

Indications and Outcome of Cholecystectomy in Paediatric Population

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Abstract

Background: With the introduction of laparoscopy the surgical management of gallstones has been revolutionized. Presently this minimally invasive technique has virtually become the gold standard in the management of cholelithiasis. Its use in paediatric population is newer as compared to the general population. **Subjects and methods:** We present our series of 47 children with gall stones disease over a period of 7 yrs who were treated with laparoscopic cholecystectomy at Govt. Medical College hospital Srinagar during 7-year period from March 2005 through March 2012. 31 patients were male and 16 female. The mean age was 13 years, with a range of 6 to 15 years. In each case, the indication for operation was symptomatic cholelithiasis. Gallstones were documented before surgery by ultrasonography in each patient. Majority of the children were having no causative factors for gallstones. Safety and efficacy of the procedure was evaluated and the children were followed up for symptom relief and complication of the procedure in the OPD clinics. **Results:** 47 patients underwent lap cholecystectomy. 21 patients were male and 26 female. The mean age was 13 years, with a range of 6 to 15 years. The mean duration of surgery was 45 +_15 minutes. Most of the patients tolerated oral diet 6-8 hrs after surgery. All patients were discharged once they tolerated oral diet. No long-term biliary complications were seen in these patients during an mean follow-up period of 12.5 months (range = 2-22 months). **Conclusion :** Laparoscopic cholecystectomy in paediatric cholelithiasis is a safe and effective surgical procedure when it is performed by an experienced surgeon having good experience of minimal access procedures and sound knowledge of biliary anatomy. It is simple and safe as compared to general population.

Keywords: Laparoscopic cholecystectomy, cholelithiasis and Children.

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Received: 10 January 2021

Revised: 25 March 2021

Accepted: 04 April 2021

Published: 20 June 2021

Introduction

Cholelithiasis is less common in children. Various types of gall stones found in paediatric population are cholesterol stones, black or brown stones or mixed stones. The pigment stones are more common than cholesterol stones in children.^[1] Incidence of paediatric cholelithiasis has increased recently probably because of increased use of investigatory tools like ultrasonography for evaluation of abdominal pain.^[2] The natural history of cholelithiasis in children differs from that of the general population. Cholelithiasis in children is often related to chronic illness and prolonged parenteral nutrition. Haemolytic diseases causing an increased bilirubin production appear to be the most common underlying condition in the younger population.^[3] The other risk factors include hepatobiliary disease, abdominal surgery (gut resection), heart valve replacements and malabsorption. Laparoscopic cholecystectomy is the gold standard surgical procedure in adults but it is not that commonly per-

formed procedure in younger age groups.

Subjects and Methods

Forty seven (47) children underwent elective laparoscopic cholecystectomy at Govt. Medical College hospital Srinagar during 7 year period from march 2005 through march 2012. Twenty one (21) patients were male and twenty six (26) female. The average age was 13 years, with a range of 6 to 18 years. In each case, the indication for operation was symptomatic cholelithiasis. Gallstones were documented before surgery by ultrasonography in each patient. Majority of the children were having no causative factors for gallstones. The child was placed in the supine position on the operating table. After the induction of general anaesthesia, urinary bladder was emptied by a Foley catheter and a nasogastric tube was passed into the stomach. The abdomen was prepared widely and draped in the usual sterile fashion. A small incision

is made, just below the umbilicus umbilical tube was identified by blunt dissection and incised. 10 mm trocar was placed under direct vision and pneumoperitoneum created by CO₂ insufflations to a pressure of 10 -12mm Hg. Two additional 5 mm trocars are placed, one in the, upper midline just below the xiphoid process and the other below the subcostal margin in the right midclavicular line under direct vision. (3-portcholecystectomy). These were placed sufficiently apart to avoid overlapping or crossing during the dissection. Calot's triangle anatomy was visualized blunt dissection in calots triangle was started and proceeded to identify cystic duct and artery to satisfy the 'critical view of Griffith' cystic duct and artery were clipped and excised separately. Gall bladder separated from liver bed by a diathermy hook or spatula. For a longer gallbladder a fourth port placed in anterior axillary line just below the costal margins when the 3rd trocar was not providing sufficient traction required for dissection of the gallbladder. Gall bladder is removed via the umbilical port after replacing the 10mm laparoscope with a 5 mm scope in the subxiphoid trocar. Subhepatic drain is placed laparoscopically through the 5mm trocar site.

