Original Research Paper

Volume-10 | Issue-1 | January - 2020 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

General Surgery

TO STUDY OF PREOPERATIVE FACTORS RESPONSIBLE FOR CONVERSION OF LAPAROSCOPIC APPENDECTOMY TO OPEN APPENDECTOMY BY PREOPERATIVE CLINICAL EXAMINATION AND ULTRASONOGRAPHY

Dr. J. P. S. Shakya M.S, FMAS, FAIS, Associate Professor, Department Of General Surgery, S. N. Medical College, Agra

Dr. Arun Rathore* (M.S.), FMAS, FAIS Surgery, Assistant Professor, Department of Surgery, S. N. Medical College, Agra *Corresponding Author

Dr. Sachin Shukla M.B.B.S., M.S., Junior Resident Third Year, Department of General Surgery Agra

ABSTRACT

Objective: In our study objective is to identified 5 independent risk factor for conversion of laparoscopic appendicectomy are Duration of illness,History of Previous surgery,Leucocyte count at the time of diagnosis, Ultrasonography and Intra operative findings

Materials and methods: Study from December 2017 to December 2019. appendectomy for acute appendicitis was performed on 60 patients in our Surgical Unit at Sarojni Naidu Medical College, Agra. Of these, 30 patients underwent laparoscopic appendicectomy and 30 patients underwent open appendicectomy The clinical, demographic, surgical and pathological data of these patients were included in a prospective database.. The following factors were analyzed in order to identify which were associated with the conversion: History of Previous abdominal surgery, Leucocyte count at the time of diagnosis, preoperative Ultrasonography, Intraoperative findings and Duration of illness During our study period.

Results: At univariate analysis, the factors significantly related to the conversion were the presence of Intraoperative findings (50%) has been the most common factor, preoperative ultrsasonography findings for conversion in(20%)cases, (10%) had undergone previous abdominal surgery , Leucocyte count at the time of diagnosis have no effect on conversion in Duration of illness>3 days (20%)have laparoscopic appendectomies, (30%) laparoscopic appendectomies converted to open . Duration of illness<3 days (30%)have laparoscopic appendectomies and (20%)laparoscopic appendectomies converted to open.

Conclusion: The majority of patients with acute appendicitis can be successfully managed with laparoscopy. We found that the only preoperative independent factor related to conversion during laparoscopic appendectomy is the presence of preoperative factors . Nevertheless surgeons should take into account that presence of Intraoperative findings(peri-appendicular abscess) and pre operative ultrsasonography findings (diffuse peritonitis) are both independently related not only to higher rate of conversion but also to higher risk of postoperative complication. Duration of illness and history of undergone previous abdominal surgery also factors for coversion but on lesser rate.

KEYWORDS : Conversion Of Laproscopic Into Open Appendectomy Intra operative Findings And Pre Operative Ultrsasonography findings.

INTRODUCTION

Appendicitis represents one of the most frequent condition requring surgery. As the laparoscopic technique has increased its popularity in surgery in general and the instruments and technique have developed, many prefer laparoscopic appendectomy to the open technique today (Jaschinski et al. 2015; Guller et al. 2004) Some studies suggest that the laparoscopic approach offers better possibilities for the explortion of the abdominal cavity than open appendectomy (Markides et al. 2010; Nataraja et al.2013; Wilson et al. 2013)However The benefits of laparoscopy are smaller wounds, shorter hospital stay and shorter sick leaves (Hansen et al. 1996) The current trend based on a meta-analysis of randomized trials is favouring laparoscopic appendectomy as the first-line operative treatment for appendicitis (Sauerland et al. 2010). In

AIM AND OBJECTIVES

AIM

The aim of this work is to do a study to predict difficulties during laproscopic appendectomy and possibilities of conversion to open appendectomy by preoperative clinical examination and ultrasonography.

