

ORIGINAL ARTICLE

ROLE OF DIAGNOSTIC LAPAROSCOPY IN EVALUATION AND TREATMENT OF CHRONIC ABDOMINAL PAIN IN CHILDREN: A FIVE YEARS DATA

Nabila Talat, Muhammad Afzal, Sarfraz Ahmad, Naima Rasool, Arsalan Raza Wasti, Muhammad Saleem

Department of Paediatric Surgery, Children Hospital & Institute of Child Health, Lahore-Pakistan

Background: Chronic abdominal Pain in children is a very common cause of hospital admission. Many of them are discharged without a diagnosis even after battery of investigations. Laparoscopy plays a significant role in diagnosis and management of many causes of acute and chronic abdominal pain. The purpose of this study was to determine the efficacy of laparoscopy as an efficient diagnostic and management tool in children with chronic abdominal pain. **Methods:** A descriptive, prospective case series was collected in the department of Paediatric surgery Mayo's Hospital Lahore, over the period of 5 years between Jan 2007–Dec 2013. The data of consecutive 50 patients, who were admitted in the department with the diagnosis of chronic abdominal pain, was recorded. All patients who had 2-3 admissions in hospital for last 2 months and failed to establish a definitive diagnosis after clinical examination and base line investigations underwent laparoscopy. The details of associated symptoms, finding of laparoscopy, laparoscopic procedures done, definitive diagnosis, histopathology, complications and relief of symptoms were collected and analysed and results were evaluated using SPSS17. **Results:** Out of 50 patients studies, 27/50 (54%) were male, 23/50 (46%) were female. Age ranged from 2–12 years, with the mean age of 7.24 year. Tuberculosis abdomen, adhesions, mesenteric lymphadenitis, appendicitis and cholecystitis were the final diagnosis. Five abdomens were found normal on laparoscopy. Complete pain relief was achieved in 30/50 (60%), reduced intensity of pain was gained in 12/50 (24%) cases while 16% (8/50) still complained of pain. **Conclusions:** Laparoscopy is an efficient diagnostic and treatment tool in children with chronic unexplained abdominal pain. It avoids serial examinations; prolong admission, battery of investigations and unnecessary surgeries.

Keywords: Laparoscopy, Chronic abdominal pain, Diagnosis, Treatment, Children

J Ayub Med Coll Abbottabad 2016;28(1):35–8

INTRODUCTION

Chronic abdominal pain is the common symptom in children, which is often recurrent and needs hospital admission. It may be due to a wide variety of underlying medical or surgical causes.¹ The approach towards this problem requires detailed history, hospital admission, serial clinical examination, base line investigations, and at times specific and invasive investigations like CT scan.² Most of these children still discharged with the diagnosis of non-specific abdominal pain even after complex and time consuming exercises.

Though laparoscopy was initially considered controversial in unexplained abdominal pain due to the fear of underlying adhesions, but now a days it is considered a well-established and efficient tool not only in assessing all organs in abdomen but surgeon are getting skilled in many therapeutic procedures including adhesionolysis.³ Over the years, laparoscopy has been evolved as an important informative method for diagnosing a wide spectrum

of both benign and malignant diseases. The ability to inspect and access all structures in the entire abdominal cavity and retro-peritoneum through one or more small apertures without disturbing anatomical relation of these structures, places laparoscopy as procedure of choice in workup of unexplained abdominal pain. Since the invention of rod-lens system which has led to miniaturization of optical devices, laparoscopy has become a possible dream in infants and children for diagnosis and treatment.⁴

Laparoscopy as diagnostic modality is useful in third world countries like Pakistan because of its highest yield and greater economy as compare to other investigations like CT scan and MRI.^{5,6} It allows rapid return to normal diet and daily activity, shows better cosmetic results, is cost effective as compare to imaging studies, decreases school absence time, avoids unnecessary laparotomy and may offer treatment at the same time.³

The aim of our study was to evaluate the efficacy of laparoscopy in accurate diagnosis in children with abdominal pain, and an option to provide treatment

at the same time when cause of abdominal pain is established under vision.