The port through which gallbladder is retrieved is irrigated with saline and the port sites are closed with absorbable sutures.

Results

During the study period of 7 years 47 patients under went lap cholecystectomy. 21 patients were male and 26 female. The average age was 13 years, with a range of 6 to 18 years. In each case, the indication for operation was symptomatic cholelithiasis. The classical signs of cholelithiasis like nausea, heart burn and abdominal fullness were seen in majority of the patients. The mean operative time was 45 ± 10 minutes. The operative findings were minimal omental adhesions of gall bladder with the surrounding structures. There were no intraoperative or post operative complications and the blood loss in each patient was minimal. The postoperative course was generally uncomplicated. Most of the patients tolerated oral diet 6-8 hrs after surgery, all patients were discharged once they tolerated oral diet. After discharge from the hospital they resumed their full routine activities. With the caveat that there should be no heavy lifting of weights greater than 5kgs and no strenuous activities until the first six months of follow up. Otherwise, routine activities of are acceptable. No long-term biliary complications were seen in these patients during an average follow-up period of 12.5 months (range = 2-22 months).

Discussion:

Laparoscopic cholecystectomy is the gold standard for symptomatic cholelithiasis and chronic cholecystitis.^[4,5] It has vir-

Table 1: Shows the Intra operative findings

Findings	No. of Patients
No adhesions	6
Minimal adhesions	15
Dense adhesions	9
Obliteration of Calot's triangle	10
Contracted/Thick wall gall bladder	5
Mucocele/Emphyema	2

Table 2: Shows histopathology findings of the gallbladder specimen

Histopathology	No. of cases	%
Total Gallbladders	47	100.0
Chronic Cholecystitis	35	74.4
Acute Cholecystitis	12	24.6

tually replaced conventional open cholecystectomy. Recently LC is being increasingly used for acute cholecystitis. The use of laparoscopic technique for gall stone diseases is expanding very rapidly. Lap cholecystectomy is performed in almost all major health care providing centres and tertiary level hospitals all over world. The laparoscopic approach has number of advantages and also has a higher rates of complications compared to open technique if performed with impunity and inadequate laparoscopic training.^[6]

This technique had not been used in paediatric patients as extensively as in adult population due to concern about their small size effects of pneumoperitoneum. Nowadays it has been proved that the technique can be employed to majority of paediatric population without significant complications.^[7-12] Cholelithiasis is an uncommon finding in children. Strong suspicion of gall stones should be born in mind of the treating physician for children having nonspecific abdominal pains with associated risk factors. Chronic illness parenteral nutrition and haemolysis appears to be the most common underlying condition for cholelithiasis in children.^[3] The other risk factors include hepatobiliary disease, abdominal surgery (bowel resections), artificial heart valves and malabsorption. Strongly positive family history of cholelithiasis in the first degree relatives is often a feature of paediatric cholelithiasis.^[7,10,13-15] Majority of the patients had no underlying pathology or risk factors for Cholelithiasis.

