CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
http://doi.org/10.5281/zenodo.3831754

Available online at: http://www.iajps.com *Research Article*

A PROSPECTIVE TRIAL TO DETERMINE THE RESULTS OF STUMP INVAGINATION VERSUS SIMPLE LIGATION DURING APPENDICECTOMY

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Abstract:
Aim: *A prospective, randomized study was carried out to determine the results in 416 consecutive cases of appendix, with simple ligation of the stump in half of the cases, and the rest with invagination of the stump.*
Place and Duration: *In the Surgical Unit II of Jinnah Hospital Lahore for one year duration from January 2019 to January 2020.*
Methods: *The two groups were combined with age, gender, personal hygiene and nutrition. The incidence of wound infections and early and late postoperative complications remained similar in both groups. However, the average surgery time was much shorter with simple ligation.*
Results and Conclusion: *In cases of suspected cecum cancer in postoperative cases, barium enema did not show any stool deformation in a simple ligation group, thus avoiding mixing the deformed cecum due to the tested logs as neoplasia. Therefore, simple ligation of the appendix stump is recommended during surgery for appendicitis.*
Key Words: *appendix, simple ligation, invagination of the stump.*

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Please cite this article in press Kh. Raees ur Rehman et al, ***A Prospective Trial To Determine The Results Of Stump Invagination Versus Simple Ligation During Appendicectomy.,*** *Indo Am. J. P. Sci, 2020; 07(05).*

INTRODUCTION:

Appendectomy remains the most common surgery performed in general surgery wards around the world. In Pakistan, as in most third world countries, this procedure covers over 50% of the entire emergency surgical burden. Most appendicitis is performed by young and relatively inexperienced colleagues from the surgical team. That is why it is extremely important to simplify the technique, which does not overestimate postoperative complications and does not save valuable time. Stump infestation after base ligation has been described as a standard procedure in surgical handbooks[1-4]. In some centers, even double intussusception with a bag or Z-stich is traditional. Historically, the simple implementation of stump ligation can only be traced for over a hundred years; most surgeons are still skeptical of this technique, assuming that naked stump ligation can lead to increased frequency[5-6]. Other complications such as postoperative wound infection or intestinal obstruction due to adhesion formation. However, over the past two decades, some Western researchers have tried to test this assumption in a different way after retrospective and prospective trials. In the third world there is no literature on such attempts[7-8]. Therefore, this prospective randomized study was conducted to compare overall wound infection and average surgery time, as well as early and late complications. Acute appendicitis is one of the most common emergency surgery. Simple appendicitis can go into perforation, which is associated with a much higher incidence and mortality, which is why surgeons tend to undergo surgery when diagnosis is possible, rather than waiting until it is certain. The clinical decision regarding surgery leads to the removal of the normal supplement in 15% to 30% of cases. This indicator can be reduced by observing cases over a period of time, which seems safe for most patients. Reducing the number of "unnecessary" or non-therapeutic operations should not be at the expense of increasing the number of openings. Although paraclinical services are developing today, a thorough medical examination will be replaced. Interview and clinical symptoms of patients play an important role in diagnosing anorexia. In the absence of anorexia, nausea or vomiting, appendicitis should be suspected, since anorexia occurs in almost all patients with acute appendicitis. In this study, we decided to assess the frequency of anorexia in acute appendicitis.

MATERIALS AND METHODS:

This Prospective study was held in the Surgical Unit II of Jinnah Hospital Lahore for one year duration from January 2019 to January 2020.

After comparing age, sex, hygiene, and nutritional groups, patients were randomly assigned to one of two groups (i.e., Ligation and simple invagination group). All patients received an antibiotic injection one hour before surgery (i.e. second generation cephalosporins). The choice of operator was made in accordance with the device's routine and the surgeon's usefulness on duty. An incision was made as a standard procedure. Gridiron muscle splitting incision was used as standard procedure. Stump was ligated with chromic catgut in all the cases and cleaning of the stump was carried out with available antiseptic solution. The appendages underwent histopathological examination in addition to the general examination to assess the severity of the pathology. The time of surgery was measured from the skin incision to the skin suture and the surgical kit to avoid the surgeon being in a hurry to complete the procedure. All wounds were examined on the fourth day after surgery and after discharge. Spontaneous discharge of pus from the dry subcutaneous plane in the lower part of the face or a deliberate incision was considered a positive wound infection. In addition to other unexplained complications associated with fever, unexplained fever was observed at over 37.5 ° C for more than two consecutive days. Patients were observed intermittently for up to six months, and then only reported when any adverse reactions occurred after surgery. The bar enema was made only when needed. While the Z test was used to determine the importance of speed, the t test was used to determine the difference between the two tools: a P value below 0.05 was considered significant.

RESULTS:

All 416 patients completed 'the trial, 208 in each group. Age and sex distribution is given in Table I.

