ORIGINAL RESEARCH PAPER

Volume-7 | Issue-9 | September-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

COMPARISON OF EFFECT OF ENDOCLIP AND ENDOLOOP FOR STUMP CLOSURE OF LAPAROSCOPIC APPENDECTOMY

General Surgery

Dr Kumar Gaurav MS,BMMSH, Department of Surgery, Ranchi.

Dr Gautam Chandra* MS, BMMSH, Department of Surgery, Chandra Hospital, Boreya, Ranchi, 834006 *Corresponding Author

Dr Sanjay Kumar Verma MD, Department of Anaesthesia, BMMSH, Ranchi.

Dr A K Tiwary MS,Associate professor,RIMS Department of Surgery,BMMSH,Ranchi.

Dr Major Ramesh Das MS,BMMSH Department of Surgery, Ranchi.

ABSTRACT

Introduction: Laparoscopic appendectomy(LA) is done for appendicitis. The aim of this study was to compare the use of endolop and endoclip(titanium clip) for stump closure during LA. The study was carried out in tertiary care hospital between June 2016 to June 2018-08-06.

Materials and methods: Sixty patient under LA were enrolled and 30 patients undergo endoclips or endoloop for the stump closure. The results in terms of operative time, stump diameter, stump closure time, hospital stay were compared between two groups. after collecting all data, were analysed with SPSS.

Results: The mean age was 25.1±12.44 for endoloop and 25.8±10.91 for endoclips.The mean operating time was 43.46±8.34 for endoloop and 39.76±7.69 for endoclip.The mean stump diameter was 11.03±0.78mm for endoclip.The stump closure time was 256.06sec for endoloop and 148.4±37.06sec for endoclip.There was no significant difference in hospital stay

Conclusion: Endoclip application of the appendiceal base had significantly better results in terms of technical comfort and operating time in comparison with application of endoloop.Further studies are required to reach a final conclusion.

KEYWORDS

L Laparoscopic Appendectomy,Endoloop,Endoclip,Appendiceal Stump.

INTRODUCTION:

Appendicitis is an inflammation of the appendix .Appendectomy is the most effective treatment of acute appendicitis and most widely performed operation of emergency surgery world wide[1]. This may be done by an open incision or through laparoscopic [2]. Kurt semm ,a german gynaecologist reported the laparoscopic removal of this organ.LA are increasing and most favourable procedure .Along with increasing facilities and advantages such as postoperative pain, faster recovery ,shorter hospital stay, less postoperative complications and minimally sized incision/scars [3,4].

There are several technical variations that could potentially affect the outcome of LA,including single vs multiple port instrumentation, technique for dividing and sealing the mesoappendix and the choice of technique for closure of the appendiceal stump. The main concern in La is the matter of closure of the appendiceal stump base. LA technique has well established steps and ligation of the base of the appendix is the important as appropriate closure may lead to sever surgical complications. Therefore many methods have been recommended and examined for its closure. Some of these methods include endoloop, endoclip, hemolock and linear endostapler [6,7,8].Endoloop is one the first method for closing the appendiceal stump[9,10].The main problem with this method is that the knot may be loose due to the surgeon being concerned with the thread breaking when it is being pooled.This could lead to stump leak. If endoclip are used, they are easier to use and less expensive[11,12].,But that may slip if diameter is large. We have compared the two methods of closing the appendiceal stump with endoloop and endoclips.

We have compared the time of surgical procedure ,post op surgical complications, appendiceal diameter ,stump closure time and length of hospitalization .In our study we have selected(emergency and elective) non perforated appendicitis cases.

PATIENTS AND METHODS:

Patients who underwent LA for non perforated appendectomy at a tertiary referral centre between july 2016 to July 2018.A total of 60 patients who were clinically and radiologically diagnosed with appendicitis. In our study we have enrolled (emergency and elective) non perforated appendicitis cases and were planned for LA.Patients with pain >4 days, bleeding, diasthesis ,mass in RIF, peritonitis, age >65 years were excluded from the study.

SURGICAL TECHNIQUE

All patients received a single dose of broad spectrum IV antibiotics before induction. Post operative antibiotic administration was dependent on operative findings and post operative complications .All operation was done in general anaesthesia. A foley's catheter was placed before the procedure and removed at the end of surgery.LA was performed through standard 3 port. A 30 degree laparoscope was used to explore the abdomen .One 10mm and two 5mm port was used. The appendix was identified and freed from inflammatory adhesions. The meso-appendix was divided by harmonic. Appendix was ligated by double titanium clip or endoloop ligature(photo-1,2). The appendix was divided by harmonic. The appendix was removed from the left 10mm port. The size of appendix was noted after the removal(photo-3) .Drain was used when necessary. At the end of the last port site closure, operating time stopped.

