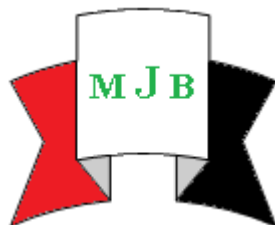


Rate and Reasons of Conversion from Laparoscopic to Open Cholecystectomy in Hilla

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Abstract

Objective: To determine the rate of conversion of laparoscopic cholecystectomy (LC) to open cholecystectomy (OC), to analyze the frequency and the reasons of conversion, and to study the possible risk factors for conversion.

Methods: A prospective study of patients submitted to LC was done from September 2005 to April 2011. There were 440 patients in the series. The inclusion criteria were: all patients with symptomatic cholelithiasis, who were subjected to LC, data recorded include number and sex of the patients, those who were converted to OC were analyzed according to their percentage from the total patients with determination of sex distribution among them. Reasons of the conversion were recorded and the percentage of each reason was determined. These data were analyzed and evaluated under the light of other similar studies in the field.

Results The recorded 440 patients submitted to LC included 360 females and 80 males. A total number of patients converted OC was 26 patients (5.9%), of them there were 16 males (61.5%), 10 females (38.5%). Those who were converted comprised 13 patients (50%) due to failure to identify a clear anatomy, 5 patients (19.2%) due to thick wall gall bladder (GB) filled with stones, 4 patients (15.3%) due to bleeding, 3 patients (11.5%) due to suspicion of biliary injury, 1 patient (3.8%) due to Mirizzi's syndrome. The conversion rate was higher in male patients (16 males vs. 10 female). Conversion rate among male patients was (20%) compared to (2.77%) in female.

Conclusion: The overall frequency of conversion of LC to OC was 5.9%, the risk was more in male patients this finding need to be more evaluated. Failure to identify clear anatomy was the commonest cause of conversion. In bleeding episodes from the GB bed, compression of the site of the bleeding by the GB for 5 minutes can avoid conversion in troublesome GB bed bleeding.

Key Words: Hilla, laparoscopic cholecystectomy, Open cholecystectomy, Conversion, Rate and Reasons.

معدل واسباب التحويل من الجراحه المنظاريه الى جراحة فتح البطن في عمليات استئصال المراره

الخلاصة

الهدف: تحديد معدل واسباب التحويل في الجراحه المناظوريه.

الطريقه: دراسته مستقبليه للمرضى المؤهلين لاجراء رفع المراره بالمنظور بسبب حصي المراره خلال الفتره من ايلول ٢٠٠٥ الى نيسان

٢٠١١ اخذين بنظر الاعتبار العدد الكلي وجنس المرضى مع حساب الحالات التي تم تحويلها جراحيا مع دراسة اسباب التحويل.

النتائج والاستنتاج: شملت الدرسته (٤٤٠) مريض (٣٦٠) امراه و (٨٠) رجل عدد الحالات التي تحولت جراحيا ٢٦ حاله (٥,٩%) مشتمله على ١٦ رجل و ١٠ نساء. اسباب التحويل كانت: بسبب عدم وضوح التشريح ١٣ حاله, تشخ جدار المراره الممتلئ بالحصي في ٥ حالات, نزف دموي في ٤ حالات, اشتباه اصابه القناة الصفراويه في ٣ حالات و متلازمة ميريزي في حاله واحده.

كما وجد هنالك نسبة التحويل اعلى في الذكور مما يستدعي دراسته مستقبليه في هذا المجال. كما وجد الباحث ان استخدام المراره للضغط على مكان النزف في الكبد لمدة ٥ دقائق هي طريقه ناجحه لاثقاذ المريض من التحويل خلال حالات النزف الحاد او المفاجئ

Introduction

Gall stone disease is a common problem affecting human being. The first cholecystectomy was done by Langenbach in 1892. [1, 2]

In 1985 Eric Muhe performed the first successful laparoscopic cholecystectomy. Two years later Philip Mauret improved the method ,over the past two decades, laparoscopic cholecystectomy (LC) has become gold standard for the surgical treatment of gallbladder disease. A shorter hospital stay, less postoperative pain, faster recovery, better cosmesis are some of the advantages of LC over open surgery .[3] The complications encountered during LC are numerous: some that are specific to this unique technique and some that are common to laparoscopic surgery in general. These include complications related to anesthesia; complications related to peritoneal access (e.g., vascular injuries, visceral injuries, and port-site hernia formation); complication related to pneumoperitoneum (e.g., cardiac complication, pulmonary complications, and gas embolism); and complications related to thrombo-coagulation. Specific complication of LC are hemorrhage, gall bladder perforation, bile leakage, bile duct injury, and perihepatic collection), and others such as external biliary fistula, wound sepsis, hematoma and foreign body inclusions. Some of these complications and several other factors can necessitate the conversion from LC to open cholecystectomy [4].