OBJECTIVES:

1. Duration of illness
2. History of Previous surgery
3. Leucocyte count at the time of diagnosis
4. Ultrasonographic findings
5. Intraoperative findings

MATERIALS AND METHODS

This study was conducted in department of GenralSurgery at SarojniNaidu Medical College, Agra up India.

Study from December 2017 to December 2019
Study design –prospective study

Patients of appendicitis at SarojniNaidu Medical College, Agra with required eligibility criteria will be considered in this Study from December 2017 to December 2019

- **INCLUSION CRITERIA**: All patients with all age group symptomatic appendicitis proven appendicitis on USG and fit for surgery.

EXCLUSION CRITERIA :

- Appendicular lump
- Subjects with association Liver/Renal pathology.
- Any Patient not fit for surgery or not giving consent
- After obtaining written consent regarding the study 60 patients was divided into two groups involving 30 patients each group by Prospectively randomization.

- **Group A :**Patients undergoing laproscopic appendectomy with preoperative factors of

1 Duration of illness
2 History of Previous surgery
3 leucocyte count at the time of diagnosis
4 ultrasonography
5 Intraoperative findings

- **Group B :**

Patients undergoing laproscopic appendectomy Converted to open due to preoperative factors of

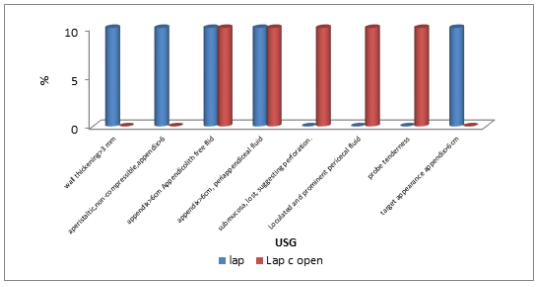
1 Duration of illness
2 History of Previous surgery
3 Leucocyte count at the time of diagnosis
4 Ultrasonography
5 Intra operative findings

OBSERVATIONS

TABLE-1

Ultrasonography	Total	Group A laparoscopic appendectomy	Group B Laparoscopic converted open appendectomy
wall thickening>3 mm	6 (10%)	6(10%)	0
aperistaltic,non-compressible,appendix>6	6(10%)	6(10%)	0

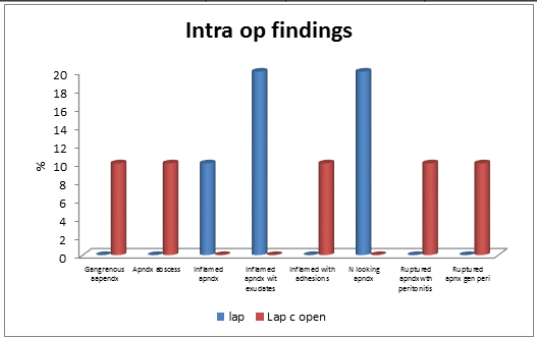
appendix>6cm Appendicolith free fluid	12(20%)	6(10%)	6(10%)
appendix>6cm, peri-appendiceal fluid	12(20%)	6(10%)	6(10%)
submucosa,lost, suggesting perforation.	6(10%)	0	6(10%)
Loculated and prominent pericecal fluid	6(10%)	0	6(10%)
probe tenderness	6(10%)	0	6(10%)
target appearance appendix>6cm	6(10%)	6(10%)	0
	60	30	30



Outcome on the basis of ultrasonography findings in total 60 cases 30(50%) was lap appendix and 30(50%) was Laparoscopic converted open appendectomy ultrasonography findings showing (sub mucosal lost appendix) 6(10%) or (Loculated and prominent pericecal fluid) 6 (10%) that seem to be predictive of abnormal intraoperative findings that prolong the laparoscopic surgery or force to need to convert to open. Whenever a ultrasonography showed a normal appendix, (wall thickening >3mmaperistaltic), (non compressible, appendix >6 (appendix >6cm) (Appendicolith free fluid) the frequency of laparoscopic appendectomy was quite high.

