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Research Article

Small Incision Open Cholecystectomy (SIOC) in the Era of Laparoscopic Surgery: A Prospective Cohort Study

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Abstract: SIOC is an alternative to laparoscopic cholecystectomy. From Jun 2012 through 2013 till Jan 2014, all the SIOC and operations performed on Gall bladder as the responsibility for surgical training (intended SIOC) were taken in to consideration in this study. 92 women and 48 men, total 140, with median age of 45 years (range 18 to 74 years) underwent cholecystectomy for symptomatic gall bladder disease. Trainee surgeons assisted by consultants performed surgery in 101 (72%) cases. 39 cases (difficult due to disturbed anatomy at Calot's triangle) were operated by consultant surgeon. The CBD was explored in 6 patients. Post op morbidity was in 06 (4.28%). Median post op stay was 01 day. Mean total (pre op & post op) hosp stay was 3.1 days. SIOC for all patients is compatible with short hospital stay, evidence-based gallbladder surgery for the training of surgical residents.
Keywords: SIOC – Small Incision Open Cholecystectomy

INTRODUCTION

Cholecystectomy is the most commonly performed elective operation [1]. It remains the standard treatment for benign gall bladder disease with proven efficacy. Calculus cholecystitis is the commonest indication for cholecystectomy as 98% of patients with symptomatic gall bladder disease are found to be harboring stone in their gall bladder [2]. Cholecystectomy remains the gold standard for benign gall bladder disease. The pain and long hospital stay associated with standard cholecystectomy is mainly due to big incision used in the standard procedure. The latest development of laparoscopic cholecystectmy, first time performed by Phylip Mouret in 1987 [1] offer's the main advantage of significant decrease in post op pain and lessened hospital stay. Soon after its introduction, laparoscopic cholecystectomy was considered the method of choice for treatment of gall stone disease, and an early consensus conference conducted that it might offer economic advantages over open surgery [3]. However, this requires costly equipment and infrastructure apart from expertise and costly consumables [4]. At that time, little information was available concerning SIOC. A less used alternative is the performance of surgery through a small incision around 5 cm long in the sub costal area which is described by many authors but not published yet [5]. Later single blind, randomized control trials have indicated that convalescence differences between laparoscopic and SIOC are small [6, 7]. In previous report from a control trial, no significant difference were observed between mini laparotomy cholecystectomy and laparoscopic cholecystectomy in terms of patient opinion of general well being , abdominal pain and scaring one year after surgery [8, 9]. Health care costs are lower after mini laparotomy surgery than after lap cholecystectomy [9 – 12]. The most important advantage is the training of surgical trainees to become the future surgeons of our country India.

Against this back ground it was appropriate to assess SIOC as a treatment for all patients with gall stone disease with responsibility of surgical training. The assessment emphasized cholecystectomy through a small incision to evaluate efficacy and decrease in post op morbidity with an aim to impart surgical education of trainees.

MATERIALS AND METHODS

140 consecutive patients reporting surgical OPD days with benign gall bladder disease with or without gall stones, admitted, investigated and followed up from Jun 2012 to Jan 2014 were included in this study. All cases were assessed clinically and by routine biochemical and radiological evaluation in regard to the presence of benign gall bladder disease and their fitness to undergo surgery. This included LFT as well as ultrasound study. The later study is particularly note worthy since the radiologist was requested to do ultrasound abdomen gall bladder, CBD, pancreas carefully. The pre op work up and the preparations were the same as per any major abdominal surgery. All cases were done under GA with

full relaxation. A small cushion was placed under the caudal portion of the rt thoracic cage in order to raise the gall bladder region. The incision was placed sub costally around 5 cm long. The incision was mostly transverse and 4 to 8 cm in length and usually over rt rectus muscle, approximately 5 cms below the xiphoid process. The abdominal muscles were partly split and partly cut transversely, the rectus muscle retracted medially. On opening the peritoneum the anatomy was first ascertained by retracting the duodenum and the transverse colon the usual way by keeping abdominal swabs under the previously placed narrow retractors. Surgery was performed the usual way by first dissecting the calot's triangle and ligating the cystic artery and cystic duct after carefully confirming the anatomy. The Gall bladder was removed in a retrograde fashion in most of cases. In some the fundus was delivered first. The wound was closed in layers. The drain was usually not used unless there were definite indications for the same. The post operative care consisted of i.v. fluids, antibiotics for two days. Patients were discharged on 02^{nd} post op day and were called back on 8^{th} day for removal of sutures. The drain when kept wear removed after 24hrs if not otherwise indicated. The patients were nursed back to normal status and reviewed after 02wks of surgery for any post op problem like pain and wound infection.

OBSERVATION AND RESULTS

- The study was conducted on 140 patients consisting of 92 females and 48 males.
- The age group ranged from 18 to 74 years.
- The most common presenting symptom was pain right hypochondrium followed by vague abdominal dyspepsia.
- Fever was present in 21 patients.
- In nine patients routine ultrasound examination revealed gall stones.
- 4 (26.66%) patients were grossly obese. 49 patients (35%) were over weight.
- Ten were having Diabetes and Ten were having hypertension.

Cholecystectomy through minimal incision was performed in 125 (89.28%). Remaining 15 patients incision was extended beyond 6cms. CBD was explored in 6 patients. CBD was dilated more than 10 mm (12mm) in one patient with multiple calculi. Trainee surgeons assisted by consultant performed surgery in 101 (72%) cases. 39 cases were performed by consultant surgeons.

