
Study of role of laparoscopy in acute abdomen

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Abstract

Study regarding role of laparoscopy in acute abdomen was conducted at Shree Chhatrapati Shivaji Maharaj Sarvopachar Rugnalaya, Solapur during the period from May 2004 to November 2006. Patients of both sex and all age groups were included in the study. A total 30 patients were studied and results were as tabulated and analysed.

In this study, total laparoscopic management was possible in 23 cases (76.7%) while laparoscopy assisted surgery were done in 4 cases (13.3%). In this study, 5 cases presented as adhesive small bowel obstruction, 1 with inflamed Meckels diverticulum and 1 as case of ileoileal intussusception. All these findings were missed on radiological investigations, but werediagnosed accurately on laparoscopy. Laparoscopic treatment was done in 9 cases presented as acute abdomen due to intestinal obstruction. This incidence is equal to that of acute cholecystitis. Of these, 5 patients (55.6%) were due to post operative adhesions. We conclude that laparoscopy is valuable, safe feasible and accurate alternative for management of patients of acute abdomen. It is very useful for final diagnosis of patients of acute abdomen. Even negative laparotomies can be avoided using laparoscopy. Therapeutic laparoscopy can be accomplished in majority of patients of acute abdomen.

Keywords: acute abdomen, laparotomy, laparoscopy, Acute cholecystitis, Abdominal Kochs

1.Introduction

Acute abdomen is defined as a condition in which patient complains of an acute attack of abdominal pain that may occur suddenly or gradually over several hours and presents with symptom complex that possibly threatens the life and requires immediate diagnosis for early treatment. Acute abdomen forms major bulk of workload of a general surgeon. There are number of conditions causing abdominal emergencies, which require prompt treatment, but all of them don't require exploration.

Laparoscopy is a minimally invasive procedure for visualization of intra-abdominal organs to detect pathology as well as to do therapeutic intervention. The visual image of the organ is projected on screen of a monitor after insertion of a telescope in to abdomen. Therapeutic intervention is possible through additional ports. As an alternative to exploratory laparotomy, laparoscopy has been used

from time to time in the past. In early 1980, it became very popular. Thus a new form of abdominal intervention has evolved, not only as diagnostic, but also therapeutic measure.

Present study was carried out to evaluate how diagnosis can be established using laparoscopy in case of acute abdomen, to evaluate correlation between clinical findings as well as other investigations and laparoscopic findings, to evaluate therapeutic role of laparoscopy in acute abdomen, to evaluate cases of acute abdomen where laparotomy can be avoided by using laparoscopy and to study complications in laparoscopy of acute abdomen.

2. Methodology

This study regarding role of laparoscopy in acute abdomen consisted of 30 cases of acute abdomen presented at Shree Chhatrapati Shivaji

Maharaj Sarvopachar Rugnalaya, Solapur during the period from May 2004 to November 2006 for emergency management. Patients of both sex and all age groups were included in the study. Patient who did not give consent for the study were excluded. Cases of Acute uncomplicated appendicitis, which is the most common cause of acute abdomen in regular surgical practice were not included in the study. Study was approved by Institutional Ethical committee, Solapur. Total 30 patients were studied and results were as tabulated and analysed.

3. Results

Maximum numbers of patients were of age 21 to 30 years (14 to 30 patients i.e. 46.7%). Least number of patients were from age group of more than 50 years. Female patients of acute abdomen were slightly more than that of male patients, due to increased number of cases of acute cholecystitis in females. Most common cause of acute abdomen in this study was acute cholecystitis, while most common cause of intestinal obstruction was adhesive obstruction. Therapeutic laparoscopy was done successfully in 23 patients (76.7%), while 4 patients required laparoscopy assisted surgical intervention. Complications related to laparoscopy in our study were observed in 4 out of 30 cases (1.3%).