Results

In total 60 patients underwent LA who were randomly divided into two group and none of the patients were excluded from the study during the research. The endoloop and endoclip groups consisted of 30 patients each.

TABLE-1:
RESULTS OF TWO GROUPS

VARIABLES	ENDOLOOP	ENDOCLIPS	SIGNIFICANT
AGE MEAN±SD	25.1±12.44	25.8±10.91	0.8176
SEX M	15	17	
F	15	13	
OPERATIVE TIME(MIN)MEAN ±SD	43.46±8.34	39.76±7.69	0.0789
STUMP DIAMETER(MM) MEAN±SD	11.03±1.06	7.73±0.78	0.0001

STUMP CLOUSURE TIME(SEC)MEAN± SD	256.06±36.47	148.4±37.06	0.0001
HOSPITAL STAY(HR)MEAN± SD	39.5±13.89	35.3±7.9	0.1553
CHI SQUARE-S= 0.2676,P-VALUR=0.60477,RESULT IS NOT SIGNIFICANT AT P<0.05			

Endoloop n=30,M=15,F=15,age (25.1±12.44),Endoclip (n=30) M=15,F=15,age- (25.8±10.91).The operating time (min) was 43.46±8.34 for endoloop and 39.76±7.67 for endoclip with p= 0.0789 were noted. The stump diameter (mm) were 11.03±1.06 for endoloop and 7.73±0.78 for endoclip with p=<0.0001.The stump closure time (sec) 256.06±36.47 for endoloop and 148.4±37.06 for endoclip(p=<0.0001).The hospital stay (Hr) was 39.5±13.89 for endoloop and 35.3±7.9 for endoclip(p=0.1553).The wound infection occurred in one patient in each group.

DISCUSSION

In this present study, Endoloop and endoclip were compared regarding their use in LA. There was a significant difference regarding surgical time and base closure in favour of endoclip. Safety, application comfort, foreign body effect of the material, operating time, base closure time defines different methods of closure .The ideal method would be the fastest and safest way to close the base of the appendix associated with no long term complications.

Safety of the different closure methods were evaluated and confirmed by numerous studies and they have shown acceptable rate of complication([13,14,15,20],).Operating time is one of the mostly studied criteria and the application method usually defines the length of application. Clip applications seems to be the easiest and fasted method for closure of the base of appendix.[14].

- In a prospective clinical trail studies, 28 patients who were divided into two groups of 14 individuals underwent LA (appendiceal stumps of one group was closed with endo clip and other group with endostapler (53.4min vs 62.5 min)[17].While in our study the surgery duration was statistically significantly shorter in the clips method in comparision with endoloop method :although this difference may not be clinically important. However in another trial of 61 patients endoclip method was compared with endoloop .The finding indicated that the endoclip method was safer and the the surgery duration was statistically significantly shorter than the loop method(41.27 vs 62.81) [12].This difference is statistically and clinically significant. The safety of the two method in our study was the same as the above mentioned study. In a trail the mean surgery duration was reported to be 53.4 min when closing the appendiceal stump with clip in LA, this period was specifically shorter in our study(39 min)[17].In another trail the mean operating time was 53.4min in the endoloop method which was longer then the periods observed in our study(43 min [16].The application of polymeric endoclip and endoloop were studied in rat model by Delibegovic et al [18],regarding the tissue reaction in the intestine. The results of the study revealed both material are acceptable tissue foreign body reaction and tissue reaction of endoclip were less than the endoloop . Moreover the use of polymeric clip has been found to be safe and effective by the study of Hanssen et al[17] with special emphasized on cost effectiveness. Another examine 242 patients who had undergone LA and indicated that the endoloop is efficient and safe specially in cases where perforation is likely high to occur.[19].This method also proved to be safe in our study.

CONCLUSION:

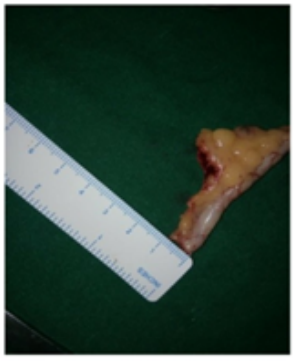
Our results showed that closing the appendiceal stump with endoloop and endoclip were not different in terms of post surgical complication and length of hospital stay, but regarding technical comfort and operating time endoclip is superior to endoloop. Both method could be used on opinion of the surgeon without expecting statistically significant difference in the results. However it is recommended to study this subject with larger samples to obtain more reliable and valid results.