TABLE-2:

Intra operative findings	Total	Group A laparoscopic appendectomy	Group B Laparoscopic converted open appendectomy
Gangrenous appendix	6(10%)	0	6(10%)
Appendix abscess	6(10%)	0	6(10%)
Inflamed appendix	6(10%)	6(10%)	0
Inflamed appendix with exudates	12(20%)	12(20%)	0
Inflamed with adhesions	6(10%)	0	6(10%)
Normal looking appendix	12(20%)	12(20%)	0
Ruptured appendixwith peritonitis base perforated	3(10%)	0	3(10%)
Ruptured appendixwith peritonitis TIP perforated	3(5%)	3(5%)	0
Ruptured appendix genralisedperionitis	6(10%)	0	6(10%)
	60	33(55%)	27(45%)



Of the 60 patients for which a decision was made to convert to open, gross findings that would increased technical difficulty were present in 27(45%)cases also noted in the operative note by the surgeon and included an grenous aappendix 6(10%),appendix abscess 6(10%), ruptured appendix with peritonitis TIP perforated3(5%), ruptured appendix with peritonitis base perforated 3(5%),inflamed appendix with adhesions 6(10%),ruptured appendix with genralised peritonitis 6(10%). This was found to be highly significant compared to the laparoscopic-only (LO) group in conversion.

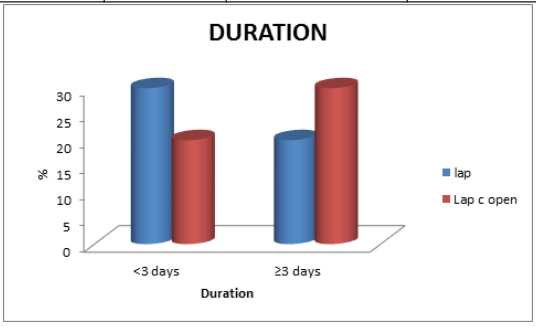
Table-3:previous Surgery

Previous surgery	Total	laparoscopic appendectomy	Laparoscopic converted open appendectomy
Yes ,lower section caesarian section	3(5%)	0	(10%)
yes, open cholecystectomy	3(5%)	0	6(10%)

Patients who belonged to the Laparoscopic converted open appendectomy group were observed to be history of previous surgery compared with the Laparoscopic appendectomy group. This difference was statistically significant. A total of 60 cases 12(20%)cases have history of previous surgery and all the 12(20%)cases underwent Laparoscopic converted open appendectomy procedures, out of which 6(10%)cases of previous lower section cesarean section and 6(10%)cases of previous abdominal open cholecystectomy converted to an open technique.

Table-4: Duration

Duration	Total	laparoscopic appendectomy	Laparoscopic converted open appendectomy
<3 days	30 (50.00)	18 (30%)	12(20%)
≥3 days	30 (50.00)	12 (20%)	18(30%)
		30	30



The rate of conversion progressively increased with the duration of symptoms. The majority of the patients presented with a duration of symptoms of less than _<3 days, and at that time point very few of them were converted to open. A large proportion of people that presented with more than >3days of symptom duration were converted to open. This difference only seemed to become statistically significant when a >3 days threshold was considered.

Table-5:TLC (cells/mm)

Group	N	Min.	Max.	Mean	SD	t-value	p-value
Lap	30	4200	12300	7060	3053.76	6.875	<0.0001
Lap open	30	9600	12600	11120	1065.57		

No direct correlation was seen between the WBC count and the conversion rate. However, a trend toward higher conversion was seen when a WBC >10,000 was noted at initialpresentation. The highest rate of negative appendectomy was also present in patients with a normal WBCcount of 4000 to 10,000

DISCUSSION

Demographic, clinical and pathological data of the 60 patients considered in the analysis are summarized in Tables 1 to table 5. 6 patients(10%) had undergone previous abdominal surgery. 30 (50%) procedures were successfully performed laparoscopically and 30 (50%) were converted to conventional open procedure.

