

Original Research Article


Feasibility of Laparoscopy as a diagnostic modality in bowel pathologies

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Abstract

Background: As the laparoscopic management in bowel surgeries of abdomen grows as a tool in the armamentarium of the acute care surgeon, it is critical that outcomes are tracked to aid surgeons in making evidence-based decisions with regards to management of their patients.

Aim: To study the feasibility of laparoscopy as a diagnostic modality and to assess the feasibility of laparoscopic intervention in various bowel pathologies in comparison to open surgery. To analyse the outcomes of laparoscopic surgery in compared to those treated by open surgery.

Material and methods: A total 110 cases (Females 45% and Male 55%) of different Intestinal Pathologies from November 2013 to November 2015 were considered. For laparoscopy 80 Therapeutic cases and 30 diagnostic cases were included. All the cases were undergone for routine blood and urine investigation, ECG, X-ray, USG abdomen and Barium meal.

Results: The commonest intestinal pathology in our study was acute Appendicitis (23.6%). Majority of the cases were seen in the age group of 26-40 years (40%). The mean operative time for laparoscopic appendectomy was 23 minutes and 25 minutes in open approach.

Conclusion: Laparoscopy is safe and effective in the treatment of Bowels of abdomen. Tertiary centers with adequate minimally invasive skills should establish laparoscopy as the primary surgical technique in the treatment of this condition.

Key words

Laparoscopy, Open surgery, Bowels of abdomen, Intestinal pathology.

Introduction

Perforation of hollow organs can present as a diagnostic dilemma since both scan and diagnostic peritoneal lavage have a poor sensitivity and a high false negative rate [1]. Laparoscopy may allow early diagnosis of bowel injury decreasing the time of definitive management.

Laparoscopy provides a direct and better view of the anatomy of intra-abdominal organs, lesser operative morbidity and mortality, short hospital stay, acceptability to the patients from cosmetic point of view and early return to work, all these qualities make laparoscopy very attractive and superior to conventional exploratory as a diagnostic tool [2].

The spread of adoption and popularity of laparoscopic surgery is without precedence in modern surgical history. This has resulted in Therapeutic and Diagnostic laparoscopy being attempted in almost every field of surgery to substitute open surgical procedures. The list is endless. It will take time to evaluate the safety and advantages of many of these procedures as reports of controlled studies and follow up results are awaited [3]. The concept of minimally invasive surgery is going to be dominant factor in the surgery of the decade and one should be prepared to face the fascinating challenge. Further development in laparoscopic instrumentation, optical systems and video imaging techniques will add progress and safety to laparoscopic procedures in the days ahead [4].

Small bowel injuries after blunt abdominal trauma represent both a diagnostic and a therapeutic challenge [5]. Early diagnosis and prompt treatment are necessary in order to avoid a dangerous diagnostic delay. Laparoscopy can represent a diagnostic and therapeutic tool in patients with uncertain clinical symptoms [6, 7].

The present study conducted to assess the feasibility of laparoscopic intervention in various bowel pathologies in comparison to open

surgery. To analyse the outcomes of laparoscopic surgery in compared to those treated by open surgery.

Materials and methods

The present study was conducted on patients presenting with signs and symptoms suggestive of (Acute or chronic) intestinal pathology in the outpatient department of MNR Medical College and Hospital, Sangareddy in the department of Surgery over the past one year. In this study 110 cases (Females 45% and Male 55%) of different Intestinal Pathologies were considered. For laparoscopy 80 Therapeutic cases as well as 30 cases for diagnostic laparoscopy were included.

Inclusion criteria

- Sub-acute intestine obstruction due to bands strictures or adhesions (TB).
- Recurrent appendicitis, acute appendicitis, appendicular lump.
- Rectal prolapse.
- Carcinoma colon involving either ascending, transverse or descending colon or sigmoid colon.
- Ileo-caecal tuberculosis.
- Meckels' diverticulities.
- Mesenteric adenitis.
- Omental Necrosis.
- Peptic ulcer perforation.
- Intestinal ischemia and Intestinal Infarctions.

Apart from specific investigations, routine investigations workup was done which includes Evaluation of Complete blood analysis (Hb, TLC, DLC, blood sugar, urea, serum creatinine), routine urine investigations, EGG and chest x-ray, Normalisation of fluids and electrolytes, X-ray abdomen erect view with domes of Diaphragm, USG whole abdomen, Barium meal follow through and Barium enema.

Results

The present study has been under taken at Department of General Surgery, MNR Medical

College and Hospital, Sangareddy over a period of 1 year during November 2013 to November 2015. During study period, 110 cases (Females 45% and Male 55%) of different Intestinal Pathologies were considered. For laparoscopy 80 Therapeutic cases as well as 30 cases for diagnostic laparoscopy were included.

Age wise distribution of patients was as per **Table – 1**.

Table – 1: Age wise distribution of patients.

