Section: Surgery

Original Research Article

LAPAROSCOPIC CHOLECYSTECTOMY FOR CHOLELITHIASIS IN PAEDIATRIC POPULATION. OUR EXPERIENCE IN A TERTIARY CENTRE

Ab. Hamid Wani[1], Nikhil Arya[2], Gurbir Singh[3], Abhimanyu Singh[4], Zahur Hussain[5]

[1]*Assistant Professor, Department of Surgery, Government Medical College Jammu, Jammu and Kashmir India.*
[2]*Postgraduate Student, Department of Surgery, Government Medical College Jammu, Jammu and Kashmir India.*
[3]*Assistant Professor, Department of Surgery,SMVDIME Kakryal, Jammu and Kashmir India.*
[4]*Senior Resident, Department of Surgery, Government Medical College Jammu, Jammu and Kashmir India.*
[5]*Professor, Department of Surgery, Government Medical College Jammu, Jammu and Kashmir India.*

Received *: 20/11/2024*
Received in revised form *: 11/01/2025*
Accepted *: 26/01/2025*

Corresponding Author:
Dr. Abhimanyu Singh,
Abhimanyu Singh Senior Resident Department of Surgery Government Medical College Jammu, Jammu and Kashmir India.
Email: abhimanyurajput848@gmail.com

DOI: 10.70034/ijmedph.2025.1.141

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

Int J Med Pub Health
2025; 15 (1); 755-758

ABSTRACT

Background: Paediatric laparoscopy has evolved for the last two decades and has become the standard of care from emergency to elective procedures.**Aims and objectives:** The present study aimed to evaluate the role of laparoscopic cholecystectomy in paediatric population.
Material and Methods: This retrospective study was carried in our institution from 2018-2024 over a period of 07 years. Data reviewed includes patient demographics, clinical presentation, investigation and management of these patients.
Results: Thirty patients were included in the study. The age varies from 2.5 – 18 years with the mean age of 9.2 years. The male to female ratio was 12: 18. The commonest presentation was pain right hypochondrium followed by nausea, vomiting and food intolerance. Four patients present with acute cholecystitis and three patients had asymptomatic cholelithiasis. The mean duration of symptoms was 2-12 months (mean 2-8 months). None of the patient had any haemolytic disorder, common bile duct stones or any congenital anomaly of the biliary tree. All patients underwent safe laparoscopic cholecystectomy without any complication. The mean operative time was 64.3 minutes and the mean hospital stay was 26.4 hours.
Conclusion: Laparoscopic cholecystectomy for cholelithiasis in children is safe, effective and feasible. The incidence of gallstones in children has increased due to change in dietary habits of children.
Key Words: Laparoscopic cholecystectomy, Cholelithiasis, Common bile duct (CBD).

INTRODUCTION

The incidence of cholelithiasis in children although less than adult population, but its frequency in paediatric population is increasing day by day.[1] The prevalence of gallstones in paediatric population is 1.9%.[2] There is a higher incidence of pigment stones in children then the cholesterol stones which are more common in adults.[3]Childhood obesity a health problem nowadays has increased the incidence of cholelithiasis. Children with haemolytic disorders, who are very prone for gall stone formation, are now offered prophylactic cholecystectomies.[4]The golden standard of treatment for cholelithiasis in adults is laparoscopic cholecystectomy. For the last two decades the incidence of gall stone disease has increased in children and the role of laparoscopy in children has also evolved. Now the standard of care for paediatric cholelithiasis is laparoscopic cholecystectomy.[5] The benefits of laparoscopic cholecystectomy should be offered to children also which includes, less pain, less hospital stay, better cosmesis and many more. There is a good amount of literature in favour of laparoscopic cholecystectomy in adults and it is well established. But in children there is a paucity of data and further research exploration is needed.

MATERIALS AND METHODS

The present retrospective study was conducted in the Post graduate department of surgery government medical college Jammu between 2018-2024 over a period of 07 years. After getting clearance from the ethical committee of the institution the study was initiated. 30 patients with cholelithiasis in the paediatric age group upto 18years of age irrespective of gender were included in the study. Data collected includes demography, clinical presentation, management and any post-operative complications. All children were evaluated by detailed history and physical examination. All blood investigations including CBC with peripheral blood film, Coagulogram, KFT, serum electrolytes and LFT were done. Radiological investigations which includes USG abdomen were done to document and diagnose gall stones in all patients. Proper discussion regarding disease and laparoscopic cholecystectomy were done with parents/guardians. They were explained the benefits of laparoscopic cholecystectomy over the open approach. After this a formal consent was obtained and the patients were posted for laparoscopic cholecystectomy. Standard four port technique was used and the pneumoperitoneum was created by open technique. The ports include 10mm umbilical port and three 5mm ports one in epigastric region, one in mid clavicular line in right hypochondrium and third one in anterior axillary line for gall bladder retraction. Once the findings were confirmed, the dissection at calots triangle was done to dissect and separate the cystic artery and cystic duct. Then the hemlock clips were applied over the cystic artery and cystic duct and then divided as shown in figure 1and 2.