Post op analgesia was determined by doses of IM pentazocin (fortwin-30mg) requirements for pain. The average requirement was 4.2mg IM injection, 3.5 was average dose for minimally invasive group and 7.4 for extended incision group.

No patient required re-exploration for post op complications. One patient was managed by ERCP CBD stone extraction and stenting for retained CBD stone.

5 patients (3.57%) had post op wound infection which responded well to appropriate antibiotics. Patients with wound infection were older than those without wound infection, mean 67 versus 54 years.

DISCUSSION

Cholecystectomy is a major surgical procedure although has a proven safety, this procedure is associated with a long post op hospital stay 7-9 days, significant post op morbidity in term of pain at operation site and long time off from work [4]. Hence, much interest has developed in minimally invasive surgery with the development of laparoscopic cholecystectomy and subsequent efforts at limiting the benefits thereof such procedures. Unfortunately, laparoscopic surgery needs costly equipment and infrastructure apart from expertise and costly consumables. Not only have that, the young surgeon after training is sent to peripheral hospitals where this facility is not available. This resulted in emergence of "Small Incision Open Cholecystectomy"(SOIC), where in the procedure is performed through small incision. Mini laparotomy cholecystectomy is usually defined as open cholecystectomy through an incision of 4-7 cms [12, 13} or less than 6 cms [14]. In this prospective series, we could perform SIOC in 97.14% of cases with incision up to 7 cms and 89.28% of cases in 6 cms incision and 47.14% of cases in 5 cms incision. This series has got similarity with other series [4-15]. In our series the medium length of incision is 7 cms similar to other series [15]. This demonstrates that surgical training and safety were prioritized in the present study and it also indicates possibilities of further improvements in reducing the length of incisions in future.

The major disadvantage of small incision is accessibility which has been overcome by means of the use of the narrow but deep retractors. Injury to cystic artery and bile ducts are described as most dreaded complications of standard as well as laparoscopic cholecystectomy where in the complications rate has been variously quoted between 2 and 6 percent [16, 17]. We have not encountered any major complications in doing the procedure. Another likely complication is that of increased wound infection because of undue retraction of wound margin and the consequent tissue damage. We have encountered only 5 cases 3.57% in 180 cases of cholecystectomies. Three cases where incision was extended beyond 7 cms. It was probably due to increased fat content of abdominal wall rather than prolonged retraction. The time factor is also not altogether different since we were able to perform the procedure within one hour in almost all cases. The operation time included intra operative cholangiography in 80% cases, CBD exploration in 4.2% cases and

training of surgical residents in 72% of all operations. The complication rate in this series was 4.28%. Out of 6 cases, 5 cases of complications were wound infection of minor clinical importance. In a randomized control trial comparing mini laparotomy cholecystectomy and laparoscopic cholecystectomy, complication rates between 3 and 20% has been observed without significant difference between the two techniques [6, 7, 18, 21]. Total hospital stay in our study was 3.1 days (mean). This figure compare favorably with a series by Jones Leo *et al*. [15]. In another big series of 12357 cholecysctectomies in Sweden, the open cholecysctectomies were 2521 [22]. The mean hospital stay was 2.7 days for lap cholecystectomy , 8.8 days for open cholecystectomy and 4.4 days for all cholecystectomies [23], approximately o1 day longer than our study.

We utilized screening program me for common bile duct stones and relied on endoscopic stone removal for one patient post operatively. Frequent use of intra op CBD exploration minimized the use of post op endoscopic sphincterotomy with its inherent risk of rare but serious complications [24]. Randomized controlled trials of open [25, 26] and laparoscopic [27, 28] cholecystectomies have shown that single stage treatment of CBD stones (cholecystectomies and CBD clearance) during the same operation, is preferable compared to bile duct clearance before or after cholecystectomy. Early surgery is optimal treatment for acute cholecystitis (within seven days of the onset of illness) [29] and in mild gall stone pancreatitis surgery should be considered within two to four weeks [30]. Surgical education should therefore prepare the trainee for emergency or open urgent gall bladder surgery. In our series, Gall Bladder was found inflamed in 12 (8.57%) cases and 16 (11.42%) cases were associated with mild calculus pancreatitis.

The main advantage of using small incision cholecystectomy for all patients is its general applicability and elimination of double learning curves. Worldwide study have shown that after introduction of lap cholecystectomy 20 to 30 percent of gall bladder operations completed openly and the patients then presented are older and have maximum co morbidities than the patients undergoing lap cholecystectomy [31, 33]. The limited exposure to open biliary surgery creates a dilemma for training of residents [34, 35]. The surgical community lacks to develop strategies to meet the growth of work load accompanying the increasing age of population [36]. Our present study indicates that SIOC is an attractive and alternative for patients [37, 38].

Value for the Cost?

Further cost utility study in comparing mini lap and lap cholecystectomy are necessary, ideally performed as expertise based randomized controlled trials [39].

CONCLUSION

Thus it will be seen that minilap cholecystectomy is a safe and easily performed procedure which does not require any sophisticated equipment. It is a patient friendly procedure and does not require the elaborate layout of lap cholecystectomy. It is also less costly and requires no special training.

Hence, open chole, with intended mini lap cholecystectomy, is compatible with short hospital stay, evidence based gall bladder surgery, and training of surgical residents.

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