Table I. Age and sex distribution of 416 patients

Technique	Mean Age (Range)	Females	Males
Simple Ligation	27(15-70)	96	112
Invagination	23(15-60)	102	106

The overall rate of infections were 13.9% in the simple ligation group and 14.9% in the invagination group, the difference between the two groups not being statistically significant. Detailed comparison according to gradation of pathology is given in Table II.

Table II. Wound infection in ligation and invagination groups

Grade of Pathology	Total No cases	Ligation		Total No cases	Invagination	
		With Gross Infection			With Infection	
		No.	%		No.	%
Catarrhal	61	5	8.2	46	3	6.5
Phlegmonous	59	4	6.8	77	7	9.1
Gangrenous	21	8	38.1	32	8	25
Perforated Interval	15	7	46.7	21	10	47.6
Appendectomy	20	3	15	22	2	9.1
Normal	32	2	6.25	10	1	10
Total	208	29	13.9	208	31	14.9

The incidence of wound infection was observed to be less in the 15-34-year-old group. (Table III).

Table III. Comparative wound infection in different age groups

Age Groups (Years)	Simple Ligation		Invagination	
	No. of Infected Cases	%	No. of Infected Cases	%
15-34	126	14(11.1)	113	11(9.7)
35-49	62	11(17.7)	69	15(21.7)
50+	20	4(20.0)	26	5(19.2)

The comparison of the incidence of wound infection among three classes of surgeons according to their experience is presented in Table IV.

Table IV. Comparative wound Infection following appendicectomies by surgeons of different experience.

		Simple Ligation			Invagination	
	Cases	Infected		Cases	Infected	
		No.	%		No.	%
House Surgeons	72	15	20.8	76	14	18.4
Registrars	120	14	11.7	112	14	12.5
Consultants	16	0	0	20	3	15

Significant difference was observed in the comparable results between house surgeons and their senior colleagues ($p<0.01$). Early and late complications occurring within one year of the follow up, was also compared (Table V).

Table V. Comparison of postoperative complications between the groups.

Complications	Simple Ligation		Invagination	
	No.	%	No.	%
EARLY COMPLICATIONS				
Unexplained Pyrexia (> 37.5ºC)	13	54.2	9	39.1
Intra-abdominal Abbesses	6	25	7	30.4
Paralytic Ileus (Unexplained)	3	12.4	4	17.4
Faecal Fistula	1	4.2	3	13.1
Pyle phlebitis	1	4.2	0	0
LATE COMPLICATIONS				
Intestinal Obstruction	6	37.5	5	35.7
Persistent RIF Induration & Pain	7	43.7	5	35.7
Incisional Hernia	3	18.4	4	28.6

The average working time for simple ligation and intussusception groups was recorded as 30 ± 9.78 and 36 ± 12.46 minutes, respectively. The difference is very important ($p <0.001$). In summary, a simple ligation of the appendix stump during appendix proved to be a simple and less time-consuming technique. However, the incidence of postoperative complications was the same. Further. In barium testing, it prevents stool deformation, which can sometimes cause confusion with cecum cancer. Therefore, simple ligation of the stump is recommended as a standard technique during appendicitis.

DISCUSSION:

Has many clinical symptoms such as acute appendicitis, anorexia, abdominal pain, nausea, vomiting, urinary tract symptoms, etc. Anorexia is an important and common symptom in acute appendicitis. If the patient has abdominal pain but no anorexia, the diagnosis of appendicitis is questionable[9-10]. In this study, we found that 83.75% of patients with acute appendicitis had anorexia, so anorexia is an important symptom in this disease. Pisarra VH believed that the classic set of symptoms included uncertain epigastric or peri-pulmonary

pain; associated nausea, anorexia or persistent vomiting; and pain migrating to the lower right quadrant[10-12]. Williams NM and colleagues found that the appearance of pain and radiation pain in the middle of the abdomen is not enough to distinguish nonspecific abdominal pain from acute appendicitis. Pain progression, nausea, vomiting, anorexia and diarrhea were more common in children with acute appendicitis. Rasmussen stated that appendicitis should be suspected in the absence of anorexia, nausea and vomiting.6 According to Horattas MC, appendicitis in the elderly is associated with increased morbidity and mortality[13-14]. Only 20% of patients had classic anorexia, fever, pain in the lower right quadrant and high white blood cell count[15]. Faloon and colleagues found that over 95% of patients had anorexia.

