (average 12 hours) in CLC and there is no statistically significant difference between both groups (p-value 0.6376).

Complications: 2 cases of MLC were converted into CLC (1st one due to bleeding from cystic artery which was controlled by clip and the 2nd case because the surgeon needed lahey for dissection of Calot's triangle) and no other serious complications were recoded; these results were summarizes in figures (2-7).

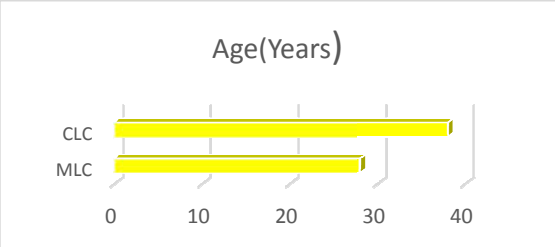
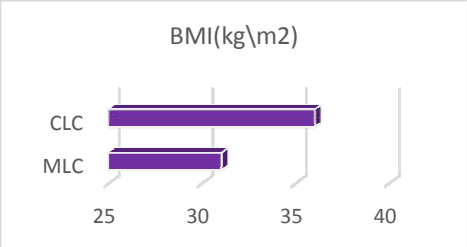
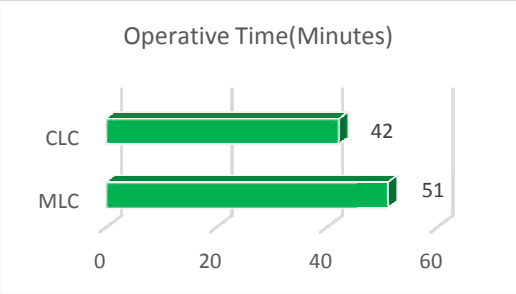


Figure (2):Average age in both groups.



Figure(3):Average BMI in both groups.



Figure(4): Average operative time in both groups.

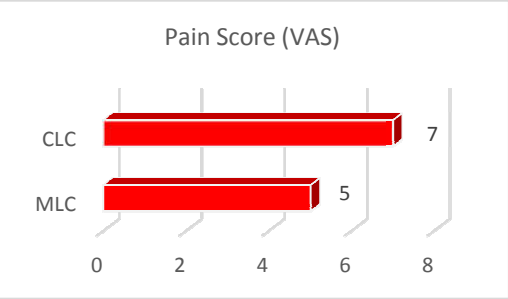
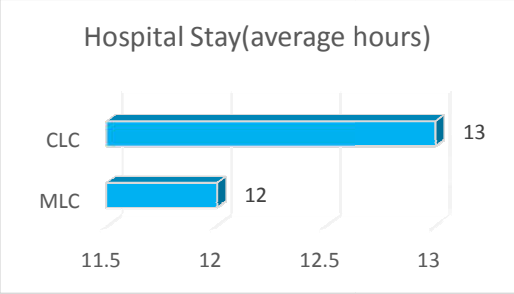
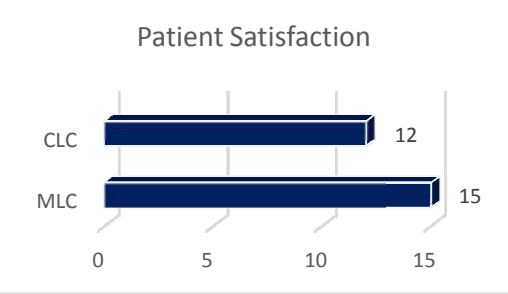


Figure (5):average pain in both groups.



Figure(6):Average hospital stay in both groups.



Figure(7):Average patient satisfaction in both groups.

DISCUSSION:

There are many prediction factors of difficult LC which was reflected on prolonged operative time and among these factors are age and obesity [10]. There is statistically significant difference between the two groups in this study, but it is necessary to mention that many studies show that difficult LC is associated with old age [11,12] while analysis of 24000 cases of The national surgery database (American College of Surgeons National Surgical Quality Improvement Program) suggests that difficult cases were recorded in younger patients[13]. So, it is assumed that the age difference is not important in this small sample study.

Overweight and obesity increase difficulty and it is generally accepted that a BMI over 27 kg\m^2 makes LC difficult to perform [14]. In this study, both groups are obese but the BMI is larger in CLC group which may affect surgery.

Prolonged operative time referred to LC takes more than 60 minutes [13]. In this study, MLC takes an average of 51 minutes compared to 42 minutes in CLC group. Although this is a big difference with more than 20% longer in time, but statistically it is not significant and these results are comparable with Haris who found a non-significant difference between both groups but the operative time was shorter (37 versus 38 minutes) [15].

Also, Sarli et al. (45 vs 50 minutes) 16 while Deniz mention a significantly shorter operative time (47 versus 70 in favor of MLC which can be explained by high selectivity of patients[17]; Our average operative time is shorter than that in Lee (68 minutes) [18].

Post-operative pain is mild after MLC and less than CLC and although the incision size is one of the factors involved in post-operative pain (19), but it is not the only factor and the results are comparable with Lai et al. (20). This less post-operative pain is reported in the 1st 24 hours as mentioned by Novistsky et al.(21).

There is no significant difference between MLC and CLC (12 VS 13 hours) in hospital stay and both were performed as a day case surgery and these results are comparable with Gupta et al.(22) and Look et al.(23) while Lai et al.(20) reported shorter hospital stay.

Two cases were converted from MLC to CLC (13%), one case of bleeding controlled by clip and the other one due to the need of Lahey dissection of Calot's triangle, Thakur et al. (24) mention a conversion rate of 24% while Haris shows no conversion (15).

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Conflicts of interest: There are no conflicts of interest to declare.

Ethical approval: obtained from local ethical committee.

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