THE PRACTICE TO INVAGINATE APPENDICULAR STUMP AFTER APPENDECTOMY

Dr. Zubair Ahmad Yosufani[1*], Dr. Muhammad Arif[2], Dr. Jabeen Zubair Yosufani[3].

ABSTRACT:

Objectives:
To determine whether invagination of stump after appendectomy is necessary

Study design: Comparative study

Place and duration of study: Surgical unit 3, Liaqat University Hospital Hyderabad, from 1-7-2007 to 30-6-2009.

Methodology:
112 patients who underwent appendectomy were included on the basis of no probability convenient sampling. Irrespective of age and sex. These patients were diagnosed by clinical examination and lab investigations. Patients were divided in 2 groups alliteratively. Group 'A consisting of 56 patients with invagination of appendicular stump and group B consisting 56 patients without invagination of stump. Both groups were looked after for post-surgical complications.

Results:
Age of patients ranged from 1266 years (men age 28.4 years), 71 patients were males (37 in group 'A, 34 in group B') 41 were females (19 in group 'A' and 22 in group 'B): Paralytic ileus was observed in 4 patients (7,2%) in group 'A' and 2 patients (3.6%) in group 'B'. Wound infection was observed in 6 patients (10.76) in group 'A' while in group B' it was observed in 2 patients (3,6%). Remaining post operative complications and hospital stay was identical in both groups.

Conclusion:
There is no benefit of invagination of appendicular stump over non invagination, rather invagination of stump-increases operating time and prolonged anesthesia un-necessarily.

Key words:
Acute Appendicitis, Appendectomy, Appendicular stump invagination.

INTRODUCTION:

Acute appendicitis is one of the most common conditions among the patients presenting in the surgical emergency unit. In our hospital, Liaqiat Universty Hospital, Hyderabad, there is a totally separate emergency unit and acute appendicitis is found to be the most frequent condition with which the patients are admitted in the emergency unit. The presentation of acute appendicitis varies and diagnosis is made on clinical presentation, laboratory investigations and ultrasound of abdomen to exclude any other pathology such as ureteric calculi or tub-Ovarian lesions in females. The treatment of acute appendicitis is surgical, i.e., appendectomy. Over the years there has been a tradition to Invaginate the appendicular stump after appendectomy by applying purse string suture or sometimes Z-suture. There has been a superstition that invagination reduces post-operative complications such as wound infection, ileus and adhesions.

The aim of this study Is to observe whether there is any realty in this belief. We have compared the results of those patients in which stumps were invaginated to those in which it was not invaginated.

METHODOLOGY:

This is a comparative case series study, conducted in the surgical unit-lll of LUH Hyderabad, from 1July 2007 to 30June 2009. During this period, 192 patients of acute appendicitis were admitted, out of these 192 patients, 112 were included in the study on the basis of non-probability convenient sampling, irrespective of age and sex of the patient. Al the patients were diagnosed .by clinical presentation and lab investigations. Ultrasound was done to exclude any other pathology. Exclusion criteria were:

- Patients under the age of 10 (these patients are routinely operated in pediatrics surgical unit).
- Patients with clinically generalized peritonitis
- Perforated appendix
- Gangrenous appendix
- Localized appendicular abscess
- Appendicular lump
- Unwilling patient (conservative treatment given)

After making a confirmed diagnosis and decision to operate upon, these patients were informed arid consent was taken. All the 112 patients were divided alternatively into two groups 'A' and B, Group A' consisting of 56 patients with simple ligation followed by invagination of appendicular stump and group 'B' was of the other 56 patients with appendectomy followed by simple ligation without invagination of appendicular stump.

Among these patients, 71 were male (37 in group A, 34 in B) and 41 were females (19 in group A and 22 in B) (see Fig. 1) Age of the patients varied from 12-66 years,

1. *Dr. Zubair Ahmad Yosufani*
2. *Dr. Muhammad Arif*
3. *Dr. Jabeen Zubair Yosufani*
.=corresponding author:*

with a mean age 28.4 years. The number of patents of different age groups is
shown in table 1. Al the patients included in the study were operated in general anesthesia through Gridiron's incision. They were given perioperative injection cefuroxirne (Zinacef) 1.5g at the time of induction of anesthesia, followed by 750 mg 8 hourly for 24 hours (i.e. 3 doses).
The patients were looked for
Postoperative complications including
i. Nausea and vomiting
ii. Fever
ii. Paralytic ileus (appearance of bowel sounds)
iv. Wound infection
V. peritonitis
vi. Fecal fistula
b. Hospital stay
C: Sub-acute obstruction
Patients were called post-operatively for follow up on 7^{th} , 14^{th} , and 21^{st} post-operative day, and followed for six months after operation tor symptoms of subacute Intestinal obstruction.

