ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue –2, March - 2020, Page No. : 04 - 08

A Prospective Randomized Study of Comparision Between Closure Versus Non Closure of Peritoneum In Open Appendicectomies

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Citation this Article: Dr. Shivkumar Bunkar, Dr. Tushar Ahuja, Dr. Kalpana Agarwal, "A Prospective Randomized Study of Comparision Between Closure Versus Non Closure of Peritoneum In Open Appendicectomies", IJMSIR- March - 2020, Vol – 5, Issue -2, P. No. 04 – 08.

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background: The best of present knowledge there are very few studies in general surgery on nonclosure of peritoneum. Therefore, this study was undertaken to compare clinical outcomes between patients undergoing appendectomy with and without peritoneal closure.

Methods: A prospective, randomized, single blinded trial of 100 patients was done in Department of General Surgery at the J.L.N. Medical College & Hospital, Ajmer. In all the cases a detail history, physical examination and investigation was done as per performa.

Results: Total 6 patients (12.00%) in group A needed additional analgesia with injection tramadol as compared to 4 patients (8.00%) in group B. This difference between two groups was statistically found to be non significant. In the present study 3patients (6.0%) in Group A and 2 patients (4.0%) in Group B had wound infection. Statistical analysis was found to be non significant.In group A mean duration of hospital stay was 6.33 days and in group B mean duration of hospital stay was 5.92 days. Statistical analysis was found to be significant.

Conclusion: It is concluded from the above study that, non closure of peritoneum at open appendicectomy is associated with lesser operating time, and shorter duration of hospital stay.

Keywords: Appendicetomy, Peritoneum, Intra-abdominal.

Introduction

Appendicitis is the most common intra-abdominal condition requiring emergency surgery, with a lifetime risk of 6%. Appendectomy continues to be one of the commonest procedures in general surgery, accounts for approximately 1% of all surgical operation[1].

Following an appendectomy, it has been standard practice to stitch the peritoneum closed. It has been suggested that peritoneal adhesions may be more likely when the peritoneum is closed, possibly as a result of reaction to the suture material and tissue ischemia. Prior animal experiments and general surgery reports have shown that suture peritonealisation tends to cause tissue ischemia, necrosis, inflammation, and foreign

body reactions to suture material. These factors may slow down the healing process and are considered important precursors of adhesion formation. Peritoneum is a mesothelial organ. In contrast to epidermal repair, where healing occurs gradually from wound borders, peritoneum heals simultaneously throughout the wound because mesothelial cells initiate multiple sites of repair. If the peritoneum is left open, experimental studies have shown that a spontaneous reperitonealisation will appear within 48-72 hours after injuring the peritoneum with complete healing after five to six days.[2]

Peritoneum also has rich nerve supply and poor blood supply. Closure of peritoneum may result in more pain because of ischemia produced by suturing with increased adhesion formation during regeneration. Leaving the peritoneum open does not have any untoward effect but has several advantages which are supported by clinical and animal data. These advantages include reduced operative time, lower operative morbidity, early discharge from hospital, reduced postoperative pain and associated sympathetic over activity.[3]

The best of present knowledge there are very few studies in general surgery on nonclosure of peritoneum. Therefore, this study was undertaken to compare clinical outcomes between patients undergoing appendectomy with and without peritoneal closure.

Material and methods

Study Design: Hospital based prospective clinical comparative study.

Study Place: Surgery Department of J.L.N. Medical College and Hospital, Ajmer.

Study Period: August 2018 to July 2019

Method of Data Collection: A prospective, randomized, single blinded trial of 100 patients was done in Department of General Surgery at the J.L.N. Medical College & Hospital, Ajmer. In all the cases a detail history, physical examination and investigation was done as per performa

Inclusion Criteria

- Age between 18-50 years.
- All patients with clinical diagnosis of acute appendicitis undergoing open appendicectomy.

Exclusion Criteria

- Pregnancy.
- Previously operated patients.
- Immunocompromised patients.
- Appendicular mass and perforated appendix.
- Patients with diabetes mellitus.
- Addiction to narcotics.
- Suffering from psychiatric disorders.
- Consent not obtained.

Methodology

After thorough history taking, clinical examination and routine blood investigations, those patients meeting the above criteria and consenting for the study will be included in the study .All patients was randomly classified into two groups:

- Group A: Included patients subjected for open appendicectomy with closure of peritoneum.
- Group B: Included patients subjected for open appendicectomy with non closure of peritoneum

The procedure will be carried out, under spinal anesthesia. Patient was discharged after/on 3rd postoperative day.

Results

Table 1: Age distribution

Age in years	Group-A	Group-B
Mean	34.23	33.39
SD	6.29	7.31

t-test=2.01, P-avalue=0.49

The age of the patients included ranges from 18 years to 50 years. Maximum numbers of patients, 37 were in the age group of 31-40 years. Mean age in group A was 34.23 years and group B was 33.39 years.