REFERENCES:

1. Mahyoub, Abdullatif, Mosa Mohammed Algarni, Ayah Jawad Almuqarrab, Abdulelah Nasser Musihel, Nawwaf Jamaan Althobaiti, Amro Ali Alghamdi, Fahad Mohammed Alrasheed et al. "Non-Operative, Open, and Laparoscopic Management of Non-Perforated Appendicitis in Adults." *EC Microbiology* 16, no. 1 (2019): 01-09.
2. Arer, Ilker Murat, Tevfik Avci, and Hakan Yabanoglu. "Hand-made Extracorporeal Knotting versus Hem-o-Lok Clip for Stump Closure in Laparoscopic Appendectomy." *Journal of the College of Physicians and Surgeons Pakistan* 29, no. 12 (2019): 1203-1206. Arer, Ilker Murat, Tevfik Avci, and Hakan Yabanoglu. "Hand-made Extracorporeal Knotting versus Hem-o-Lok Clip for Stump Closure in Laparoscopic Appendectomy." *Journal of the College of Physicians and Surgeons Pakistan* 29, no. 12 (2019): 1203-1206.
3. Tekniğinin, Apendiks Güdüğünün Kapatılmasında Laparoskopik Gömme, and Diğer Tekniklerle Karşılaştırması. "Comparison of Laparoscopic Embedding Technique and Other Techniques for Appendiceal Stump Closure." *Turk J Colorectal Dis* 29 (2019): 121-126. Tekniğinin, Apendiks Güdüğünün Kapatılmasında Laparoskopik Gömme, and Diğer Tekniklerle Karşılaştırması. "Comparison of Laparoscopic Embedding Technique and Other Techniques for Appendiceal Stump Closure." *Turk J Colorectal Dis* 29 (2019): 121-126.
4. Miyano, Go, Masahiko Urao, Geoffrey J. Lane, Yoshifumi Kato, Tadaharu Okazaki, and Atsuyuki Yamataka. "A prospective analysis of endoloops and endostaples for closing the stump of the appendix in children." *Journal of Laparoendoscopic & Advanced Surgical Techniques* 21, no. 2 (2011): 177-179.
5. Gonenc, Murat, Eyup Gemici, Mustafa Uygar Kalayci, Mehmet Karabulut, Ahmet Nuray Turhan, and Halil Alis. "Intracorporeal knotting versus metal endoclip application for the closure of the appendiceal stump during laparoscopic appendectomy in uncomplicated appendicitis." *Journal of Laparoendoscopic & Advanced Surgical Techniques* 22, no. 3 (2012): 231-235.
6. Mayir, Burhan, Cemal Özben Ensari, Tuna Bilecik, Arif Aslaner, and Mehmet Tahir Oruç. "Methods for closure of appendix stump during laparoscopic appendectomy procedure." *Turkish Journal of Surgery/Ulusal cerrahi dergisi* 31, no. 4 (2015): 229.
7. Gomes, Carlos Augusto, Cleber Soares Junior, Rodrigo Oliveira de Peixoto, Jose Murillo Bastos Netto, Camila Couto Gomes, and Felipe Couto Gomes. "Appendiceal stump closure by metal endoclip in the management of complicated acute appendicitis." *World Journal of Emergency Surgery* 8, no. 1 (2013): 35.
8. Bhandarkar, Deepraj S. "Open Appendectomy with Invagination of the Stump Rather than Laparoscopic Appendectomy--Are We Really Serious?." *Journal of Gastrointestinal Surgery* 18, no. 10 (2014): 1883.
9. Sayyadinia, Mehrdad, Hosein Hamadiyan, Suroor Mokaripoor, and Mohsen Azaad. "Comparing the complications of purse-string and simple ligation of appendix stump in appendectomy: A randomized clinical trial." *International Journal of Medical Research & Health Sciences* 5, no. 10 (2018): 55-60.
10. Roberts, Kurt E., Lee F. Starker, Andrew J. Duffy, Robert L. Bell, and Jamal Bokhari. "Stump appendicitis: a surgeon's dilemma." *JSLS: Journal of the Society of Laparoendoscopic Surgeons* 15, no. 3 (2011): 373.
11. Bortz, Joel. "Inverted appendix: Computed tomographic colonography diagnosis in a patient and lesson learned." *SA Journal of Radiology* 19, no. 1 (2015): 1-4.
12. Pepper, Victoria K., Amy B. Stanfill, and Richard H. Pearl. "Diagnosis and management of pediatric appendicitis, intussusception, and Meckel diverticulum." *Surgical Clinics* 92, no. 3 (2012): 505-526.
13. Lucchi, Andrea, Pierluigi Berti, Michele Grassia, Luca Maria Siani, Carlo Gabbianelli, and Gianluca Garulli. "Laparoscopic appendectomy: Hem-o-lok versus Endoloop in stump closure." *Updates in surgery* 69, no. 1 (2017): 61-65.
14. Madhu, D. "A study on Laparoscopic Vs open appendectomy: A prospective comparative case series." PhD diss., Kilpauk Medical College, Chennai, 2013.

15. Ebeid, Abdel Mottaleb E., Hussam S. Hassan, Hisham A. Almetaher, and Essam A. Elhalaby. "Low-cost laparoscopic appendectomy in pediatric patients." *Annals of Pediatric Surgery* 12, no. 3 (2016): 100-103.