Range (in years)	No. of cases	%
10 – 25	30	27.27
26 – 40	44	40.00
41 – 55	16	14.54
56 – 70	20	18.18

A total 80 patients were selected for therapeutic laparoscopy and 30 patients for Diagnostic Laparoscopy. The common complained symptom among the patients was pain in abdomen, which was found in 90.9% patients. Other common symptom included nausea and vomiting (61.8%), not passing Flatus and faeces (12.7%), Abdominal Distention (12.7%), Lump (12.72%) and Anorexia (10.9%). (**Figure - 1**) Out of patients, in 47 patients laparoscopy was performed under spinal anesthesia and remaining in 8 patient's laparoscopy done under general anesthesia. Mean operative time (in minutes) for different laparoscopic and open procedures and No. of pain killer injections given in the postoperative period was as per **Table – 2**. Total No. of patients underwent laparoscopic therapeutic intervention was as per **Table – 3**.

Figure – 1: Classification of cases according to their clinical complication.

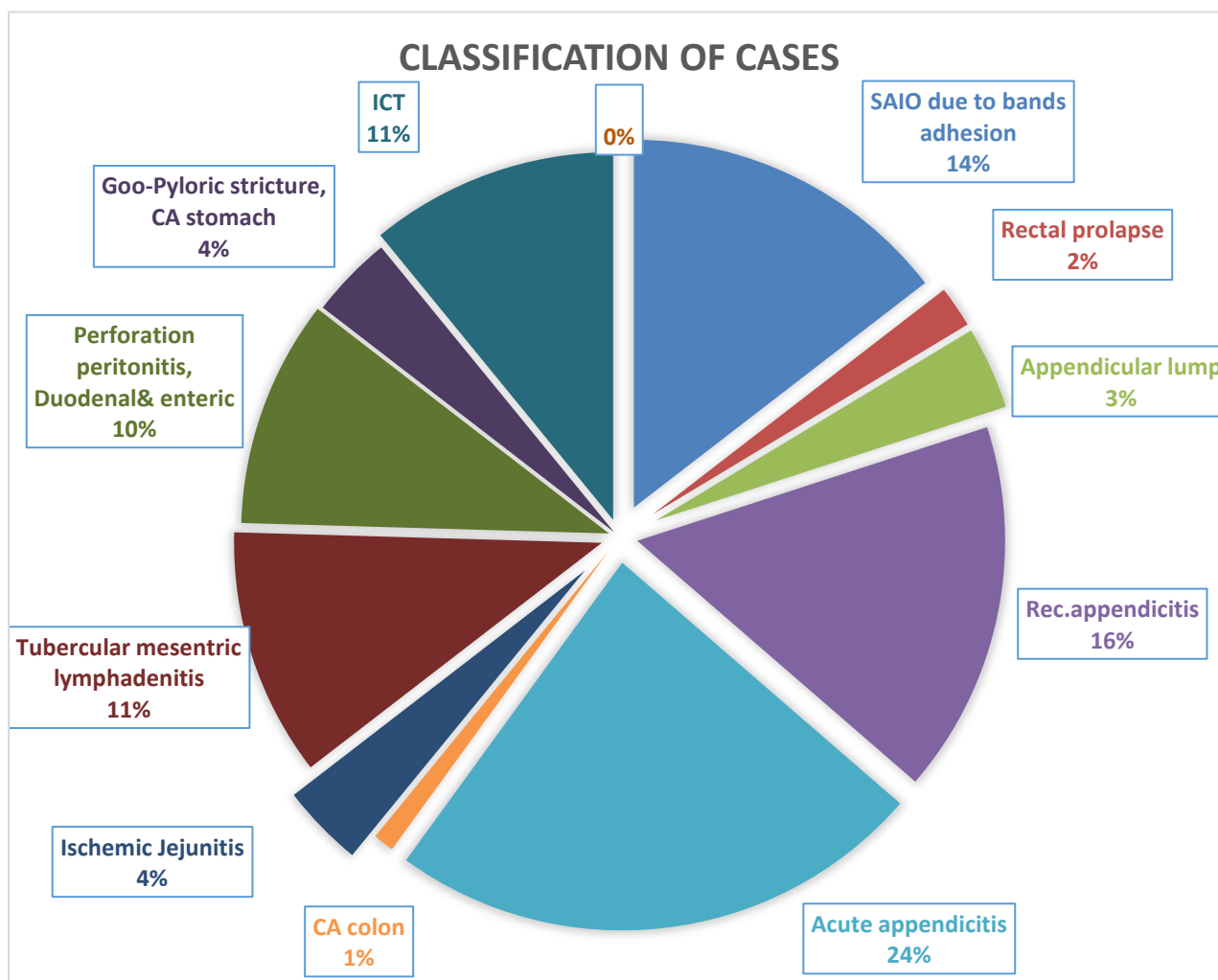


Table – 2: Mean operative time (in minutes) for different laparoscopic and open procedures and No. of pain killer injections given in the postoperative period.