Table 2: Operating Time

Group A	Group B	p-value
69.50 ±25.35	47.25 ±17.18	<0.0001,HS*

* - HS : Highly significant

Mean Operative time for Group A was 69.50 minutes and for Group B was found to be 47.25 minutes. After applying student t test, difference between operative time between both the groups was found to be statistically significant (p< 0.0001).

Surgery was performed by various surgeons and the time taken varies from surgeon to surgeon. Since this pool consists of approximately more than 5 surgeons operating, the duration of surgery may not be clinically significant. However since non closure of peritoneum involves one less step in surgical procedure, the operating time taken would be less.

Table 3: Requirement of Analgesia

Analgesic	Group A	Group B	P value
Standard	50(100.00%)	50(100.00%)	
High	8(16.00%)	6(12.00%)	0.41, NS

To assess immediate post operative pain patients were divided into two groups,

- Standard analgesic requirement
- High analgesic requirement

All patients post operatively were given same analgesic (inj. Diclofenac) in recommended doses as per weight for 3 days. Patients who required analgesic for more than 3 days or patients who required more than one analgesic (Inj.Tramadol) were said to be in high analgesia requirement group and others were included in the standard analgesia requirement group.

8 patients (16.00%) in Group A required high analgesia as compared to 6 patients (12.00%) in Group B. This difference was statistically found to be non significant.

Table 4: Requirement of Additional Analgesia

Group A	Group B	P value
6(12.00%)	4(8.00%)	0.52, NS

Total 4 patients (12.00%) in group A needed additional analgesia with injection tramadol as compared to 4 patients (8.00%) in group B. This difference between two groups was statistically found to be non significant.

Table 5 : Surgical Site Infection

Group A	Group B	p-value
3(6.00%)	2(4.0%)	0.57,NS

In the present study 3patients (6.0%) in Group A and 2 patients (4.0%) in Group B had wound infection. Statistical Analysis was found to be non significant

Table 6: Post Operative Hospital Stay

Group A	Group B	p-value
6.33± 0.88	5.92 ±0.84	0.0081, HS

In group A mean duration of hospital stay was 6.33 days and in group B mean duration of hospital stay was 5.92 days. After applying t- test it was found to be statistically significant (p-value<0.0081).

Discussion

As the surgical time taken varies from surgeon to surgeon and since in the present study this pool consisted of more than 5 qualified surgeons operating, the duration of surgery may not be clearly interpreted. However since non closure involves one less step in surgical procedure, probably operating time taken would be less.

Analgesia requirement is considered a good indicator to assess pain and so to assess post operative pain patients were divided into two groups,

- Standard analgesic requirement
- High analgesic requirement

All patients post operatively were given same analgesic (inj.Diclofenac) in recommended doses as per weight for 3 days.

All patients post operatively were given same analgesic (inj.Diclofenac) in recommended doses as per weight for 3 days. Patients who required analgesic for more than 3 days or patients who required more than one analgesic (inj. Tramadol) were said to be in high analgesia requirement group and others were included in the standard analgesia requirement group. 8 patients(16.00%) in Group A required high analgesia as compared to 6 patients (12.00%) in Group B. This difference was statistically found to be non significant.

Total 6 patients (12.00%) in group A needed additional analgesia with injection tramadol as compared to 4 patients (8.00%) in group B. This difference between two groups was statistically found to be non significant.

Study	Results
Hull and Varner et al[3] in caesarean section.(1991)	Post operative pain significantly less in non closure group
Irion et al[4] in caesarean section.(1996)	No difference in post operative analgesic use in both groups
Hojberg et al[5], in caesarean section , (1998)	Decreased usage in post operative analgesic in non closure group
Present study	No difference in post operative pain in both groups

Wound infection was found in 4 patients in group A and 3 patients in group B and was statistically non significant. Other studies by Ellis and Heddle[52] and Dorfman et al[6] also observed the comparable results.

Study	Result
Ellis and Heddle[7] in Exploratory Laparotomy, 1977	No significant difference in wound infection in both the group
Dorfman et al[6], in cholecystectomy, 1997	No significant difference in wound infection in both the group
Present study	No significant difference in wound infection in both the group

In group A mean duration of hospital stay was 6.33 days and in group B mean duration of hospital stay was 5.92 days. After applying t- test it was found to be statistically significant (p-value<0.0081).

Study	Result
CORONIS trial[8],2007	Significantly reduced hospital stay in non closure of peritoneum group
Present study	Statistically Significant reduction in hospital stay in non closure of peritoneum group.

In present study, non closure of peritoneum in open appendicectomy was found to have a decreased operative time and less duration of hospital stay which was statistically significant. Pain was less in patients with non closure of peritoneum as compared to closure but not statistically significant. There was no difference in post operative complications in both groups. These

results were consistent with studies done with non closure of peritoneum in caesarean sections and laparotomies. However since our study has been the first study with appendicectomies we could not compare it to any other study.

Conclusion

It is concluded from the above study that, non closure of peritoneum at open appendicectomy is associated with lesser operating time, and shorter duration of hospital stay.

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