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Original Research Article

Pairing surgery with laparoscopic cholecystectomy in single sitting

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ABSTRACT

Background: With advancement in laparoscopic surgery a number of surgical procedures can be performed combined with laparoscopic cholecystectomy for treating coexisting abdominal pathologies in a single surgery. We evaluated the safety and efficacy of such surgeries when paired in a single sitting with laparoscopic cholecystectomy.
Methods: A retrospective review of all patients who had undergone combined procedures with laparoscopic cholecystectomy during the period from May 2016 to July 2019 at Maxx life hospital, Bathindi, Jammu was performed. 1200 laparoscopic cholecystectomies were performed during the study period. Of these, 400 cases were combined with another procedure, out of which, 348 were combined laparoscopic procedures and 52 were open procedures combined with laparoscopic cholecystectomy.
Results: All the combined surgical procedures were performed successfully. The mean operative time was 70 minutes (range 50-180 min). The longest time was for the patients who had undergone laparoscopic cholecystectomy with Laparoscopic assisted vaginal hysterectomy (180 min). The mean hospital stay was 2 days (range 1-5 days).
Conclusions: As long as the basic surgical principles and indications for combined procedures are adhered to, more patients with concomitant pathologies in the abdomen can enjoy the benefits of minimal access surgery and also one-time anaesthesia without significant addition in post-operative morbidity and hospital stay.

Keywords: Abdomen, Combined procedures, Concomitant pathologies, Laparoscopic cholecystectomy, Morbidity, Minimal invasive

INTRODUCTION

The application of minimal access to general surgical practice has revolutionized the field of general surgery. Since the first laparoscopic cholecystectomy performed around 3 decades ago, minimally invasive techniques have been applied to an increasing number and variety of surgical procedures. Laparoscopic cholecystectomy has not only superseded open cholecystectomy as the preferred method of gall bladder removal, but has also inspired surgeons to apply laparoscopic technique for the treatment of numerous other conditions.[1] The laparoscope provides an excellent view of the entire abdomen by appropriate port placement, thus, opening up the possibility of combining two or more procedures in a single surgery. Combining procedures can be a modality of choice for concomitant pathologies in the abdomen (intra or extra peritoneal spaces). Apart from the benefits of minimal access approach, namely shorter hospital stay, less post-operative pain and morbidity, early return to work and better cosmesis, it is now possible to combine 2 or more surgical procedures done in different parts of the abdomen.[2,3] Moreover, pairing surgery with Laparoscopic cholecystectomy in single sitting is not only beneficial to the patient, but also appears to be cost effective both to the patient as well as to the hospital.[4]

In combination laparoscopic procedures, the role of operating surgeon is most important and should be tried

only by an experienced laparoscopic surgeon. It is also very important to have a good camera person and assistant in combined surgical procedures.

Objective of the study was to establish the benefits to the patient of pairing surgery with laparoscopic cholecystectomy in one sitting for concomitant abdominal pathologies in the form of single hospital admission, single preoperative evaluation, single time anesthesia and one-time post-operative medication along with less expenditure and substantially less perioperative morbidity than would've been expected with discrete procedures.

METHODS

This retrospective study was conducted at Maxx Life Hospital, Bathindi, Jammu from May 2016 to July 2019, wherein we analysed the data of 400 patients who underwent procedures combined with laparoscopic cholecystectomy out of total 1200 cases. Demographics, case notes, operation records and follow-up data of these patients were analysed. The combination included laparoscopic cholecystectomy, various hernia repairs including ventral and umbilical, total extraperitoneal (TEP) and open inguinal hernia, gynecological procedures like ovarian cystectomy, tubal ligation, laparoscopically-assisted vaginal hysterectomy (LAVH) and abdominal hysterectomy and urological procedures like laparoscopic nephrectomy, laparoscopic ureterolithotomy, ureteroscopy (URS), open pyelolithotomy and retro-pubic prostatectomy.

Selection criterion for combined procedure was the absence of sepsis. In the presence of a contaminated or potentially contaminated case of acute cholecystitis, an additional clean surgical intervention was not performed. For example, laparoscopic repair of ventral hernia was deferred if there was empyema of the gallbladder. In this study, the exclusion criterion was difficult cases of cholelithiasis having thick walled or edematous gallbladder or lot of adhesions that took more than regular operative time, i.e., more than 1 hour. Moreover, medical morbidities like coronary artery disease, severe airway obstructive disease and severe renal impairment were also considered as relative contraindications to perform combined laparoscopic procedures where in only laparoscopic cholecystectomy was done and the surgical intervention for the coexisting pathology was deferred.