MATERIAL AND METHODS

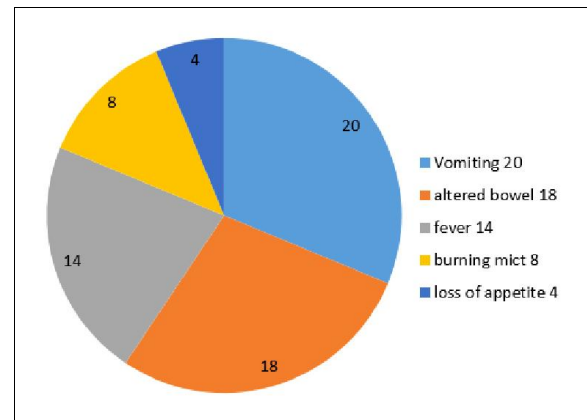
This descriptive, prospective case series was conducted in the department of paediatric surgery Mayo’s Hospital Lahore, over the period of 5 years between Jan 2007–Dec 2013. A total of 50 patients from 2–12 years of ages were included in this study, which had history of 2–3 episodes of abdominal pain in last 2 months. After clinical assessment, base line investigations and ultrasound of abdomen, if still there was no clinical diagnosis, patients were subjected to laparoscopy. Parent’s informed consent was obtained before surgery. Patients with acute abdomen, history of multiple surgeries, abdominal distension and patients with haemodynamically unstable patients were excluded from the study

Laparoscopy was performed under general anaesthesia by open technique. A folly’s catheter was retained in urinary bladder, prophylactic antibiotic were given (injection Augmentin 100 mg/kg and Metronidazole 15 mg/kg). Two ports of 5mm passed in sub umbilical and right lower quadrant areas. If some surgical procedure is added then third port was passed in right hypochondrium or in area of convenience. Age of patient, duration and site of pain, associated symptoms, laparoscopic findings, procedures done , histopathology sent , final diagnosis, any complication occurred and outcome were recorded. Data was collected through predesigned *pro forma* and results were evaluated by using spss.17.0.

RESULTS

Out of 50 patients 23 were male (46%) and rest of 27 (54%) were females. Age ranged from 2 years to 12 years with mean of 7.24 years. Seventeen (34%) patients were 2–5 years old, 23 (46%) were 6–10 years old and 10 (20%) patients belong to 11–12 years age group. (Table-1) On exploring history, 20 had on and off vomiting, 18 had altered bowel habits, 14 had fever, 8 had burning micturation and 5 had loss of appetite and weight as associated symptoms. (Ghraph-1) None of them had history of previous

surgery. On laparoscopic examination, Twenty five patients had enlarged mesenteric lymph nodes, 8 had bands and inter loops adhesions, 4 had tubercles on mesentery or peritoneal lining, 3 had adhesions in right upper abdomen in sub hepatic area, 2 had adhesion around appendix, 2 had unusual small, atrophic appendix and in one patient feacolith was visible inside the lumen of appendix. Five abdomens were found normal. Mesenteric lymph node biopsy was taken in all 25 patients, (proven to be tuberculosis in 20 patients while idiopathic hyperplasia was the final diagnosis in rest of 5 patients). The biopsy of abdominal wall or mesenteric tubercles was taken in 4 patients (tuberculosis was the final outcome in all 4 patients). Adhenolysis and bands lysis was done in all 8 patients, appendectomy was done in 5 patients, while cholecystectomy was done in 3 patients. (Table-2) No gynaecological problems like ovarian cyst, ovarian torsion, Meckels diverticulum, enteric duplication, tumours, and liver disorders were found. Patients were followed up for 6 months. Complete alleviation of pain was observed in 30 patients (60%), reduction in pain was noted in 12 patients (24%), 8 (16%) had persistent pain, who were later on subjected to other investigations.