The conversion from LC to open cholecystectomy results in a significant change in out-come for the patient because of the higher rate of postoperative complications and the longer hospital stay in addition to the effect and the long term sequel of the cause of conversion itself as in bile

duct injury. [5]

Conversion to open cholecystectomy is occasionally necessary to avoid or repair injury, delineate confusing anatomic relationships, or treat associated conditions.[6]

Method

From September 2005 to April 2011 we have recorded the data of 440 patients undergone laparoscopic cholecystectomy for gall stone diseases in Hilla city hospitals (360 female and 80 male) . The data recorded include number and sex of the included patients, outcome of the operations and if conversion was undertaken the cause of the conversion was recorded . The sex distribution among converted patients, rate of conversion was calculated , the reasons of conversion was tabulated , analyzed and evaluated under the light of other similar studies in the field.

Result

From 440 patients submitted to LC, 26 were converted to OC. Those were 16 males (61.5%) & 10 females (38.5 %) . The overall rate of conversion was 5.9% . The reasons of conversion were :- Failure to identify the anatomy in 13 patients (50 %), this included 3 patient due to adhesion of previous operations, and 10 patients due to difficult Calot,s triangle dissection. Thick wall GB filled with stones in 5 patients (19.2%). Laparoscopically uncontrollable bleeding in 4 patients (15.3%), comprises 2 patients due to bleeding from cystic artery and 2 patients due to bleeding from GB bed in patients with intrahepatic GB. Suspicion of bile duct injury in the course of difficult dissection emerged in 3 patients (11.5%) and all of them were safely completed . Mirrizzi's syndrome in one patient (3.8 %) as shown in the Table 1.

Table 1 Causes of conversion, number and its percentages

Causes	No.	%
Failure to identify anatomy	13	50 %
Thick wall G.B filled with stones	5	19.2%
Bleeding	4	15.3%
Suspicion of bile duct injury	3	11.5 %
Mirrizzi's syndrome	1	3.8 %
Total	26	100 %

Discussion

The majority of cholecystectomies are performed Laparoscopically now a days and it is the commonest laparoscopic operation worldwide.[3] The conversion rate and complications associated with LC depend on the experience of the surgeon and degree of difficulty faced during surgery.[7] Conversion to open cholecystectomy should not be viewed as complication, rather a matter of sound surgical judgment as patient safety is of foremost importance.[6,8]

There are many studies in the literatures concerning the conversion rate (ranging from 1.5% to 7.7%) [7, 9]. In this study, the conversion rate was determined to be 5.9%, which compares favorably with the rates reported in the literatures and it is lower than that reported by Ishizacki et al (7.9 %) and Lipman et al (8.2%).[10,11] Our favorable conversion rate is partly related to the selection of patients and time of interference and possibly due to the inclusion of emergency operations by both these studies , we found that most of the conversions occurred in the initial period of the study while it became less and less as time went and this was supported by a study done by Sakpal SV et al[12].

Dense adhesions at the calot's triangle and acute cholecystitis are two of the most important reasons for conversion to open procedure, as shown in the present study ,

Alsalamah et al., Ibrahim and

Bingener showed more than half of the converted cases were due to adhesion [7, 13, 14]

Dense adhesions at calot's triangle signified chronic inflammation and were certainly due to the repeated attacks of inflammations in the area or due to previous intra-abdominal pathology or surgery. Conversion remains in these circumstances a possible outcome of laparoscopic gall bladder surgery, it should be carried out bravely whenever surgeon feels that the field is unwell, it is not a matter of challenge to surgeon glory. Failure to identify the anatomy is the commonest cause of conversion, which might be either due to inflammatory process which disturbed Calot triangle or anatomical variations or adhesion due to previous surgery.[6,15] In our study, inability to correctly identify the anatomy at Calot's triangle accounted for about one half of the patients undergoing conversion to OC . Al Salamah, Ibrahim et al and Bingener et al also found it as the most common reason for conversion observed in 41.5%, 48.5% and 50% of patients respectively. [7, 13, 14] We observed that individual anatomy was obscured primarily by acute inflammation in 7 patients (53.8%), but dense adhesions from chronic cholecystitis in 5 out of 13 patients (38.4%) and aberrant anatomy in 1 out of 13 patient (7.7%) were also noted. According to our experience here advert ant extra- calot dissection helped a lot to avoid conversion ,this technique is done by

unleashing the Hartman pouch and proximal body of the gall bladder before any skeletonization of the cystic duct .

