

“Post Operative Analgesic Requirement in Closure Vs Non-Closure of Peritoneum in Open Appendectomy”

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Abstract:

Background: It is conventional to suture all the layers that are cut during surgery. This is indeed what every surgeon is taught and every surgeon is practicing. The fear of increased adhesions following the non-closure of peritoneum has been disapproved by many studies.

Our hypothesis is that – peritoneum has rich nerve supply and poor blood supply. Closure of peritoneum results in more pain because of ischemia produced by suturing. To test our hypothesis we will take up this study to know the effect of non-closure of peritoneum at appendectomy on post-operative pain and analgesic requirement.

Materials and Methods: This is a prospective study of 100 in-patients undergoing open appendectomy in PK Das Institute of Medical Sciences, Palakkad, Kerala over a period 2years selected by purposive sampling method.

Patients were divided in two groups non-randomly: Group A: Included patients subjected for open appendectomy and who underwent closure of peritoneum. Group B: Included patients subjected for open appendectomy with non-closure of peritoneum.

Post operatively pain was recorded using visual analogue scale (VAS), on day 0, day 1 and day 2. Analgesic requirement was calculated based on severity of pain calculated using VAS. The analgesic requirement was recorded.

Results: There were 100 patients in our study of which 50 had peritoneal closure and other 50 had non-peritoneal closure. 44 were female and 56 were male patients. Mean for VAS for closure was 8, 5 and 3 on day 0, 1 and 2 respectively. And that for non closure was 5,3 and 2 on day 0, 1 and 2 respectively. In our study those who underwent peritoneal closure had more score on VAS and required more analgesia that those underwent non closure of the peritoneum. Total 8(16%) patients in Group A required high analgesia as compared to 5(10%) patients in Group B. Total 5 patients (8.4%) in group A needed additional analgesia with injection tramadol as compared to 4 patients (5.9%) in group B.

Conclusion: It is concluded from the above study that, nonclosure of peritoneum at open appendectomy is associated with lesser postoperative pain and lesser postoperative analgesia requirement. Hence, non closure of peritoneum in appendectomies can be safely recommended.

Key Word: Appendectomy, Peritoneum, VAS, Analgesia

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I. Introduction

Appendicitis is most common surgical emergency and appendectomy is a most common abdominal surgical procedure. Appendicitis is diagnosed using USG, CT, MRI and laparoscopy. Imaging techniques have been shown to be particularly accurate.

Re-approximation of peritoneum after appendectomy has been widely performed on a routine basis. It is conventional to suture all the layers that are cut during surgery. This is indeed what every surgeon is taught and every surgeon is practicing. On the contrary, theoretical consideration and animal experiments support that suture peritonization tends to cause 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. On the other hand clean excision of peritoneal surface without suturing the cut edges provides more rapid peritoneal repair and does not lead to tissue ischemia and inflammation decreasing the risk of adhesion formation.^{1,6} Due to the presence of mesothelial cells in the peritoneum, spontaneous reperitonealization after injury will initiate within 48 to 72 hours and complete healing in 5 to 6 days.⁷ Closure of peritoneum at lower abdominal surgery that may be an appendectomy have not any additional advantage, rather is associated with more complications.

Much of the experience on non- closure of peritoneum in the literature comes from obstetric and gynaecological surgeries. The effect of post-operative pain remains a controversial issue. Our hypothesis is that – peritoneum has rich nerve supply and poor blood supply. Closure of peritoneum results in more pain, because of ischemia produced by suturing. To test our hypothesis we will take up this study to know the effect of non-closure of peritoneum at appendectomy on post- operative pain and analgesic requirement.

II. Material And Methods

This is a prospective study of in-patients undergoing open appendectomy in PK Das Institute of Medical Sciences, Palakkad, Kerala over a period 2years selected by purposive sampling method. Primary source data will be collected from a specially designed case recording Performa (CRF) pertaining to the selected patients. Prior to selection, they will undergo routine history taking, physical examination and investigations. Informed written consent will be taken prior to the study.