The presence of a preoperative ultrsasonography findings for conversion in(20%)cases ultrsasonography findings with Loculated and prominent pericecal fluid 6(10%)also associated with appendix absess intra operatively and ultrsasonography findings with sub mucosal lost appendix 6(10%) also associated with ruptured appendix with peritonitis base perforated 3(5%)in intra operative findings.

Intraoperative findings (50%)has been the most common reason 30 of

60 patients, (50%)patients were converted. In 30cases the conversion was the result of a intraoperative findings gangrenous aappendix 6(10%) appendix abscess 6(10%), ruptured appendix with peritonitisbase perforated3(5%),inflamed appendix with adhesions 6(10%), ruptured appendix with genralised peritonitis 6(10%).

CONCLUSION

In our study we identified 5 independent risk factor for conversion of laparoscopic appendicectomy are

1. Duration of illness
2. History of Previous surgery
3. Leucocyte count at the time of diagnosis
4. Ultrasonography
5. Intraoperative findings

Based on this data surgeon can initiate open appendicectomy or aim to have a low threshold of conversion if any of the above mention risk factors present in combination. We have developed a preoperative assessment to estimate the risk of conversion to open during laparoscopic appendectomy based on clinically relevant and readily available pre-operative patient characteristics, and a pre-operative diagnosis of complicated appendicitis.

We also know that the converted patient population is at risk for higher rates of post-operative morbidity, even when compared to those undergoing the primary open approach.

Therefore, the predictors identified here could help select for patients who may benefit from primary open appendectomy

In conclusion, the majority of patients with acute appendicitiscan be successfully managed with laparoscopy. We found that the only preoperative independent factor related to conversion during laparoscopic appendectomy is the presence of History of Previous abdominal surgery, Duration of illness>3 days, Intra operative findings is most common reason for conversion Ultrasonography preoperative is second most common and Leucocyte count at the time of diagnosis have no effect on conversion. Nevertheless surgeons should take into account that presence of peri-appendicular abscess and diffuse peritonitis are both independently related not only to higher rate of conversion but also to higher risk of postoperative complication

REFERENCES

1. Guller U, Hervey S, Purves H, Muhlbaier L H, Peterson E D, Eubanks S &Pietrobon R. (2004). Laparoscopic versus open appendectomy: Outcomes comparison based on a large administrative database. Annals of Surgery, 239(1): 43-52.
2. Hansen J B, Smithers B M, Schache D, Wall D R, Miller B J & Menzies B L. (1996). Laparoscopic versus open appendectomy: Prospective randomized trial. World Journal of Surgery, 20(1): 17-20; discussion 21.
3. Jaschinski T, Mosch C, Eikermann M & Neugebauer E A. (2015). Laparoscopic versus open appendectomy in patients with suspected appendicitis: A systematic review of meta-analyses of randomised controlled trials. BMC Gastroenterology, 15, 48-015-0277-3.
4. Markides G, Subar D & Riyad K. (2010). Laparoscopic versus open appendectomy in adults with complicated appendicitis: Systematic review and meta-analysis. World Journal of Surgery, 34(9): 2026-2040.
5. Nataraja R M, Loukogeorgakis S P, Sherwood W J, Clarke S A & Haddad M J. (2013). The incidence of intraabdominal abscess formation following laparoscopic appendicectomy in children: A systematic review and meta-analysis. Journal of Laparoendoscopic& Advanced Surgical Techniques. Part A, 23(9): 795-802.
6. Sauerland S, Jaschinski T & Neugebauer E A. (2010). Laparoscopic versus open surgery for suspected appendicitis. The Cochrane Database of Systematic Reviews, (10): CD001546.
7. Wilson D G, Bond A K, Ladwa N, Sajid M S, Baig M K &Sains P. (2013). Intra-abdominal collections following laparoscopic versus open appendicectomy: An experience of 516 consecutive cases at a district general hospital. Surgical Endoscopy, 27(7): 2351-2356.