Operative bile duct injury is one of the serious complications of hepatobiliary surgery. During surgical learning curve of LC there was an initial rise in the reports of bile duct injuries, resulting mainly from the surgeon's inexperience and misinterpretation of anatomy.[5] Compared to open operation, injuries sustained during LC are often more severe (e.g., excision of a segment of the CBD) and generally extend to higher level. The presence of acute cholecystitis has been shown to predict conversion to open cholecystectomy [15,16]. We have 3 patients converted due to bile leak occurred and conversion revealed leak from cystic duct stump in 1 patient GB bed in 1 patient no source of leak found in the third patient ,all the 3 patients responded very well to just peritoneal wash and drainage and bile leak stopped.

Thick wall gallbladder either due to fibrosis or edema , in the later an attempt to aspirate the gallbladder might be helpful to avoid conversion. A distended, edematous gall bladder containing infected bile commonly is seen in cases of acute cholecystitis. [11]

On the basis of our experience, we believe that several technical key points must be kept in mind when laparoscopic surgery is performed for acute cholecystitis. For good exposure of Calot's triangle, decompression of the gallbladder should be done early because this allows better grasping and retraction of the gallbladder can be done stitch retraction of the fundus of the gall bladder through the right hypochondrium, partial LC can be done in very difficult cases and closure of the stump can be done by ladder multiple clipping or by laparoscopic

suturing. peritoneal drainage is of supreme importance in these cases.

Preoperative US wall thickness of the gall bladder should be obtained a day before the list to evaluate the changes in wall thickness within the list waiting time . Thickness more than 3 mm is a risk factor for conversion [6, 15].

Bleeding should be expected in patient with signs of acute inflammations beyond the golden time of interference and those with anatomical variations especially of Rt. hepatic artery and cystic artery. [17] Bleeding complication account for up to one third of all major complications seen in LC and are the second most common cause of death in patients undergoing the procedure (after anesthesia related complications) .The reported incidence of uncontrollable bleeding in LC is 0.03-10%. [18]

In our series 4 cases (15.3%) were converted due to bleeding complication one from posterior division of cystic artery due to hook injury and another from abnormal cystic artery. Both cases were managed well by prompt conversion, one required blood transfusion, while in the other two cases the gall bladder was intrahepatic and the conversion was due to bleeding from gall bladder bed, both of them occurred in the early cases and later on this bleeding was overcome by compression on the site of bleeding by the gall bladder itself for 5 minutes. This technique was adopted by the writer successfully and prevented the conversion in other four cases with similar complication.

Male is a risk factor for conversion as reported by Zisman who reported a 5 folds increased conversion in male more than female. In our study, 20% (16 out of 80) of males required conversion as compared to 2.7%(10 out of 360) females; this was similar to figures reported by , Brodsky et al,

Ibrahim et al and Al Salamah who also found male gender as a most significant determinant for conversion to OC.[7,13,19, 20]

Gharaibeh et al reported 24% conversion rate in males vs. 4% in females.[21], whereas Lim et al reported 16.6% conversions in males vs 8.2% in females.[22]

In this study male was constituting 61.5%, of the converted cases compared to 38.5% composing of female side, this could be due to more anatomical difficulties encountered in men. Men have been identified to have a greater incidence of conversion to open cholecystectomy than women. The etiology of this association is not completely clear . Inflammation and dense adhesions are frequently cited as reasons for conversion in men. Men had a greater frequency of the 5 other characteristics demonstrated to predict conversion and had a significantly greater incidence of acute cholecystitis.[23,24]

Conclusion

Despite advantage of LC , conversion is required in a varying proportion of patients ranging from 2% and may reach 15% in a cute cholecystitis. Conversion is neither complication nor a failure but it is an attempt to avoid complications. Preoperative US immediately before surgery is a helpful to anticipate the risk of conversion which should be done by an expert operator . Failure to identify a clear anatomy is the commonest cause of conversion .In gallbladder bed bleeding compression by the gall bladder itself using the grasper to push the gall bladder against the site of bleeding for five minutes proved to be a useful technique to safe the patient from conversion. Male is a true risk factor for conversion and increased incidence of anatomical difficulties need to be evaluated.

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