Procedure	Mean operative time		No. of Ampoules	
	Lap. (n=110)	Open (n=452)	Lap. (n=110)	Open (n=452)
Appendectomy	23 Min	25 Min	3 ampoules	6 ampoules
Adhesionlysis	30 Min	15 Min	3 ampoules	10 ampoules
Rectopexy	80 Min	35-40 Min	5 ampoules	12 ampoules
Right Hemicolectomy	72 Min	45 Min	6 ampoules	14 ampoules
Graham’s repair	45 Min	30 Min	6 ampoules	14 ampoules
Gastrojejunosomy	60 Min	50 Min	6 ampoules	12 ampoules
Jejunojejunal anastomosis	45 Min	45 Min	5 ampoules	10 ampoules
Diagnostic	16 Min	16 Min	2 ampoules	10 ampoules

There was an absolute difference in systemic complication between laparoscopic and open surgery. No pulmonary and local wound complication in laparoscopic surgery (**Table - 4**).

Table – 3: Total No. of patients underwent laparoscopic therapeutic intervention.

Pathology	No. of cases	%
Appendectomy	48	48.9%
Adhesiolysis	16	16.3%
Perforation – Duodenal Perforation repair (Graham’s repair)	10	12.2%
Enteric P. repair	2	2.0%
Right Hemicolectomy lap. Assisted	12	12.2%
Rectopexy	2	2.0%
Lap. Assisted R.A.		
• Lap Assisted J.J.	4	4.0%
• Lap Assisted GJ	2	2.0%
• Lap. Assisted Pyloroplasty	2	2.0%

Discussion

This study included 110 patients of different Intestinal Pathologies who were admitted between November 2013 to November 2006 in the Department of General Surgery, MNR Medical College and Hospital, Sangareddy. The age of these 110 patients range from 14-70 years

and most of the Intestinal Pathologies occurred in 26-40 years range (40%). Of all the Pathologies of intestine include in study Acute Appendicitis was commonest (23.6%), recurrent Appendicitis (16.3%), Followed by SAIO (14.5%) due to bands and adhesions, Ileo-caecal Tuberculosis (10.9%), Appendicular lump (3.6%) Gastric out let obstruction (3.6%), Rectal Prolapse (1.8%) and Ischemic jejunitis (3.6%). The present study was done with aim to compare and analysed the results with open surgery for the same pathology using with following parameters- Post-Operative Pain relief, Operative time, Length of hospital stay, Complication.

Acute abdominal emergencies are diagnosed incorrectly or too late in 5 to 20% cases [8-10]. The delay in appropriate treatment, improper surgical access route and repeat surgery causes economic burden, higher morbidity and mortality [10]. According to one prospective non-randomized study laparoscopy may prevent unnecessary appendicetomy in 24% of patients with acute abdomen [11].

The emergency laparoscopic approach for patients with acute abdomen improves the diagnostic accuracy and is there for currently it is recommended and accepted worldwide [4]. Saverlands, et al. in a large study compared laparoscopic appendectomy with open appendicetomy and found that diagnostic laparoscopy lead to a large bur variables

reduction in rate of negative appendectomies [12] (**Table - 3**). Study by Temple L K, et al. concludes that with diagnostic laparoscopy the negative appendectomy rate can be successfully reduced from 10% for open appendectomy to 1% for laparoscopic appendectomy [13].

Table – 4: Complications associated with laparoscopic and open surgeries.

Complications	Laparoscope surgery (n=110)	Open surgery (n=452)
Systemic complication		
Respiratory	-	24
Cardiac	-	6
Ileus	3	41
Pulmonary embolism	-	-
Deep vein thrombosis	-	-
others	2	18
Local complications		
Wound infections	-	58
Wound dehiscence	-	7

Tyagat S H, et al. in his work on 56 patients found diagnostic laparoscopy accurate in 98% of his patients. In a study of 100 patients subjected to diagnostic laparoscopy before an open appendectomy, the rate of misdiagnosis was 41% in female patients of reproductive age and percentage in male patients [14]. The present study recorded the mean operative time for laparoscopic adhesiolysis is 23 minutes which was comparable to open approach 25 minutes by the same surgeon. The studies by Schenk et al and Ellis H, et al. reported their mean operative time as 37 minutes and 42 minutes respectively [15, 16] (**Table - 2**).

Laparoscopy has definitely reduced the rate of negative laparotomies in undiagnosed acute and nonspecific abdominal pain. In this study we found laparoscopy as highly successful and rewarding as a diagnostic and Therapeutic tool in patient suffering from Acute and chronic

Abdominal conditions. There was no mortality and morbidity in our cases.

Conclusion

By this study, we concluded that the commonest intestinal pathology in our study was acute Appendicitis 26 cases, (23.6%). Majority of the cases were seen in the age group 26-40 years (40%). Sex distribution of Intestinal Pathologies was 54.60% Males and 45.40% Female. Commonest symptom was pain in Abdomen which was found in 90.9% patients followed by Vomiting in 61.8% patients. Out of 110 patients, Therapeutic intervention by laparoscopy done in 98 patients while in other 12 patient Biopsy taken and Management was done conservatively. There was an absolute different in systemic complications between laparoscopic and open surgery. There was no pulmonary complication in our Laparoscopic Surgery. There was also no local wound complication in laparoscopy group despite the fact that wound protectors were not used during specimen extraction.

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