Graph-1: Associated Symptoms

Table-1: Ages of patients

2–5 years	6–10 years	11–12 years
17	23	10

Table-2: Laparoscopic findings, procedures done and outcome

Laparoscopic finding	Procedure done	Biopsy report	Outcome 42/08
Lymph nodes enlargement 25	Lymph node biopsy	Tuberculosis- 20 Reactive hyperplasia- 5	No/ reduced pain 22 Persistent pain 3
Bands and adhesion 8	adhenolysis	Congenital 8	5 2
Tubercles 4	Biopsy taken	Tuberculosis 4	3 1
Normal 5	None		4 1
Appendicitis 5	Appendicectomies 5	Inflamed 3 (2 not available)	5 0
Cholecystitis 3	Cholecystectomies 3	Inflamed 2 (1 not available)	2 1

DISCUSSION

In last few decades laparoscopy has been developed, refined and popularized as efficient diagnostic and treatment tool. It provide a better view of internal structures with minimal incisions, leading to less stormy post-operative convalescence and lessen the hospital stay with fewer complications. Though the examining endoscope like instrument was constructed in mid 80s and till 1930 it was used for the diagnostic examination of the peritoneal cavity.⁷ Initially paediatric surgeons were slow to adopt laparoscopic technique. Paediatric laparoscopy has been first described in 1923 by Kelling, now in children it has been increasingly used for various procedures in this era.⁸ Its relatively a new specialty in Pakistan, Laparoscopy either not popular among all paediatric surgeon or is used at very limited scale.

Chronic and recurrent abdominal pain in children is most challenging, demanding unrewarding condition in terms of diagnosis and outcome. Most of them even after extensive work up spanning on days, discharged undiagnosed. Laparoscopy offers safe identification of any abnormal finding inside abdominal cavity, opportunity to treat in same setting, which untimely leads to improvement in the outcome, with exclusion of all intra-abdominal organic causes without any empiric intervention.

In our study, slight male child preponderance was observed, (54%). Majority (46%) of children belonged to 6–10 years age group. The age distribution in our study group were identical to the results done in 1999 who stated that chronic abdominal pain is commonest in children between the age of 5–12 yeas.⁹

Abdominal tuberculosis was found to be the most common cause in our study followed by adhesions unlike other studies where chronic appendicitis, gall bladder dyskinesia, mesenteric lymphadenitis, inflammatory bowel disease, adhesions, urinary tract infection, ovarian torsion and ovarian cysts are commonly described.^{3,9–11} It may be due to different selection criteria of patients.

Abdominal tuberculosis is prevalent in our country; mostly it has unspecific presenting features, history and clinical features and non-conclusive base line investigations and abdominal ultrasound. Laparoscopy has become the investigation of choice in such cases leading to prompt diagnosis and evidence based start of anti-tuberculosis drugs.¹² Laparoscopic biopsy of abdominal lymph node, omental or peritoneal nodules is easy.^{13–15}

Unlike other studies reported by Stringle G in 1999 and Baria in 2013 appendicitis was found quite low in number. Contrary to their recommendation that appendectomy should be done

even if abdomen is normal, we only did appendectomies in cases where some obvious pathology of appendix or adhesions around appendix were found.^{9,10}

On laparoscopy, a definitive diagnosis was established in 45/50 patients while 5 abdomens were apparently normal. If laparoscopy is negative even then it is helpful in terms of exclusion of any organic cause and other causes of pain like depression, poor quality of life, emotional disturbances and stress should be considered and managed accordingly.¹⁶

Apart from 20 tuberculosis lymph adenitis, in 5 patients lymph node hyperplasia was in reaction to the some infection inside abdominal cavity were managed with intravenous and oral antibiotics and all were settled. None of patient had lymphoma or other malignancies.¹⁷

Bands and adhesions were the second most common finding in our series. None of them had history of previous abdominal surgery though in literature laparoscopy is used for post-operative adhenolysis. The extra advantage was minimal chances of post-operative adhesions.¹⁸ None of them were so dense adhesions which have made pneumoperitonium difficult. All proved to be either congenital or secondary to chronic inflammation as described by Stephen M Kavik in 2002.¹⁸ Bands around gall bladder and appendix were assumed due to chronic inflammation of these structures. Appendectomies and cholecystectomies were done in 5 and 3 patients respectively, the removal of appendix is recommended when apparent abnormality is visible.¹⁹ On follow up of 5 months pain was resolved either completely or more than 50% in 43/50 patients, however 7/50 still had complaints of on and off abdominal pain. Final outcome in terms of pain relieve in our study is consistent with Gouda et al and study of Moussa and Mahfooz in which 53.5% experienced pain relief and 26.7% experienced reduction in pain after laparoscopic diagnosis and treatment.^{3,20}

CONCLUSION

Laparoscopy has effective diagnostic and therapeutic role in chronic and recurrent abdominal pain in children in whom the expensive and time consuming investigations do not elicit any specific cause.

