
Abstract: Cholelithiasis is 10-15% prevalent in India and approximately 1-2% of asymptomatic patients will develop symptoms and require cholecystectomy each year. There has also been a remarkable shift in the trend of gall stone disease from middle aged, fertile, fat, females to young asthenic females in their twenties. Open cholecystectomy was the standard treatment for symptomatic gallstones for more than 100 years. Today, laparoscopic surgery is preferred because it involves less postoperative pain, a rapid recovery period, a greater degree of comfort and a better cosmetic appearance from smaller incisions. Today, laparoscopic surgery is preferred because it involves less postoperative pain, a rapid recovery period, a greater degree of comfort and a better cosmetic appearance from smaller incisions.

Keywords: Cholelithiasis, Epidemiology, Prevention, Management.

INTRODUCTION

EPIDEMIOLOGY

Gallstone disease is one of the most common problems affecting digestive tract. The prevalence of gallstones is related to factors like age, gender and ethnic background. The prevalence of gallstone varies widely from place to place. It is estimated that approximately 20-25 million people in the United States have gallstones and that approximately 1 million new cases of cholelithiasis develop each year. Cholelithiasis is 10-15% prevalent in India and approximately 1-2% of asymptomatic patients will develop symptoms and require cholecystectomy each year. Its occurrence has been found to be at least 7.4% in adult population of North India. There has also been a remarkable shift in the trend of gall stone disease from middle aged, fertile, fat, females to young asthenic females in their twenties. Changing incidence in India is mainly attributed to westernization of diet, change in socioeconomic structure and availability of ultrasound as investigation in both rural and urban areas.

TRENDS IN SURGERY

Open cholecystectomy was the standard treatment for symptomatic gallstones for more than 100 years. A revolution in the surgical treatment of biliary disease came in the 1980’s with the introduction of laparoscopic surgery. The first laparoscopic cholecystectomy was performed by Dr Erich Muhe however his approach did not become popular until both French and American groups popularized the four-port technique in the early 1990’s.

The ultimate goal of surgery has always been providing the best and most effective procedure with the least amount of postoperative complications, pain and the best possible aesthetic results. Surgery of the biliary tract is by no means the exception. With the development of minimally invasive surgical techniques, surgeons are now focused on achieving cosmetic results and significantly reducing surgical trauma.

Today, laparoscopic surgery is preferred because it involves less postoperative pain, a rapid recovery period, a greater degree of comfort and a better cosmetic appearance from smaller incisions. Laparoscopic cholecystectomy has now become the procedure of choice for symptomatic gall stone disease. Laparoscopic cholecystectomies in particular require shorter operative times and involve fewer complications as surgeons’ experience with them increases. Novel methods are currently being attempted to further develop the well known advantages of this procedure so that the incision size and the number of trocars can be reduced.
Recently, a single-incision laparoscopic cholecystectomy (SILC), also called as transumbilical laparoscopic cholecystectomy or laparoendoscopic single site (LESS) cholecystectomy, has been developed to further minimize the invasiveness of laparoscopic cholecystectomy by reducing the number of incisions. Single-incision laparoscopic cholecystectomy (SILC) was first reported by Navarra et al. in 1997. Since then, it has emerged as an alternative technique to improve cosmesis and minimize complications associated with multiple incisions. Various randomized controlled trials have shown that SILC can provide better cosmetic results, shorter duration of hospital stay and early recovery as compared with conventional laparoscopic cholecystectomy.

Sometimes single incision laparoscopic cholecystectomy can be difficult. It may take time longer than usual and may require conversion to conventional laparoscopic cholecystectomy or to open cholecystectomy. Considering that the main benefit of single incision laparoscopic cholecystectomy (SILC) appears to be improved cosmesis, it is important to complete the procedure via a single incision. Because the number of incisions is the primary concern for patients who hope to undergo SILC, the ability to identify an individual patient’s risk for needing additional ports is important. If conversion is necessary for whatever reason, the benefit of the minimal access concept is lost. Therefore, every effort should be made to increase the probability of successful completion of the laparoscopic procedure to be attempted through single incision.