RESULTS:

The results were compiled on the basis of observation made about post-operative findings mentioned in methodology. Nausea and vomiting which was subsided spontaneously within 24 hours was observed in 11/56 patients ii group A (19.6%), while 12/56 (21.4%) m group B.
Post-operating fever in 1 three days was observed in 2 patients (3.6%) in group A and 1 (1.8%) in group B, which responded well to simple antipyretic drugs.
Paralytic ileus (bowel sounds not audible within 24 hours) was observed for in 4 patients (7.2%) in group A and 2 (3.69%) in group B. It was. managed conservatively.
Post-operative infection was observed in 6 patients (10.7%) in group A while 2 (3.6%) in group B.
Patients of both groups did not develop either post-operative peritonitis or fecal fistula.
Hospital stay in both the groups were almost identical, all the patients were discharged on 2h0 or 3d post-operative day. I patient in group A (1.8%) and 1 patient in Group 'B' (1.8%)
presented with subacute obstruction which was relieved by conservative management.
Results are summarized in table-2.

DISCUSSION:

Acute appendicitis is one of the most common surgical emergencies. In our hospital i.e. Liaquat University Hospital, hyderabad, there is a separate emergency unit. In this unit i.e. surgical emergency unit II, acute appendicitis was the commonest condition among all the admissions. A total of 192 patients with acute appendicitis were admitted in surgical emergency unit II during a period of two years from 1" July 2007 to 30 June 2009. All these patients were diagnosed to have acute appendicitis by clinical presentation and laboratory investigations. These patients were admitted in surgical emergency unit II through casualty, Liaquat University Hospital, hyderabad. Out of these 192 patients, 34 patients were unwilling for operation. Of the remaining 158 patients, 46 patients did not fulfil our criteria for study. Thus, a total of 112 patients were included in the study. Persons of any age may suffer from acute appendicitis but the commonest age group, in the study of Simpson J and Speak W was second and third decade of life'. In our study the commonest age group was 3^{rd} decade of life followed by 2^{nd} decade of life which is identical to the study. The mean age in a study by Qasim Minhas et al was 26.5 years[3], while in our
study it was 28.4 years.
Appendicitis occurs more frequently in males than n females with-a male to female ratio of (1.7:1) In the study: male to female ratio is 71/41 (1:73:1)[2]. Appendectomy has remained
the treatment of choice for acute appendicitis. It has been a tradition to invaginate the appendicular stump after appendectomy with a belief that it will reduce post-operative complications, But whether it is really evidence based or superstition. n our study we have compared the results of the patients in which invagination was done with those n which it was not done. In our study wound infection was 10.7%in group A as compared to 3.6% in Group B which is significantly higher in group A. In a study conducted by Chaudhry 1LA.et al. It was 6.4% in patients with stump invaginated[4]. This evidence is also supported by Jacobs PP et al. While there is also evidence that there is no difference in ratio of wound infection in two groups. Our study shows that rate of post-operative paralytic ileus (based on non-appearance of bowel sounds within 24hrs) was 7.1% in group A which was double as compared to group B. It is supported by Lopez VRG[8].
Regarding other post operative findings there was no significant difference in two groups. Walters, DA et al[9] and Stret David et al[10] in their study have found no difference between the post-operative results of the two groups.
It has been a routine practice even among Some senior surgeon at Hyderabad to invaginate the appendicular stump after appendectomy. Though none of the studies conducted all over the world show any advantage of invagination as no such Comparative study was done in our setup, we carried out this study. Or study shows that there is no superiority of invagination. On the contrary it has been observed that invagination increases the operative time, prolongs anesthesia, unnecessary per-operative exposure and even slightly higher rate of post-operative wound infection and paralytic ileus. These findings are also supported by international literature.