Figure 2:Hemolock clips being applied over the cystic duct before it is divided.

Figure 1:Cystic artery clipped with hemolock clip and cystic duct delineated.

Gallbladder was than separated from the liver bed to complete the procedure. Data was obtained regarding operative time, Intraoperative blood loss and intraoperative complication, post-operative complications, analgesiarequirement and hospital stay and analysed. All patients under went elective laparoscopic Cholecystectomy. 04 patients who presented with acute cholecystitis were managed conservatively followed by elective laparoscopic cholecystectomy

RESULTS

In the present study, the age of the patients varies between 2.5-18 years (mean 9.2) years. The male to female ratio was 9:21. The commonest presentation was pain right hypochondrium. 25 patients followed by nausea in 14 patients, vomiting in 6 and food intolerance in 04 patients. 03 patients present with acute cholecystitis and 04 patients had silent gall stones. Duration of symptoms varies from 2-12 months (mean 2-8 months). Risk factors for cholelithiasis were present in 03 patients and no patients had any type of haemolytic disorder. The body mass index varies between16-30 (mean 24.2). All these features are shown in table-1. [Table 1]

Gallstones were present in all 30 patients, 04 patients had solitary stone and 26 patients had multiple patients. Wall thickness of gall bladder was 3mm in 19 patients and >3mm in 11 patients. Features of acute cholecystitis like pericholecystic fluid was present in 03 patients. No patient had choledocholithiasis or any congenital disorder of hepatobiliary system as shown in table-2. [Table 2]

The mean operative time for laparoscopic cholecystectomy was 45.3 minutes (range 40-70 minutes). Mild filmsy adhesions were present in 06 patients. One patient had mucocele. 26 patients had pigmented stone and 04 patients had cholesterol stones. The mean blood loss was 4ml. drain was placed in 03 patients only and removed on 2nd post-operative day. 02 patients had pain and vomiting in the post-operative period. The mean hospital was 26.4 hours (range 24-72 hours). There were no mortality and the mean follow up was 5.5 months as

shown in table -3. [Table3] Histopathological examination of the specimen show acute cholecystitis in 06 patients and chronic cholecystitis in 24 patients as shown in table -4. [Table 4]

Table 1:Showing Patient demographics and clinical presentation

Parameter	Number of patients	Percentage
Age	2.5-18 years Mean 9.2 years	-
Gender Males Females	 09 21	 30% 70%
Clinical presentation		
Pain rt. Hypochondrium/ epigastrium	25	83.3%
Nausea	14	46.6%
Food intolerance	4	13.3%
Vomiting	6	20%
Acute cholecystitis	4	13.3%
Asymptomatic gall stones	3	10%
Duration of symptoms	2-12 months Mean 2-8 months	-
Risk factors	3	10%
BMI	16-30 Mean 24.2	-
Haemolytic disorders	-	-

Table 2: Showing Radiological findings in patients with cholecysticdisease

Parameter	Number	Percentage
Gallstones	30	100%
Single stone	4	13.3%
Multiple stones	26	86.6%
Wall thickness		
< 3mm >3mm	19 11	63.3% 36.6%
Pericholecystic fluid	3	10%
CBD stones	0	0%
Congenital biliary disorders	-	0%

Table 3: Showing Operative and post-operative parameters in ptients with cholecysticdisease

Parameter	Number	Percentage
Operative time	40-70 minutes Mean 45.3 minutes	-
Adhesions	6	20%
Mucocele	1	3.3%
Pigmented stones	26	86.6%
Cholestrol stones	4	13.3%
Drain placement	3	10%
Blood loss	3-12ml Mean 4ml	-
Post-operative Complications Early PSI	2	6.6%
Hospital Stay	24-72 hours Mean 26.4 hours	-
Mortality	0	0%
Follow up duration	3-14 months Mean 5.5 months	-

Table 4: Showing Histopathological examination of resected specimens

Parameter	Number	Percentage
Acute cholecystitis	6	20%
Chronic cholecystitis	24	80%

DISCUSSION

Cholelithiasis is relatively an uncommon condition in children as compared to adult population. Due to dietary habits, environmental changes and easy access to ultrasonography, the incidence of gallstones in children has increased in the last two decades. The incidence is also high in children with haemolytic disorders. The prevelalence of cholelithiasis in children ranges between 0.13-0.22%.[6] Risk factors for the formation of gallstones in children includes haemolytic disorders, family history, abdominal surgery, Ig A deficiency, cystic fibrosis, gilberts disease and prolonged ceftriaxone therapy. However the incidence of idiopathic cholelithiasis has increased in the recent past and the

