



COMPARATIVE STUDY BETWEEN SIMPLE LIGATION VERSUS INVAGINATION OF APPENDICULAR STUMP IN OPEN APPENDICECTOMY.

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ABSTRACT

Acute appendicitis is the most common surgical disease with a lifetime risk of 7-8 %¹. Since the first descriptions of appendicectomies , the treatment of appendicular stump has been variable. Simple ligation is preferred over invagination of stump is preferred as it is simpler , less time consuming and doesn't alter the anatomy of cecum and is similar to stump invagination in terms of post operative complications.

AIMS AND OBJECTIVES: This study is designed with the aim to compare the two techniques for treatment of appendicular stump that is simple ligation versus invagination of stump prospectively. To determine the advantages and disadvantages of each method with regard to duration of surgery , intra operative, post operative complications and hospital stay.

MATERIALS AND METHODS : The present study consists of 128 patients having been operated as a case of acute appendicitis and appendicular perforation admitted in Post Graduate Department of Surgery ,GMC over a period of 1 year from February 2019 to February 2020. The study consisted of two groups

Group A-Simple ligation of appendicular stump-64 cases.

Group B- Ligation and invagination of appendicular stump-64 cases.

Both groups were similar with respect to age, sex and complications.

INCLUSION CRITERIA- all patients > 1 year of age with acute appendicitis and appendicular perforation.

EXCLUSION CRITERIA- appendicular lump, appendicular abscess, immunocompromised patients, diabetics, pregnancy and interval appendicectomy.

All patients were given same pre operative antibiotics. Duration of the procedure with time from skin incision to skin closure is noted. All the patients were given same post operative antibiotics . Their post operative complications were noted and analysed.

RESULTS: In the patients in group A (n=64) the incidence of post operative complications like pyrexia , wound infection, wound dehiscence and duration of hospital stay was comparable with the patients in Group B (n=64) . However the mean duration of surgery in Group A patients was significantly lower than the duration of surgery in Group B patients .

CONCLUSION: In conclusion we recommend that appendix stump should be simply ligated as it is less time consuming and is comparable with stump invagination in terms of post operative complications.

KEYWORDS :

INTRODUCTION

Acute appendicitis is the most common surgical disease with a lifetime risk of 7-8 %¹. Surgical management of acute appendicitis can be safely performed with a open or minimally invasive approach. First minimal invasive appendectomy was done in an adult by Semm in 1983.² since the first descriptions of appendicectomies , the treatment of appendicular stump has been variable . Simple ligation was the preferred method of treatment initially until its effectiveness was questioned by some authors citing the risk of infection and loosening of the ligature suggesting that stump should be covered or buried by sutures.³ In invagination of stump , the appendix stump is crushed , ligated and then invaginated . Carbolisation of stump prior to invagination was included as a safeguard against infection.⁴ On the other hand simple ligation is found simpler , less time consuming and without interfering the anatomy of the cecal wall.⁵

SEX RATIO

MALES	FEMALES	TOTAL
87	41	128

Table 1: Age Distribution

AGE	MALE	FEMALE	TOTAL	%
0-10	8	2	10	7.8%
11-20	23	14	38	29.7%
21-30	27	11	37	28.9%

31-40	10	7	17	13.2%
41-50	12	4	16	12.5%
51-60	2	3	5	4%
61-70	3	0	3	2.34%
71-80	2	0	2	1.56%
TOTAL	87	41	128	100%

Out of the 128 patients in the study , the maximum number of patients were in the age group of 11-20 years (29.7%). The youngest patient was 2 years old and the oldest patient was 72 years old. Mean age of presentation was 27.9 years.

Patients were divided into two equal groups of 64 each. Group A consisted of patients in which simple ligation of appendicular stump was done while in Group B ligation and inversion of stump was done.

Table 2: Sex Ratio

MALES	FEMALES	TOTAL
87	41	128

Males constituted 67.97% of the cases whereas females constituted 33.03 % of the patients with a male : female ratio of 2.12:1.