Photos:

FIG:1

FIG:2

FIG:-3



REFERENCES

1. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendectomy in the United States. Am J Epidemiol. 1990;132:910–25.
2. Ates M, Sevil S, Bulbul M. Routine use of laparoscopy in patients with clinically doubtful diagnosis of appendicitis. J Laparoendosc Adv Surg Tech A. 2008;18:189–93
3. Chung RS, Rowland DY, Li P, Diaz J. A meta-analysis of randomized controlled trials of laparoscopic versus conventional appendectomy. Am J Surg 1999;177:250–6.
4. Golub R, Siddiqui F, Pohl D. Laparoscopic versus open appendectomy: a metaanalysis. J Am Coll Surg 1998;186:545–53.
5. Wei B, Qi CL, Chen TF, Zheng ZH, Huang JL, Hu BG, et al. Laparoscopic versus open appendectomy for acute appendicitis: a metaanalysis. Surg Endosc 2011;25:1199–208.
6. Hansen JB, Smithers BM, Schache D, Wall DR, Miller BJ, Menzies BL. Laparoscopic versus open appendectomy: Prospective randomized trial. World J Surg. 1996;20:17–20.
7. Al Hadi HI, Maw A. The "double endoloop" technique – A simple alternative technique for laparoscopic appendectomy. Surg Laparosc Endosc Percutan Tech. 2008;18:67–9.
8. Kazemier G, Saad S, Bonjer H, Sauerland S. Securing the appendiceal stump in laparoscopic appendectomy: Evidence for routine stapling? Surg Endosc. 2006;20:1473–6.
9. Martín del Olmo JC, Blanco Alvarez JI, Carbajo Caballero MA, de la Cuesta de la Llave C, Vaquero Puerta C, Arenal J. Laparoscopic appendectomy by ultrasonically activated scalpel in acute appendicitis: Preliminary report. J Laparoendosc Adv Surg Tech A. 2002;12:111–3.
10. Sajid MS, Rimple J, Cheek E, Baig MK. Use of endo-GIA versus endo-loop for securing the appendicular stump in laparoscopic appendicectomy: A systematic review. Surg Laparosc Endosc Percutan Tech. 2009;19:11–5.
11. Beldi G, Vorburger SA, Bruegger LE, Kocher T, Inderbitzin D, Candinas D. Analysis of stapling versus endoloops in appendiceal stump closure. Br J Surg. 2006;93:1390–3.
12. Kazemier G, in't Hof KH, Saad S, Bonjer HJ, Sauerland S. Securing the appendiceal stump in laparoscopic appendectomy: evidence for routine stapling? Surg Endosc 2006;20:1473–6.
13. Beldi G, Muggli K, Helbling C, Schlumpf R. Laparoscopic appendectomy using endoloops: a prospective, randomized clinical trial. Surg Endosc 2004;18:749–50.
14. Ates M, Dirican A, Ince V, Ara C, Isik B, Yilmaz S. Comparison of intracorporeal knot-tying suture (polyglactin) and titanium endoclips in laparoscopic appendiceal stump closure: A prospective randomized study. Surg Laparosc Endosc Percutan Tech. 2012;22:226–31.
15. Sahm M, Kube R, Schmidt S, Ritter C, Pross M, Lippert H. Current analysis of endoloops in appendiceal stump closure. Surg Endosc 2011;25:124–9.
16. McAnena OJ, Austin O, O'Connell PR, Hederman WP, Gorey TF, Fitzpatrick J. Laparoscopic versus open appendicectomy: A prospective evaluation. Br J Surg. 1992;79:818–20.
17. Hanssen A, Plotnikov S, Dubois R. Laparoscopic appendectomy using a polymeric clip

to close the appendicular stump. JSLS. 2007;11:59–62.
18. Delibegovic S, Iljazovic E, Katica M, Koluh A. Tissue reaction to absorbable endoloop, nonabsorbable titanium staples, and polymer Hem-o-lok clip after laparoscopic appendectomy. JSLS. 2011;15:70–6.
19. Arash S, Langer M, Skarsgard ED. Endoloop versus endostapler closure of the appendiceal stump in pediatric laparoscopic appendectomy. Can J Surg. 2012;55:37–40.
20. Rickert A, Bönninghoff R, Post S, Walz M, Runkel N, Kienle P. Appendix stump closure with titanium clips in laparoscopic appendectomy. Langenbecks Arch Surg 2012;397:327–31.