Inclusion criteria:

Patients undergoing emergency or elective open appendectomy with proven ultrasonographic findings will be recruited for the study.

Exclusion criteria:

Age less than 12 years.

Neurotic/ psychiatric patients.

Complicated appendicitis.

Patients who will be operated under anaesthesia other than spinal anaesthesia.

The study population comprised of 100 in-patients undergoing open appendectomy.

Patients were divided in two groups non-randomly:

Group A: Included patients subjected for open appendectomy and who underwent closure of peritoneum.

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

The patients enrolled for the study undergo open appendectomy under spinal anaesthesia. Mc Burneys incision will be employed in all the cases. Per operative findings on opening the abdomen will be noted. Patients with complications, additional pathology and who will undergo additional procedure will be excluded. After removing the appendix, group A underwent suture closure of peritoneum, and in group B the peritoneum was left open. Rest of the layers will be closed as in routine. The time when surgery ended will be taken as “0” hour and the day of surgery will be taken as “0” day.

Post operatively pain will be recorded using visual analogue scale(VAS), on day 0,day 1 and day 2. Analgesics will be administered when VAS is more than 4 on the scale. The analgesic requirement will be recorded. Patients will be watched for wound infection.

Analgesic requirement :

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.

III. Result

There were 100 patients in our study of which 50 had peritoneal closure and other 50 had non-peritoneal closure. 44 were female and 56 were male patients.

In the present study 36 patients were found in the age group of 21 – 30 yrs (36%), 24 patients were found in the age group of 12 - 20 yrs (24%),18 patients were found in the age group of 31 - 40 yrs (18%),14 patients were found in the age group of 41 - 50 yrs (14%) and 8 patients were found in the age group of 51 - 70 yrs (8%).

Age (in yrs)	Frequency
12-20	24
21-30	36
31-40	18
41-50	14
51-60	04
Above 61	04

Pain on vas for peritoneal non-closure and closure patients (mean)

	DAY 0	DAY 1	DAY 2
PAIN ON VAS FOR CLOSURE(Grp A)	8	5	3
PAIN ON VAS FOR NON-CLOSURE(Grp B)	5	3	2

Mean for VAS for closure was 8, 5 and 3 on day 0, 1 and 2 respectively. And that for non closure was 5,3 and 2 on day 0, 1 and 2 respectively. In our study those who underwent peritoneal closure had more score on VAS and required more analgesia that those underwent non closure of the peritoneum. The chi-square statistic is 0.0081 & p-value is .995946 which was not statistically significant.

Analgesic requirement :

Total 8(16%) patients in Group A required high analgesia as compared to 5(10%) patients in Group B. Total 5 patients (8.4%) in group A needed additional analgesia with injection tramadol as compared to 4 patients (5.9%) in group B. The chi-square statistic is 0.6131 and p-value is .433625 which was not statistically significant.

Analgesic	Group A	Group B
Standard	50	50
High	8(16%)	5(10%)

IV. Discussion

The present study was undertaken to assess the post-operative analgesic requirement of non-closure of the peritoneum at open appendectomy as compared to suture peritonization. Our results and observations were discussed and compared with various other studies.

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Study	Results
Hull and Varner et al3 in caesarean section.(1991)	Post operative pain significantly less in non closure group
Irion et al5 in caesarean section.(1996)	No difference in post operative analgesic use in both groups
Hojberg et al7, in caesarean section , (1998)	Decreased usage in post operative analgesic in non closure group
Wilkinson TRV et al8 in Appendectomy	No difference in post operative analgesic use in both groups
Present study	Decreased usage in post operative analgesic in non closure group

V. Conclusion

It is concluded from the above study that, nonclosure of peritoneum at open appendectomy is associated with lesser postoperative pain and lesser postoperative analgesia requirement. Hence, non closure of peritoneum in appendectomies can be safely recommended..

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