Table No 1: Age incidence in acute abdomen

Sr. no	Age group (in years)	No. of cases	Percentage (%)
1	10-20	04	13.3%
2	21-30	14	46.7%
3	31-40	05	16.7%
4	41-50	04	13.3%
5	51 or more	03	10%
	Total	30	100%

Table No 2: Sex distribution in cases of acute abdomen

Sr. no	Sex	No. of cases	Percentages
1	Male	14	46.7%
2	Female	16	53.3%
	Total	30	100%

Table No 3: Incidence of various pathologies in acute abdomen

Sr. no	Pathology	No. of cases	(%)
1	Acute cholecystitis	9	30%
2	Adhesive intestinal obstruction	5	16.7%
3	Appendicular abscess	3	10%
4	Appendicular lump	2	6.7%
5	Peptic perforation	2	6.7%
6	Enteric perforation	2	6.7%
7	Intussusception	1	6.7%
8	Parasitic granuloma of colon with Intussusception	1	3.3%
9	Intraperitoneal abscess	1	3.3%
10	Obstructed hernia	1	3.3%
11	Intestinal obstruction due to abdominal kochs	1	3.3%
12	Meckel's diverticulum	1	3.3%
13	Twisted ovarian cyst	1	3.3%
	Total	30	100%

Table No 4: Incidence of various causes of intestinal obstruction

Sr. No	Pathology	No. of cases	%
1	Adhesive obstruction	5	55.6%
2	Intussusception	1	11.1%
3	Obstructed ing. Hernia	1	11.1%
4	Abdominal Kochs	1	11.1%
5	Parasitic granuloma of colon with intussusceptions	1	11.1%
	Total	9	100%

Table No. 5: Age incidence of various pathologies in acute abdomen

Sr. no	Pathology	Age groups (in years)				
		10-20	21-30	31-40	41-50	>50
1	Acute cholecystitis	0	3	3	2	1
2	Adhesive intestinal Obstruction	0	4	1	0	0
3	Appendicular abscess	0	2	0	0	1
4	Appendicular lump	1	0	1	0	0
5	Peptic perforation	0	2	0	0	0
6	Enteric perforation	1	0	0	1	0
7	Intussusception	0	1	0	0	0
8	Intraperitoneal abscess	0	0	0	0	1
9	Obstructed inguinal Hernia	0	1	0	0	0
10	Abdominal kochs	0	1	0	0	0
11	Parasitic granuloma of colon	0	0	0	1	0
12	Twisted ovarian cyst	1	0	0	0	0
13	Meckels diverticulum	1	0	0	0	0
	Total	4	14	5	4	5

Table No 6: Management policies for patients of acute abdomen

Sr. no	Management	No. of cases	Percentages
1	Therapeutic laparoscopy	23	76.7%
2	Lap. Assisted surgery	4	13.3%
3	Laparotomy (conversion)	2	6.7%
4	Laparotomy avoided	1	3.3%
	Total	30	100%

Table No. 7: Correlation between findings on radiological investigations and Laparoscopic findings in acute abdomen.

No	Investigations	No of cases with correct diagnosis	Percentage
1	Radiological	23	76.7%
2	Laparoscopy	30	100%

Table No. 8: Incidence of laparoscopic complications in cases of acute abdomen: -

Sr. no	Complications	No of cases	Percentages
1	Major vessel injury	0	0
2	Bowel injury	1	3.3%
3	Wound gaping	0	0
4	Shoulder pain	0	0
5	Subcutaneous emphysema	2	6.7%
6	Post site infection	1	3.3%
7	Omental prolapse	0	0
8	Port site hernia	0	0
	Total	4	13.3%

4. Discussion

This study for role of laparoscopy in acute abdomen included 30 cases of acute abdomen who presented to Shree Chhatrapati Shivaji Maharaj Sarvopachar Rughnalya, Solapur for emergency management. They were posted for emergency laparoscopy after necessary investigations.

4.1 Age incidence

In this study, patients included were of all ages. Maximum patients of acute abdomen were from age group 21 to 30 years i.e. 14 to 30 cases (46.7%). Next to follow is age group of 31 to 40 years, with 5 cases (16.7%). Age groups of 10-20 years and 41-50 years has same incidence of 4 cases each (13.3%).

4.2 Sex distribution

Among 30 patients of acute abdomen, 16 were females (53.3%) and 14 were males (46.7%). More number of females is due to more incidence of acute cholecystitis in females, which is the most common cause of acute abdomen in this study.

4.3 Incidence of various pathologies in acute abdomen

Cases of acute uncomplicated appendicitis which are actually the most common cause of acute abdomen, were excluded in this study. Acute cholecystitis was the most frequent cause of acute abdomen in our study i.e. 9 of 30 cases (30%). Of these, 6 (66.7%) were females and 3 (33.3%) were males. Age groups having acute cholecystitis commonly were 21 to 30 years and 31 to 40 years i.e. 3 cases each. Next to acute cholecystitis is small bowel obstruction due to adhesions with 5 cases (16.7%), maximum of which were from age group of 21 to 30 years (4 cases).