incidence varies between 23%-52.5%. In our study only 03 patients had risk factors present and in 27/30 (90%) patients had idiopathic cholelithiasis. This may be due to diatery habits in children, dehydration and endocrine influence. In 80% of the cases they are silent.[7,8] In our study 19 patients had silent stones and only 11 patients were symptomatic. The incidence of gall stones is slightly higher in boys than in girls. In our study the male to female ratio was 09:21. The incidence of subclinical Common bile duct stones (CBD) is low in children. In our study no patient had CBDstones or altered liver function test. These patients may present with acute cholecystitis, chronic cholecystitis, biliary colic, obstructive jaundice or cholangitis. There are no clear cut guidelines for the management of cholelithiasis in children but delay in the treatment of gallstones in children may may cause complications as in adult population.[9,10] The more you delay the treatment more the chances of complications.[11] Laparoscopic cholecystectomy a minimally invasive procedure is a well-established procedure for cholecystic disease in adults and its application in paediatric population for cholelithiasis has increased for the last two decades.[7,8] Laparoscopic cholecystectomy can be done in combination with splenectomy in children with haemolytic disorders. The advantages of lap. Cholecystectomy like less pain, early ambulation, early recovery, less analgesia and less hospital stay should be offered to children also. In our study all patients were managed by laparoscopically with no conversion. Post-operative period was uneventful with no complications and most of the patients were discharged on the next day. Laparoscopic cholecystectomy should be offered to all patients with symptomatic gallstones and who do not respond to conservative treatment. A period of conservative treatment should be given to patients who are asymptomatic. The rationale behind conservative treatment is either they remain asymptomatic or the stones may disappear.[12,13] However there are certain risk factors like female gender, multiple stones, large stones, haemolytic disorders in whom early intervention is the best to avoid the complications of recurrent attacks of cholecystitis.[14] In the present study, only 04 patients had solitary stones while as 26 patients had multiple stones in gall bladder. The attacks of acute cholecystitis have been found to be milder in children as compared to adult population.15 Positive Murphys sign along with pericholecysticfluid and wall thickness > 3mm are considered as acute cholecystitis in children. On histopathological examination 06 specimen shows feature of acute cholecystitis and 24 had feature of chronic cholecystitis.

CONCLUSION

The incidence of paediatriccholelithiasis has increased in the recent past especially the idiopathic cholelithiasis. Laparoscopic cholecystectomy a minimally invasive procedure with definite advantages over open surgery is safe and feasible to tackle cholecysticdesease in children and should be offered to every child with cholecysticdesease.

Conflict of interest. Nil
Source of funding. Nil

REFERENCES

1. Kaechele V, Wabitsch M, Thiere D, Kessler AL, Haenle MM, Mayer H. Prevalence of gallbladder stone disease in obese children and adolescents: Influence of the degree of obesity, sex and pubertal development. J PediatrGastroenterolNutr. 2006; 42:66-77.
2. Wesdrop I, Bosman D, de GraaffA, Aronson D etal. Clinical presentation and predisposing factors of cholelithiasis and sludge in children. J Paediatr. GastroenterolNutr. 2000; 31:411-7.
3. Deepak Javare Gowda, Prakash Agarwal, RajkishoreBagdietal. Laparoscopic cholecystectomy for cholelithiasis in children. J Indian AssocPediatr Surg. 2009;14(4): 204-206.
4. T. M Walker, Ian Hambleton BA, Graham R etal. Gallstones in sickle cell disease: Observations from the Jamaican cohort study. The Journal of Pediatrics 2000;136 (1): 80-85.
5. Anja Mattson, Ankit Sinha, Ike Njereetal. Laparoscopic cholecystectomy in children: A systemic review and meta-analysis. The Surgeon 2023;21(3):133-141.
6. BalanescuRN,Balaneescu L, Dragan G, Moga A, Caragaaa R. Billiarylithiasis with choledocholithiasis in children. Chirurgia. 2015; 110:559-61.
7. Friedman GD. Natural history of asymptomatic and symptomatic gallstones. Am J Surg. 1993; 165:399-404.
8. Gibney EJ. Asymptomatic gallstones. Br J Surg. 1990; 77:368-72.
9. Akhtar-Danesh GG, DoumourasAG,Bos C, Hong D et al. Factors associated with outcomes and costs after paediatric laparoscopic cholecystectomy. JAMA Surg 2018; 153:551-7.
10. Cofini M, Favoriti P, Pietrantoni S, Quadrozzi F. Management of paediatric cholelithiasis: our experience. Minerva Pediatr.2014;66:267-73.
11. Sarrami M, Ridley W, Nightingale S et al.Adolescent gallstones-need for early intervention in symptomatic idiopathic gallstones. PediatrSurg Int. 2019; 35: 569-74.
12. Tuna Kirsaclioglu, C Cuhaci, Cakir B, Baryram G et al. Risk factors, complications and outcome of cholelithiasis in children. A Retrospective single centre review. Paediatr. Child Health 2016; 52:944-949.
13. Goldman, D. A. Gallbladder, gallstones, and diseases of the gallbladder in children. Pediatr. Rev. 2020; 41:623-629.
14. Liu Y, Jin S, Li, y, xu, R Pang et al. Treatment of asymptomatic gallstones in children with hereditary spherocytosis requiring splenectomy. J. Paediatr. Surg. 2023; 58:756-761.
15. Pelizzo, G Bussani, R, De Silvestri A, Di Mitri, M Rosone et al. Laparoscopic cholecystectomy for symptomatic cholecystic disease in children: Defining Surgical Timing. Front.Paediatr. 2020; 8:203.