Single incision laparoscopic cholecystectomy though safe and effective, yet can be difficult. Various problems faced while performing SILC are difficulty in creating pneumoperitoneum, accessing peritoneal cavity, releasing adhesions, identifying anatomy and extracting gall bladder. SILC which takes more than expected time with any of these problems is considered as difficult. However, of all Single Incision Laparoscopic cholecystectomies, 1-3% requires conversion to conventional laparoscopic cholecystectomy. Main causes of conversion are inadequate exposure of the Calot’s triangle and bleeding. Difficulties which are encountered during the laparoscopic cholecystectomy like hemorrhage, gall bladder perforation, bile leakage, or bile duct injury leads to the conversion of the procedure to open cholecystectomy. These difficulties may be responsible for creating procedural difficulty in single incision laparoscopic cholecystectomy too. Single incision Laparoscopic cholecystectomy though is a better alternative, is also sometimes technically challenging for the surgeons in view of difficult intra operative anatomy, difficulty in dissecting around the Calot’s triangle or dense adhesions between the gall bladder and adjoining structures.

Sometimes single incision laparoscopic cholecystectomy may take longer time and may require extra port or conversion to conventional laparoscopic cholecystectomy/open cholecystectomy. A procedure which requires extra port and takes more than expected time can be considered as difficult. Some of the reasons quoted in earlier studies for difficult single incision laparoscopic cholecystectomy are:

a. Elderly patients are more likely to have difficult SILC.

b. Females undergo this surgery more frequently, but males tend to have a higher number of difficult cases.

c. BMI > 30kg/m², weight >80kg and height > 172 cm are associated with procedural difficulties during SILC.

d. Acute cholecystitis is a predictor for difficult cholecystectomy.

e. Previous surgery predisposes towards difficulties in the procedure.

f. Preoperative USG and CT can predict difficulties during surgery.

g. Features like distended or contracted gallbladder, intraperitoneal adhesions, structuralanomaliesordistortionsandthepresenceofcirrhotic liverare signs that are associated with subsequent difficulties during surgery.

Although, the rate of conversion to conventional laparoscopic cholecystectomy and the complications are low in experienced hands, knowledge of the rate and impact of the underlying reasons for conversion could help surgeons during preoperative assessment and improve the informed consent of patients. Some factors which can be accessed preoperatively to reliably predict the feasibility of successful single incision laparoscopic cholecystectomy or the requirement for additional ports have been observed in previous studies.

Certain variables have been proposed which can be used to predict the feasibility of the successful single incision laparoscopic cholecystectomy or probability of conversion to conventional laparoscopic cholecystectomy such as age, gender, BMI, diabetes mellitus, hypertension, history of hospitalization for acute cholecystitis or acute biliary pancreatitis, palpable gall bladder lump, previous abdominal surgery scar and ultrasonologically proven presence of gall bladder wall thickness more than 4mm, contracted gall bladder , impacted stone at the neck of gall bladder and size of stone more than 1.5 cm.
SILC has the higher risk of umbilical complications related to the larger incision. It is well known that obesity is a risk factor for incisional hernia and wound infection after abdominal surgery. Thus, it is likely that patient with BMI > 30 kg/m² are at a risk of developing hernia and infection, even if SILC is performed.²

Thus, for surgeons it would be helpful to establish criteria that would assess the risk of conversion preoperatively and risk of postoperative complications. Factors, which can be assessed preoperatively can reliably predict feasibility of the successful single incision laparoscopic cholecystectomy and the requirement of extra ports. Knowledge of these factors, may be used for the preoperative counselling of the patients regarding the successful outcome of the surgery as well as to predict the risk of conversion preoperatively for selected patients, prepare the patient psychologically, arrange operating schedules accordingly, minimize the procedure related cost, help overcome financial constraints, which is a significant problem in developing countries and possibility of the conversion so that needful arrangements can be made by the patients.³⁴,³⁵

CONCLUSION
Open cholecystectomy was the standard treatment for symptomatic gallstones for more than 100 years. Today, laparoscopic surgery is preferred because it involves less postoperative pain, a rapid recovery period, a greater degree of comfort and a better cosmetic appearance from smaller incisions. Today, laparoscopic surgery is preferred because it involves less postoperative pain, a rapid recovery period, a greater degree of comfort and a better cosmetic appearance from smaller incisions.

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