Waclawiczek *et al*[1] in their study of 172 patients acute inflammation of gall bladder was seen in 48 patients (27.9%) while ulcer perforation was present in 9 patients (5.2%). H. J. Scott and R. D. Rosin[2] in their study of 67 patients, of which 4 were of perforated duodenal ulcer (5.9%) and 2 were of torsion ovarian cyst (2.9%). These findings also correlate with this study.

4.4 Laparoscopic treatment of perforated ulcer

In this study, laparoscopic exploration was done of 4 patients presented for perforation peritonitis, 2 of them (50%) had peptic perforation and 2 had enteric perforation. Of them, both peptic perforations were prepyloric perforation and were sutured using omental patch intracorporeally and drain kept.

Siu *et al*[3] in their study of 121 patient of which 98 (81%) were male. They did laparoscopic repair of perforated peptic ulcer. Mean post operative hospital stay was 6 days. Lorand *et al*[4] in their

study of 59 cases of perforated ulcers, of which 3 (6.89%) required conversion to open surgery and remaining 56 were treated by laparoscopy. Mean post operative stay was 8.2 +/- 4 days. Findings of above studies correlate with this study findings but differences seen may be due to small number of cases in this study.

4.5 Laparoscopic treatment of intestinal obstruction

Laparoscopic treatment was done in 9 cases presented as acute abdomen due to intestinal obstruction. This incidence is equal to that of acute cholecystitis. Of these, 5 patients (55.6%) were due to post operative adhesions while intussusception, parasitic granuloma of colon, abdominal kochs and obstructed inguinal hernia contributed 1 case (11.1%) each.

Liaud J J and Cheah W K[5] in their study observed that most common cause of this condition is adhesion i.e. 8 to 9 cases (88.9%). Behoists *et al*[6] in their study, found that 31 to 35 cases (88.55%) of small bowel obstruction were due to adhesions. These findings correlate with findings of our study but percentages are different, probably due to less number of cases in our study.

4.6 Laparoscopic management of acute abdomen

In this study, total laparoscopic management was possible in 23 cases (76.7%) while laparoscopy assisted surgery were done in 4 cases (13.3%).

Waclawiczek *et al*[1] studied 172 cases of acute abdomen using laparoscopy. They found conversion rate to be 2.7% which is less than our study. Difference in percentages may be due to difference in number of cases. Navej *et al*[7] studied 231 cases in which unnecessary laparotomy was avoided in 6.5% patients. This correlates with our study.

4.7 Correlations between findings on radiological investigations and laparoscopic findings

In this study, 5 cases presented as adhesive small bowel obstruction, 1 with inflamed Meckels diverticulum and 1 as case of ileoileal intussusception. All these findings were missed on radiological investigations, but were diagnosed accurately on laparoscopy. So diagnostic accuracy of radiological investigations was 76.7% (23 out of 30 cases) while the same for laparoscopy was 100%.

Zantut *et al*[8] in their study of 45 patients, 28 cases had nontraumatic acute abdomen. The laparoscopic and ultrasound accuracy were 97.8% and 53% respectively. The findings in our study are better than these figures.

4.8 Complications of laparoscopy in acute abdomen

In this study, complications were seen in 4 cases (13.3%), one was intra-operative bowel injury which was repaired immediately by open method, and one was port site infection, while in two cases subcutaneous emphysema was detected.

Waclawiczek *et al*[1] studied 172 cases in which complications rate was 11%. Benoists *et al*[6] studied 35 cases of small bowel obstruction, of which complications were seen in 19% cases. While in this study complication occurred in 1 of 9 cases of acute small bowel obstruction (11.1%). This correlates with this study. Probably the difference in percentages is due to less number of cases of acute small bowel obstruction in this study.

5. Conclusion

In conclusion, laparoscopy is valuable, safe feasible and accurate alternative for management of patients of acute abdomen. It is very useful for final diagnosis of patients of acute abdomen. Even negative laparotomies can be avoided using laparoscopy. Therapeutic laparoscopy can be accomplished in majority of patients of acute abdomen. Even in other cases where therapeutic laparoscopy is not possible due to some reasons, it can help for laparoscopy assisted surgery, thereby avoiding exploratory laparotomy and its subsequent complications. Even wherever exploratory laparotomy is needed, one can plan the incision. Laparoscopy has advantages of shorter hospital stay, early recovery and good cosmesis. Laparoscopy in

acute abdomen is also a good training modality for trainees.

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