Retrocecal appendix was found in 63% of the patients while appendix was pelvic in position in 25% of the cases. Subcecal and other positions included 9% and 7% respectively

Table 3: Intraoperative Findings

FINDINGS	GROUP A (N=64)	GROUP B (N=64)
SIMPLE APPENDICITIS	49	49
APPENDICULAR PERFORATION	15	15

A total of 23.43% of the patients had appendicular perforation with males comprising 66.67% and females comprising 33.33% of the perforations. 76.57% of the patients had simple appendicitis.

Table 4: Complications

COMPLICATION	GROUP A (N=64)	GROUP B (N=64)	p-value
PYREXIA	13 (20.3%)	14(21.8%)	0.821 (insignificant)
WOUND INFECTION	7 (10.9%)	6 (9.37%)	0.735 (insignificant)
WOUND DEHISCENCE	3 (4.7%)	1(1.56%)	0.213 (insignificant)
FISTULA	NIL	NIL	-

Out of 64 patients in Group A 20.3% had pyrexia whereas wound infection and wound dehiscence occurred in 10.9% and 4.7% patients respectively. In Group B the pyrexia occurred in 21.8% of patients and wound infection and wound dehiscence occurred in 9.37% and 1.56% patients respectively.

Table 5 :AVERAGE DURATION OF SURGERY

	GROUP A (N=64)	GROUP B(N=64)	p-value
DURATION	41.11 + 3.26	50.2 + 3.47	<0.0001 (significant)

The average duration of surgery in Group A was 41.11 ± 3.26 minutes and the average duration of surgery in Group B was 50.2 ± 3.47 minutes. The average hospital stay was same in both the groups.

DISCUSSION

In our study a total of 128 patients requiring emergency surgery for acute appendicitis and appendicular perforation were included. The highest number of cases were found in the age group of 11-20 years (29.7%). BUCKIUS MT et al⁶ in their study of changing epidemiology of acute appendicitis in the united states found that the most common age of presentation of acute appendicitis was in the age group 10-19 years.

128 patients in our study were divided in two equal groups of 64 each . Males constituted 67.97% of the patients whereas females constituted 32.03% of the patients. CHAUDHARI YP et al⁷ in their study of prevalence of appendicitis at Surgery inpatient department of a tertiary care hospital found that males constituted 60% of the patients while females constituted 40% of the patients.

Out of the 128 patients in our study, 23.4% of the patients had appendicular perforation and 76.6% had simple appendicitis . BALOGUN OS et al⁸ in their study of acute perforated appendicitis in adults found out that the rate of appendicular perforation was 28.5%.

The most common post operative complication in both the groups was pyrexia. In Group A 20.3% of the patients had developed pyrexia whereas in Group B 21.8 % of the patients developed pyrexia which is statistically insignificant. S KHAN⁹ in his study of assessment of stump invagination versus

simple ligation in open appendectomy found out that the incidence of post operative pyrexia in simple ligation of appendicular stump was 22.5% and in patients with invagination of appendicular stump the incidence of post operative pyrexia was 18.57%. These findings go well with our study.

The incidence of wound infection and wound dehiscence in the patients of Group A in which simple ligation of appendicular stump was done was 10.9 % and 4.7% respectively whereas the incidence of wound infection and wound dehiscence in Group B patients in which appendicular stump was invaginated was found to be 9.37% and 1.56% respectively which is statistically insignificant. CUBAS V et al¹⁰ in their study of simple ligation versus stump inversion in open appendectomy found that the incidence of wound infection in the patients of simple ligation of appendicular stump was 0-30% and the incidence of wound infection in the patients of invagination of appendicular stump was 2-27%. These findings go well with the findings of our study.

The authors observed that the average duration of surgery from skin incision to skin closure in Group A patients was 41.11 ± 3.26 minutes and the average duration of surgery in Group B patients was 50.2 ± 3.47 minutes which is statistically significant. SINGH G et al¹¹ in their study of management of appendix stump found that the mean duration of surgery from skin incision to the closure in patients with simple ligation of appendix stump was 48.2 minutes while in patients with stump invagination was 60.9 minutes .

The mean duration of hospital stay was similar in both the groups that is 4 days.

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