Patients had undergone all the basic investigations for laparoscopic cholecystectomy including liver function tests and ultrasound of abdomen. Patients with gynecological pathologies also had thorough gynecological examination and relevant biochemical investigations such as serum Ca-125 for ovarian mass and Papanicolaou tests prior to hysterectomy. Patients undergoing urological surgery such as retro-pubic prostatectomy underwent uroflowmetry and PSA estimation. Patients who were undertaken for other urological procedures in combination with laparoscopic cholecystectomy were subjected to intravenous urography and renal function tests. The patients with hydatid cyst liver discovered on ultrasonography had CT scan abdomen and other serological tests to confirm the diagnosis and plan surgery.

In all cases, laparoscopic cholecystectomy was done first followed by the second procedure, except for cases of TEP repair of inguinal hernia where TEP was performed first. Any variation in the port placement and extra ports, if needed, were made according to surgical procedure for the coexisting pathology. In procedures that required working in the pelvis, extra ports were made, whereas for procedures like TEP, both surgeries (laparoscopic cholecystectomy and TEP) were done with the usual ports and the umbilical telescope port initially used for extra-peritoneal space and then was used for intra-peritoneal procedure. In 1 case, 4 simultaneous surgeries were performed laparoscopically which included laparoscopic cholecystectomy, laparoscopic ovarian cystectomy, laparo ligation of fallopian tubes and laparoscopic ventral mesh hernioplasty. The services of other specialists, such as urologists and gynecologists were utilized when required. As per protocol, all patients who underwent combined laparoscopic procedures were given injection of diclofenac sodium in I.V. drip at the time of induction and repeated 8 hourly and later followed by oral analgesics for 3-5 days. Antibiotics in the form of injection ceftriaxone was administered preoperatively and repeated after 12 hours during the hospital stay and then shifted to oral cefuroxime for 5-7 days.

RESULTS

In the current study, the most common procedure was ovarian cystectomy performed in 120 patients. Appendicectomy was performed in 60 patients. Adhesiolysis was performed in 30 cases. Laparoscopic assisted vaginal hysterectomy was performed for dysfunctional uterine bleeding or for symptomatic fibroids in 3 patients, whereas abdominal hysterectomy was done in 28 patients along with laparoscopic cholecystectomy, Table 1 shows details of various procedures combined with laparoscopic cholecystectomy.

There was no mortality in our series. The mean operative time was defined as the time taken from the beginning of surgery, i.e., the time incision is made until the completion of surgery, i.e., closure of surgical wound. The mean operative time of the combined surgical procedure was shorter than the total time taken if both the procedures were done separately. In our study, the mean operative time was 70 minutes (range 45 to 180 minutes). The longest time was taken for the patients who underwent laparoscopic assisted vaginal hysterectomy (180 min) along with laparoscopic cholecystectomy as shown in Table 2.

Table 1: Combination of various procedures with laparoscopic cholecystectomy.

Combined procedures	No. of patients
Laparoscopic cholecystectomy with ovarian cystectomy	120
Laparoscopic cholecystectomy with appendicectomy	60
Laparoscopic cholecystectomy with adhesiolysis	30
Laparoscopic cholecystectomy with tubal ligation	30
Laparoscopic cholecystectomy with abdominal hysterectomy	28
Laparoscopic cholecystectomy with diagnostic laparoscopy	21
Laparoscopic cholecystectomy with umbilical hernia	20
Laparoscopic cholecystectomy with open pyelolithotomy	19
Laparoscopic cholecystectomy with oophorectomy	16
Laparoscopic cholecystectomy with open inguinal hernia repair	12
Laparoscopic cholecystectomy with incisional hernia repair	11
Laparoscopic cholecystectomy with URS	10
Laparoscopic cholecystectomy with liver biopsy	6
Laparoscopic cholecystectomy with LAVH	3
Laparoscopic cholecystectomy with TEP	3
Laparoscopic cholecystectomy with retro-pubic prostatectomy	3
Laparoscopic cholecystectomy with laparoscopic nephrectomy	3
Laparoscopic cholecystectomy with laparoscopic liver hydatid cystectomy	3
Laparoscopic cholecystectomy with laparoscopic ureterolithotomy	2

Table 2: Time taken in various combined procedures.

Combined procedures	Time (in minutes)
Laparoscopic cholecystectomy with ligation	45
Laparoscopic cholecystectomy with liver biopsy	48
Laparoscopic cholecystectomy with diagnostic laparoscopy	50
Laparoscopic cholecystectomy with appendicectomy	70
Laparoscopic cholecystectomy with ovarian cystectomy	80
Laparoscopic cholecystectomy with open hernia repair	85
Laparoscopic cholecystectomy with lap hernia repair	100
Laparoscopic cholecystectomy with abdominal hysterectomy	110
Laparoscopic cholecystectomy with open ureterolithotomy	115
Laparoscopic cholecystectomy with prostatectomy	120
Laparoscopic cholecystectomy with open pyelolithotomy	125
Laparoscopic cholecystectomy with laparoscopic nephrectomy	150
Laparoscopic cholecystectomy with LAVH	180

The duration of various parameters such as mean operative time, time of resumption of oral intake, requirement of injectable analgesia, the mean hospital stay and time to return to routine work was more for combined procedures as compared to single procedure of Laparoscopic cholecystectomy as depicted in Table 3.

