ISSN: 0975-833X

Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 15, Issue, 03, pp.24029-24032, March, 2023
DOI: https://doi.org/10.24941/ijcr.44959.03.2023

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

REVIEW ARTICLE

LAPAROSCOPIC CHOLECYSTECTOMY; THE NUMBER AND TOPOGRAPHIC DESIGN IN PORT MAKING, A MINI REVIEW

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ARTICLE INFO

Article History:
Received 14th December, 2022
Received in revised form
17th January, 2023
Accepted 05th February, 2023
Published online 29th March, 2023

Key words:

Laparoscopy Cholecsytectomy, Techniques, Ports, Sites, Number.

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ABSTRACT

Laparoscopic cholecsytectomy has gained the title of gold standard treatment for gall stone diseases. Over the last thirty years, there has been a tremendous progress in the technical advancement of this procedure. With the advent of standard four port technique, the surgeons progressed with their different modifications and innovations viz a viz the topography, design and the number of ports. This is what led to the growing concept of reduced port surgery in laparoscopic cholecsytectomy. The technical journey in laparoscopic cholecsytectomy made us to travel a distance from four port, three port, two port to currently single port surgery. Subsequently the topography and site for port making on abdomen also underwent different modifications. The site for epigastric port is important among all ports as it is the main working port in most of the techniques used for laparoscopic cholecsytectomy. Its accurate placement on the abdomen adds technical ease to the procedure. Herein we present a minireview from literature on laparoscopic cholecsytectomy with different modifications to number, site and design of ports with special emphasis on our contributions in this regard.

Citation: ***Dr. Mushtaq Chalkoo, Dr. Aamir H Hela, Dr. Mehraj-ud-din Ganaie, Dr.Suryavel, S., Dr.Ghulam nabi Guroo and Dr.Vikash Gupta,*** **2023.** "Laparoscopic cholecystectomy; the number and topographic design in port making, A mini review*". International Journal of Current Research*, 15, (03), 24029-24032.

INTRODUCTION

This manuscript highlights the advantages of reduced port laparoscopic cholecsytectomy. It highlights different techniques with their advantages viz a viz the number, site and design of ports in the procedure. It also highlights the importance of site specific epigastric port (Chalkoo's point) in laparoscopic cholecystectomy.

MINIREVIEW

The first laparoscopic cholecystectomy has been dated to 1987[1]. Laparoscopic approach offers many advantages over open approach like shorter hospital stay, early return to activity, less scars, good cosmesis, reduced post operative adhesions and less surgical site infections[2]. Since its inception different modifications have been devised in order to reduce the number and size of ports during the surgery. The reduced number and size of ports from standard four ports has led to reduced analgesic use, reduced number of scars and better cosmesis without compromising the patient safety. The most recent modification is single incision or single site laparoscopic cholecsytectomy.

Traditional way of performing the laparoscopic cholecsytectomy is by using four ports. The first 10mm optical port is placed around umbilicus. Another 10mm port is placed in subxiphoid region. Two additional 5mm ports are placed in right subcostal area one in mid clavicular line and another in anterior axillary line[3]. The fourth port is used to retract the fundus of gall bladder towards the patient's right shoulder. The most important port used as dominant working port happens to be the epigastric port. However placing the epigastric port is a tricky job and many techniques and ways have been described for placement of this port[4, 5]. From our experience of working with laparoscopic cholecsytectomy we observed that a small variation from the ideal site of epigastric port makes the easy procedure difficult. This is what made us interested in knowing and understanding the exact location of epigastric port. While perusing the literature, we strongly felt that much has not been talked about the point specific epigastric port placement in laparoscopic cholecystectomy. Many references were encountered which mention the site of epigastric port as 3 cm below the subxiphoid and few mentioned it to be at upper 1/3rd and lower 2/3rd distance from xiphoid to umbilicus[6]. In other place it was mentioned as three finger breadths below the xiphoid process which varies from surgeon to surgeon[7]. When we applied it to our clinical practice, we felt it becomes difficult to locate the site of

epigastric port and time consuming especially when teaching to young surgeons. Furthermore, the word "epigastric", refers to a region and not to a point location for the port, which might be eased by naming the point in epigastrium and for convenience, we referred it as "the chalkoo's point", for epigastric port which is easy to fashion, speedy to make and reproducible[8]. We took up this study simply to provide the surgeon, especially a trainee in laparoscopy, a point specific anatomy of epigastric port and a speedy maneuver for fashioning it on the patient. The chalkoo's point is the intersection of two anatomical lines; one being the sagital line that passes through the xiphoid process and umbilicus and second line passing through the tips of 9th costal cartilage(Fig 1). The maneuver of designing the epigastric port that guides the beginner to its near accurate placement is shown in Fig 2.