AUTHOR'S CONTRIBUTION

All authors contributed significantly towards the study.

REFERENCES

1. Ramchandani PG, Stein A, Hotopf M, Wiles NJ. Early parental and child predictors of recurrent abdominal pain at school age: results of a large population-based study. *J Am Acad Child Adolesc Psychiatry* 2006;45:729–36.

2. Oberlander TF, Rappaport LA. Recurrent abdominal pain during childhood. *Pediatr* 1993;14(8):313-9.
3. El-Labban GM, Hokkam EN. The efficacy of laparoscopy in the diagnosis and management of chronic abdominal pain. *J Minim Access Surg* 2010;6(4):95-9.
4. Holocomb GW. Laparoscopic cholecystectomy *Surg Innov* 1998;5(1):2-8.
5. Ramakrishna H. Laparoscopy, A tool in diagnosis of lower abdominal pain. *Indian J Surg* 2004;66(6):377.
6. Saeed M, Ayyaz M, Cheema MA (2003). Role of laparoscopy- a diagnostic aid, its indication and benefits. *Ann King Edward Med Coll* 2003;9:232-4.
7. Spaner SJ, Warnock GL. A brief history of endoscopy, laparoscopy, and laparoscopic surgery. *J Laparoendosc Adv Surg Tech A* 1997;7(6):369-73.
8. Ruchi R, Singh S. Challenges in Paediatric Laparoscopic Surgeries. *Indian J Anaesth* 2009;53(5):560-6.
9. Stringel G, Berezin SH, Bostwick HE, Halata MS. Laparoscopy in the Management of Children with Chronic Recurrent Abdominal Pain. *JLS* 1999;3(3):215-9.
10. Baria KA. "Role of Laparoscopy in Diagnosis and Management of Chronic Abdominal Pain." *Indian J Sci Res* 2013;4(1):65-8.
11. Tulaskar N, Nichkaode P, Dasgupta S, Choudhary A, Zamad R, Panchbhai K. Evaluation of role of laparoscopy in chronic abdominal pain. *Int J Biol Med Res* 2013;4(2):3230-3.
12. Chahed J, Mekki M, Mansour A, Ben Brahim M, Maazoun K, Hidouri S, *et al.* Contribution of laparoscopy in the abdominal tuberculosis diagnosis: retrospective study of about 11 cases. *Pediatr Surg Int* 2010;26(4):413-8.
13. Lin YS, Huang YC, Lin TY. Abdominal tuberculosis in children: a diagnostic challenge. *J Microbiol Immunol Infect* 2010;43(3):188-93.
14. Rai S, Thomas WM. Diagnosis od abdominal tuberculosis: the importance of laparoscopy. *J R Soc Med* 2003;96(12):586-8.
15. Mohamed A, Bhat N, Abukhater M, Riaz M. Role of Laparoscopy in Diagnosis of Abdominal Tuberculosis. *The Internet J Infect Dis* 2009;8:2.
16. Shapiro M, Nquyen M. Pshycological stress and abdominal pain in adolescence. *Ment Health Fam Med* 2010;7(2):65-9.
17. Bhandarkar DS, Shah RS, Katara AN, ShankarM, Chandiramani VA, Udwadia TE. Laparoscopic biopsy in patients with abdominal lymphadenopathy. *J Minim Access Surg* 2007;3(1):14-8.
18. Kavic SM, Kavic SM. Adhesions and adhesiolysis: The role of laparoscopy. *JLS* 2002;6(2):99-109.
19. Pandza H, Custović S, Cović R, Delibegovic S. Laparoscopic treatment of lower abdominal pain related to chronic appendicitis. *Med Arch* 2008;62(5-6):268-70.
20. Moussa GI, Mahfouz AE. Role of laparoscopy in management of un explained chronic abdominal pain. *Egypt J Surg* 2004;23(1):22-9.

Address for Correspondence:

Dr Nabila Talat, Department of Paediatric Surgery, The Children Hospital & The Institute of Child Health, Lahore-Pakistan

Cell: +92 336 644 1369

Email: nabila.talat@chich.edu.pk