The pain experienced in the post-operative period was measured based on the requirement for injectable analgesics. The mean hospital stay of the patients undergoing combined procedure was dependent upon the type of surgery performed and the more morbid condition. The patients undergoing open surgery along with laparoscopic cholecystectomy had to stay longer (3-5 days) than the patients who had only laparoscopic combined procedures (1 day). The majority of the patients were discharged on the first post-operative day. The duration of hospital stay for the patients who underwent both the procedures laparoscopically was similar to the duration of stay of the patients who had undergone a single procedure. Oral intake was started after a mean of 12 hours. Oral liquids were started on the same day in patients who underwent hernia repairs, laparoscopic appendicectomy, diagnostic laparoscopy, ovarian cystectomy and retro-pubic prostatectomy. Patients of hysterectomy and pyelolithotomy were started on oral intake on the first post-operative day. Of the 400 patients who underwent combined surgical procedures in a single sitting, 18 patients developed fever in the

immediate post-operative period, 12 patients had port site hematoma, 10 patients developed port sepsis and 2 patients had urinary retention. There was no case of recurrence in the patients who underwent hernia repairs.

Table 3: Comparative study of single and combined procedures performed by minimal access surgery.

Variable	Laparoscopic cholecystectomy	Combined procedures
Mean operative time	Half an hour	1 hour 10 minutes
Resumption of oral intake	6 hours	12 hours
Requirement of injectable analgesia	12 hours	24 hours
Mean hospital stay	12 hours	48 hours
Return to routine work	72 hours	96 hours

DISCUSSION

It is more than 3 decades since Muhe performed the first laparoscopic cholecystectomy in 1985.[1] Laparoscopy has come a long way since then and today myriad procedures are performed laparoscopically. Each of the procedure performed laparoscopically benefits from decreased post-operative pain, early ambulation and early return to oral feeds, early discharge from hospital and early return to work.[2] Patient benefits from the single exposure to anesthesia, single hospital stay and single break from work. The procedures when combined have proved equally safe and efficacious as when done singularly. Moreover, pairing surgery in same sitting with laparoscopic cholecystectomy in concomitant abdominal pathologies appears to be cost effective both for patients as well as for hospital services.[4] Warren et al, in their study found that incidental appendicectomy during a cholecystectomy resulted in increased incidence of wound infections when compared to cholecystectomy alone.[5] Voitk and Lowry in their review of elective appendicectomies during cholecystectomies and abdominal hysterectomies found no increase in operative time, fever or infectious complications.[6-8] Of the gynecological procedures, patients who underwent ovarian cystectomy, oophorectomy, ovarian drilling and tubal ligation had no additional morbidity, only the patients who underwent hysterectomy had more postoperative pain.[9,10] Although umbilical and incisional hernias caused some difficulty in port placement, the subsequent mesh repair and postoperative course remained uneventful. We had no recurrence of the hernias during our follow up period (range 3 months to 3 years).[11] Wadhwa et al, in their study had a mean operative time of 62 minutes for laparoscopic cholecystectomy and ventral hernia repair. We required 70 mins for the same. Their time for laparoscopic cholecystectomy with hysterectomy was 80 minutes, while ours was 180 minutes. Post-operatively, they resumed oral liquids after 3-4 hrs and normal diet on the first postoperative day, though author started oral liquids 12 hrs post-operatively and normal diet on the first post-operative day. The mean hospital stay for laparoscopic or endoscopic procedures in their study was 2.9 days, while the mean hospital stay in our study was just 1 day. Mean operating time was slightly longer compared to their study, but their case mix was different from ours. The most common procedure in their study was laparoscopic cholecystectomy and ventral hernia repair, while ours was laparoscopic cholecystectomy with ovarian cystectomy. Wadhwa et al, found that the length of convalescence in these patients was no different than in those who had undergone single procedure. Author found no significant increase in the hospital stay or post-operative complications in the combined procedures.

CONCLUSION

Combined procedures by an experienced laparoscopic surgeon can be a modality of choice for concomitant pathologies in the abdomen. Apart from financial benefit to the patient, there are other benefits of minimal access approach, namely lesser pain and morbidity, shorter hospital stay and better anesthetic management. Combined procedures not only provide the patient all the advantages of minimally invasive surgery, but also give the additional benefits of single hospital admission, single pre-operative evaluation, single time anesthesia for surgical intervention for multiple pathologies and only one-time post-operative medication. Thus, the patient has the dual benefit of receiving surgical therapy for two coexisting pathologies concurrently while experiencing substantially less perioperative morbidity than would've been expected with two discrete procedures. In fact, procedures combined with laparoscopic cholecystectomy 'kill two pathologies with one scope', but such pairing should be considered only when surgical exposure is adequate, the patient's condition is satisfactory and operating time is not unduly prolonged.

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