21 patients were male and 26 female. The mean age was 13 years, with a range of 7 to 16 years. The indication for operation was symptomatic cholelithiasis. Based on symptoms the patients in our series were divided into two groups. Group 'A' included those patients who presented with acute symptoms (33 children 70.21%). 16(48%) among these were oper-

ated within 72 hrs of starting symptoms of pain and vomiting. The remaining 15 were treated conservatively with nothing by mouth (NBM), Intravenous fluids and antibiotics. The decision of delayed cholecystectomy was based on findings of lump formation in right hypochondrium and radiologically obscured anatomy of Calot's triangle by pericholecystic fluid and wall oedema thereby risking injury of vital structures at the of operation. These patients were discharged from the hospital and later operated after 4-6 weeks after the initial symptoms of biliary disease. In the 'V' group children with vague symptomatology of abdominal pain, regurgitations food intolerance and abdominal fullness were grouped. These patients were thoroughly evaluated and investigated. When gall stone disease was confirmed as the cause of their problem they were posted for elective laparoscopic cholecystectomy.^[15-18] Laparoscopic cholecystectomy is a minimal access technique that has been accepted as the standard treatment for chronic cholecystitis and cholelithiasis in adults.^[9,10,17-22] Incidence of paediatric cholelithiasis has increased recently. This may be attributable to the extensive use of ultrasonography (US) in the evaluation of abdominal problems in the recent times. Pneumoperitoneum creation during the procedure is very crucial step in paediatric laparoscopy. Because of the smaller body size caution needs to be exercised to avoid any visceral injury. We used a 10 mm trocar was used to create pneumoperitoneum. This trocar was placed under vision by making a small incision infraumbilically and with blunt dissection the umbilical tube was identified and slit open under vision. Other standard (all 5mm) ports were placed under vision sufficiently apart to avoid crossing and fighting between the instruments.

Dissection at calot's triangle was done by blunt dissectors and cystic duct and cystic artery were dissected after taken the peritoneal and fibro fatty tissues. The two were clipped separately to avoid injury to duct or artery.

The intra operative findings of case in our series ranged from minimal adhesions to thick dense adhesions were gall bladder was engulfed in the omental and peritoneal adhesions. Tabulated form of the intraoperative findings of the series is given below.

Intra-operative perforation of gall bladder and spillage of bile and stones was seen in 9 cases Stones were retrieved and bile was cleared by thorough normal saline washes. Peritoneal drain was placed was a bile spillage it was removed on the 2nd post operation day.

Histopathological examination of the gallbladder showed features of acute or chronic inflammation of the gallbladder. Gall stones during surgery were sent for analysis In contrast to adult population calcium carbonate stones were more common in children.^[23]

The histopathological features of gall bladder in our series is given below were majority of the cases had features of chronic

cholecystitis. No major complication were seen in the series 5 patients developed fever which was resolved with antibiotics. patients developed wound infection of the umbilical port and required wound irrigations and antiseptic dressings.

We follow a practice of irrigating the port of specimen retrieval (umbilical port in this series) when gall bladder is perforated. All patients were discharged home once they tolerated oral feeds. The average hospital stay in our series was 2 days (range 1- 5 days).

All the patients were put on regular follow up of 2 weeks for first two months and subsequently after every month for the next six months. No complaints of recurrence of symptoms of cholelithiasis or with retained stones were found during the follow up period.

The benefits of minimal access surgery are appreciated by the children in the same way as those by the adults with shorter hospital stay, lesser pain fewer analgesics and early return to home and school there by decreasing the morbidity considerably.

Conclusion

For the treatment of paediatric cholelithiasis laparoscopic cholecystectomy is a safe and effective surgical procedure when it is performed by an experienced surgeon having good experience of minimal access procedures and sound knowledge of biliary anatomy. It is simple and safe as compared to general population. Presently with a large volume of literature in support of minimal access surgery lap cholecystectomy should be the treatment of choice for the treatment of gall stones in the paediatric population.

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How to cite this article: Sandhu JK, Mir SA, Ahmad SS, Akhter S. Indications and Outcome of Cholecystectomy in Paediatric Population. *Acad. J Surg.* 2021;4(1):31-34.

DOI: [dx.doi.org/10.21276/ajs/2021.4.1.7](https://doi.org/10.21276/ajs/2021.4.1.7)

Source of Support: Nil, **Conflict of Interest:** None declared.