

# HEM-O-LOK VERSUS ROEDER'S KNOT FOR CLOSURE THE APPENDICULAR STUMP DURING LAPAROSCOPIC APPENDECTOMY: A RANDOMIZED CLINICAL TRIAL.

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## Introduction

Acute appendicitis is a highly frequent cause of abdominal surgical emergencies. The preferred treatment is still an Open appendectomy or Laparoscopic appendectomy. Because laparoscopic appendectomy offers advantages over open appendectomy as regard wound infection after surgery, analgesic needs, hospital stay length, and general healing, it has replaced open appendectomy as a therapeutic option. The most important step in a laparoscopic appendectomy is the closure of the appendicular stump. Many methods such as ligation using extracorporeal knots, intracorporeal knots, endostapling, endoloop or endoclips have been used for CAS in LA. This study aimed to compare 2 different methods the extracorporeal Roeder's knot and the polymeric non-absorbable Hem-o-lok clip.

## Aim of the work

The aim of this randomized comparative study was to evaluate two different methods of closure of appendix stump, the extracorporeal Roeder's knot versus the polymeric non-absorbable Hem-o-lok clip as regards safety, feasibility, cost and complications.

## Subjects and Methods

In the period from August 2020 through September 2022, 40 patients underwent laparoscopic appendectomy were admitted to the HPB Surgical Unit in AUMH. A total of 173 patients were excluded, Causes of exclusion included appendicular mass, appendicular abscess, Perforation with generalized peritonitis and unavailability of the laparoscope in the OR.

The remaining 40 patients constituted our study cohort which were randomly allocated to Hem-o-lok group and Roeder's knot group with 20 patients per group, 2 patients were excluded from the analysis.

### Preoperative assessment:

Thorough history, Routine laboratory investigations and abdominal ultrasonography.

## Results

**Table (2)** illustrates the total operative time and the base control time in both study groups. The median total operative time was statistically significantly longer in the Roeder's group compared to the Hem-o-lok group (42 vs 40 minutes respectively;  $p < 0.6$ ). The median appendicular stump closure was statistically significantly longer in the the Roeders group compared to that in the Hem-O-lok (10 vs. 5 minutes respectively;  $p < 0.001$ ).

There were 2 cases excluded from our study due to failure of the procedure one case was due to failure of Hem-o-lok application due to large diameter of the appendix (14 mm) ,and another case was due to difficulty of Roeder's knot introduction due to severe adhesions .

**Table 2:** Comparison between the two studied groups according to operative time ,appendicular stump closure and extraction time

	Total (n =38#)	Hem-O-lok (n = 19)	Roeder's knot (n = 19)	U	p
<b>Time of operation</b>					
Min. – Max.	19.0 – 88.0	19.0 – 60.0	27.0 – 88.0	154.5	0.452
Mean ± SD.	40.74 ± 14.53	38.32 ± 13.03	43.16 ± 15.87		
Median (IQR)	40.0 (30.0- 45.0)	40.0 (28.5 – 45.0)	40.0 (32.5 – 45.0)		
<b>Appendicular stump closure time</b>					
Min. – Max.	3.0 – 14.0	3.0 – 8.0	6.0 – 14.0	6.0*	<0.001*
Mean ± SD.	7.29 ± 3.03	4.79 ± 1.13	9.79 ± 2.10		
Median (IQR)	6.50 (5.0 - 10.0)	5.0 (4.0 – 5.0)	10.0 (8.0 – 11.0)		
<b>Extraction time</b>					
Min. – Max.	1.50 – 6.0	1.50 – 3.0	1.50 – 6.0	178.50	0.954
Mean ± SD.	2.22 ± 0.80	2.16 ± 0.55	2.29 ± 1.0		
Median (IQR)	2.0 (2.0 – 2.0)	2.0 (2.0 – 2.50)	2.0 (2.0 – 2.0)		

U: Mann Whitney test

\*: Statistically significant at  $p \leq 0.05$

SD: Standard deviation

p: p value for comparing between the two methods

IQR: Inter quartile range

# 2: Cases was excluded

## Conclusion

Hem-o-lok clips are safe effective methods of closure of the appendicular stump with no significant complication up to 12 mm diameter of appendix ,also Closing the appendicular stump using Roeder's knot is a safe, effective, and relatively cheaper than closing the appendicular stump using Hem-o-lok clips and doesn't depend on appendix diameter.

**Table 1:** Comparison between the two studied groups according to cost

	Hem-O-lok (n = 20)	Roeder's knot (n = 20)
Cost / Pound	500	30 – 60