CONCLUSION:

The evidence derived from our study suggests that there is no benefit of invagination of the appendicular stump over non-invagination, through it is routinely practiced in our setup. Even there is slightly higher rate of post-operative infection and paralytic ileus in group which had undergone invagination. The rest of the results are identical in both groups. Invagination of stump increases the operating time un-necessarily, it also prolongs anesthesia and per operative exposure.

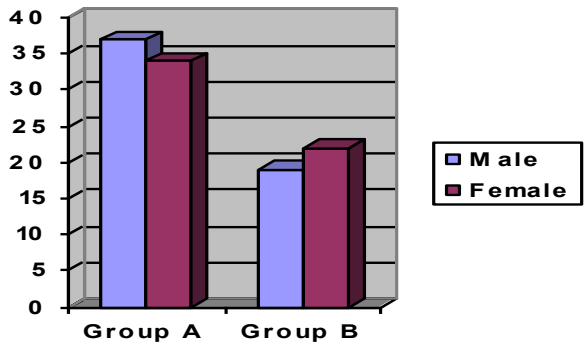
Table-1.

Age Group years	Group A	Group B	Total
11-20	9	10	19
21-30	26	21	40
31-40	12	11	23
41-50	7	9	16
51-60	3	5	8
>60	1	6	1

Table-2. Post-Operative complications

Complication	Group A (56 Patients)		Group B (56 Patients)		Total (112 Patients)	
Nausea/ Vomiting	11	19.6%	22	23.4%	23	20.5%
Fever	2	3.6%	1	1.8%	3	2.7%
Paralytic ileus	4	7.2%	2	3.6%	6	5.4%
Wound Infection	6	10.7%	2	3.6%	8	7.1%
Peritonitis	0	0%	0	0%	0	0%
Fecal fistula	0	0%	0	0%	0	0%
Sub-acute obstruction	1	1.8%	1	1.8%	2	3.6%

FIGURE-1



REFERENCES:

1. Mann CV, Russel RCG, Willams NS. In: Bailey and Love. Short Practice of Surgery. 22nd edi, Chapman and Hall London 1995; pp: 82841.
2. Simpson J, Speake W. Appendicitis. Clin Evid 2004; 11:544-51
3. Q. MINHAS, K. SIDDIQUE, S. MIRZA & A. MALIK : Post-Operative Complications of Stump Ligation Alone Versus Stump Ligation with Invagination in Appendicectomy. The Internet Journal of Surgery. 2010 Volume 22 Number 2.
4. Chaudry IA, Samiullah, Malhi AA, et al. it is necessary to invaginate the stump after appendicectomy. Pak, J Med Sci 2005; 21:35-8.
5. Jacobs PP, Koeyers GF Bruyninckx CM. Simple ligation superior to inversion of the appendiceal stump; a prospective randomized study. Ned Tijdschr Geneeskd 1992;136:1020-1023.
6. 11. Althoubaity FR. Suspected acute appendicitis in female patients Trends in diagnosis in emergency department in a University Hospital in Western region of Saudi Arabia. Saudi Med J 2006; 27 (11):1667-73
7. 12 Yang HR, Wang YC, Chung PK, Chen WK, Jeng LB, Chen RJ. Laboratory tests in patients with acute appendicitis ANZ J Surg 2006;76(1-2):71.
8. López VRG, Flores SR Comparison between simple ligation and invagination of the appendiceal stump after appendectomy: A systematic review Cir Gen 2007;29
9. Julle A. Margentholer, MD, Walter E. Longa, MD, Kotherine S. Virgo, PhD, Frank E. Johnson, MD, Charles A. Oprian, PhD, Wiliam G. Henderson, PhD, Jennifer Daley. MD. and Shukri F. Khuri, MD, Risk Factors lor AdverSe Outcomes After the Surgical Treatment of Appendicitis in Adults. Ann Surg. 2003 July: 238(1);59-66.
10. Scholz M, David S, Stover B, Wit J, Mau H. Value of ultrasound in diagnosis of appendicitis in childhood. ZuntralblChir. 1998; 123 Suppl 4:41-2.