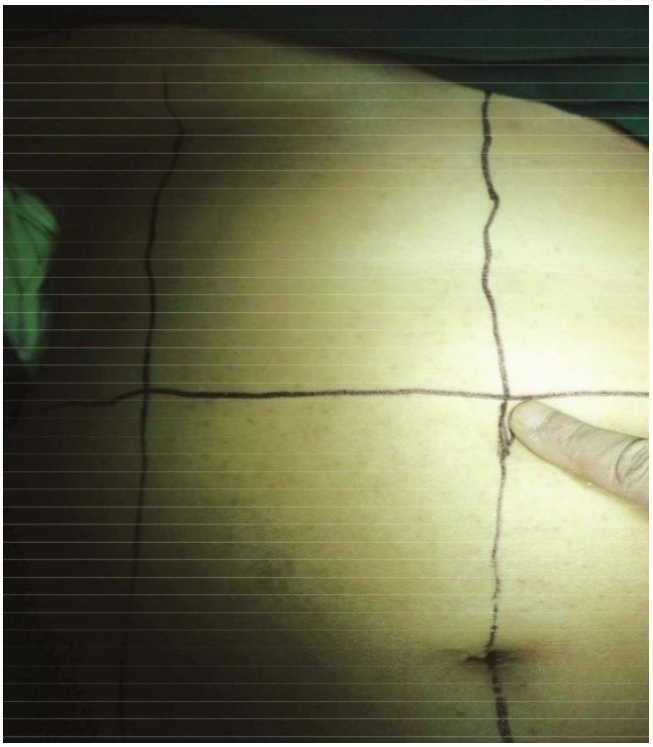

Fig 1. The location of Chalkoo's point for epigastric port

Fig 2. The Manuver to locate Chalkoo's point for epigastric port

Fig. 3.The Port position for Three port laparoscopic Cholecystectomy (Chalkoo's modification)

Fig 4. Post operative picture of three port laparoscopic cholecystectomy

Fig 6. The port placement for two port laparoscopic cholecystectomy with Chalkoo's modification

Fig 6. Post operative picture of two port laparoscopic cholecystectomy

This point specific approach adds safety and saves time, causes less bleeding, easy to teach, needs less thrust and angulates to right of falciform ligament thus adding technical ease to surgeon. The surgeon's quest to reduce the number of ports has led to several technical modifications. The use of most lateral port used to retract the fundus of gall bladder in standard four port laparoscopic cholecystectomy was challenged[9,10]. Many surgeons have developed their own techniques for three port laparoscopic cholecsytectomy[11,12,13]. Our modification for three port laparoscopic cholecsytectomy involves the use of 10mm optical port at 4 o clock position on the left lip of umbilical scar. The second working 10mm port is placed at conventional subxiphoid region. The third 5mm working port is placed at 8 o clock position of umbilical scar on the right lip of umbilicus (Fig 3). The third port around umbilicus at 8 O clock position allows to retract the infundibulum and perform dissection safely.

This modification of placing the third port showed good results and patient satisfaction and one assistant on right side of patient is spared. Besides, the third port at umbilicus gives it the appearance of two ports only[14]. Even in three port technique, the necessity of third port was challenged and various techniques other than making a port were utilised for providing the necessary retraction. Some have used two to three traction sutures taken using the laparoscopic needle holder and passed through fundus, body and infundibulum of gall bladder. These sutures were brought through the abdominal wall and held in hemostatic forceps to provide the required retraction[15,16]. Some have added an additional left sided traction stitch to hartman's pouch to increase the range of movement of gallbladder neck (puppet show technique)[17]. We have also tried our hands in our institution using port closure needle[18].

Two 10mm ports are placed in umbilical and epigastiric regions in conventional ways. A stab incision using 11mm knife is made at the site of third port and port closure needle is screwed into the abdominal cavity under vision. This port closure needle is now used to hold the hartman's pouch and give necessary traction (Figure 5,6). Our modification of doing two port laparoscopic cholecsytectomy is feasible, reproducible and easily practicable. It also avoids the pain and scar of 5mm port. Conclusion: Reduced port surgery for laparoscopic cholecystectomy is gaining importance viz-a-viz reduced scars and cosmesis. We believe there is demand for reduced port surgery from our patient population especially young females with gall stone disease.

However, we recommend these procedures be taken after attaining a good amount of experience by the expert laparoscopic surgeons. There is further much scope in this field of surgery.

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