

# SINGLE DERMATOME LAPAROSCOPIC APPENDICECTOMY VS CONVENTIONAL LAPAROSCOPIC APPENDICECTOMY- A PROSPECTIVE RANDOMIZED STUDY

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## Abstract

**Background:** The advent of laparoscopy stands as an evolutionary change in medicine for the treatment of appendicitis. This procedure came into existence over 100 years with different modalities like single dermatome laparoscopic appendectomy and conventional laparoscopic appendectomy. Though these techniques exist, the advantageous of these did not come into practice and hence the study is designed.

**Aim:** To compare the outcome on patient compliance in single dermatome laparoscopic appendectomy and conventional laparoscopic appendectomy.

**Materials & Methods:** The study was conducted in department of surgery of our hospital for a period of 6 months. A total of 50 patients who are diagnosed with acute appendicitis were included in the study and are categorised into two groups (Group A receiving Single Dermatome Laparoscopic Appendectomy and Group B receiving Conventional Laparoscopic Appendectomy). Hospital stay and duration of analgesia were noted.

**Results:** The results of the study proved that, Single dermatome laparoscopic appendectomy has shown less duration of hospital stay and analgesia as compared to conventional laparoscopic appendectomy with  $p < 0.05$ .

**Conclusion:** SDLA is found to be more advantageous over CLA

**Key words:** Pain score, patient satisfaction, treatment

## Introduction

Acute appendicitis stands as a major indicative of abdominal surgery. The incidence of acute appendicitis represents 8.6% in males and 6.7% in females. Schreiber was the first person to report the application of laparoscopy for acute appendicitis. It can be of different modalities like conventional laparoscopic appendectomy (CLA) or single-port laparoscopic appendectomy (SPLA).<sup>1</sup>

When compared to conventional laparoscopic appendectomy, single dermatome laparoscopic appendectomy (SDLA) is becoming more popular due to its single incision application. The surgical process requires a single umbilical incision with less risk of injury

to abdominal muscle vessels in combination with less postoperative pain.<sup>2</sup> There are chances of converting single dermatome laparoscopic appendectomy to conventional laparoscopic appendectomy if necessary. It is also reported that a single incision at umbilicus is scarless. However, it has many advantages reported over conventional methods, single dermatome laparoscopic appendectomy has become less popular in clinical practice.<sup>3</sup> Hence, the aim of the study is to compare single dermatome laparoscopic appendectomy with conventional laparoscopic appendectomy.

### Materials and Methods

This prospective randomized study was conducted in department of surgery, Sri Venkateshwara Medical College Hospital and Research Centre, Ariyur, Puducherry during the period of March 2022 to August 2022.

**Inclusion Criteria:** Patients above 18 years of age with acute appendicitis, chronic appendicitis and advised for interval appendicectomy were included for the present study.

**Exclusion Criteria:** Patients with appendicular abscess, appendicular mass, perforated appendix, neoplasms of appendix and patients with other pain pathology like low back ache, ureteric calculi and ovarian pathology were excluded from the present study.

A total of 50 patients of acute appendicitis were included in this prospective study and were randomly distributed into two groups (Group A and Group B). Group A includes patients undergoing single dermatome laparoscopic appendectomy. Group B includes patients undergoing conventional laparoscopic appendectomy. Informed consent is obtained from all the patients who participated in the present study.

### Results

In total 50 participants of two groups, the mean age in group A was 32 (31-40 years) and in group B was 25 (21-30 years) which is represented in figure 1. A total of 13 males and 12 females were presented in group A and 17 males and 8 females were presented in group B which is represented in figure 2.

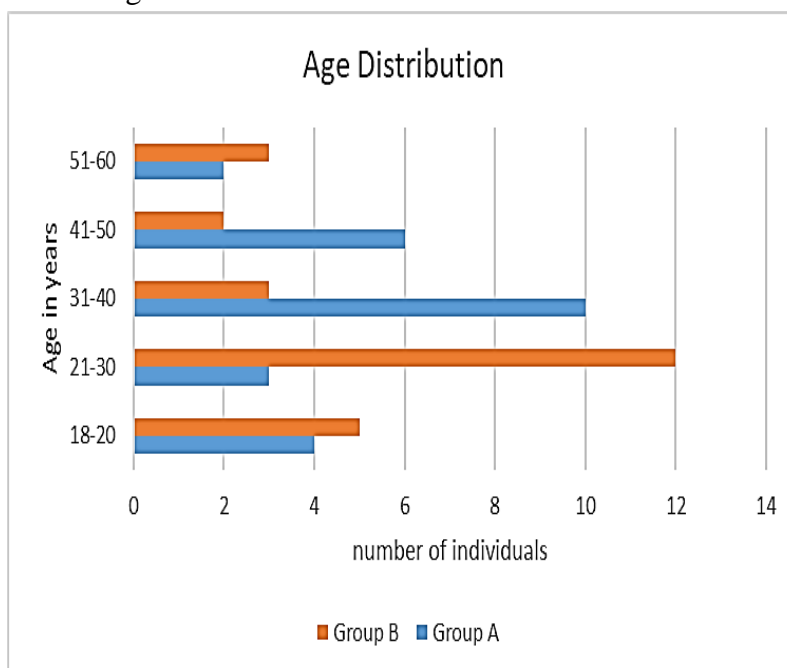
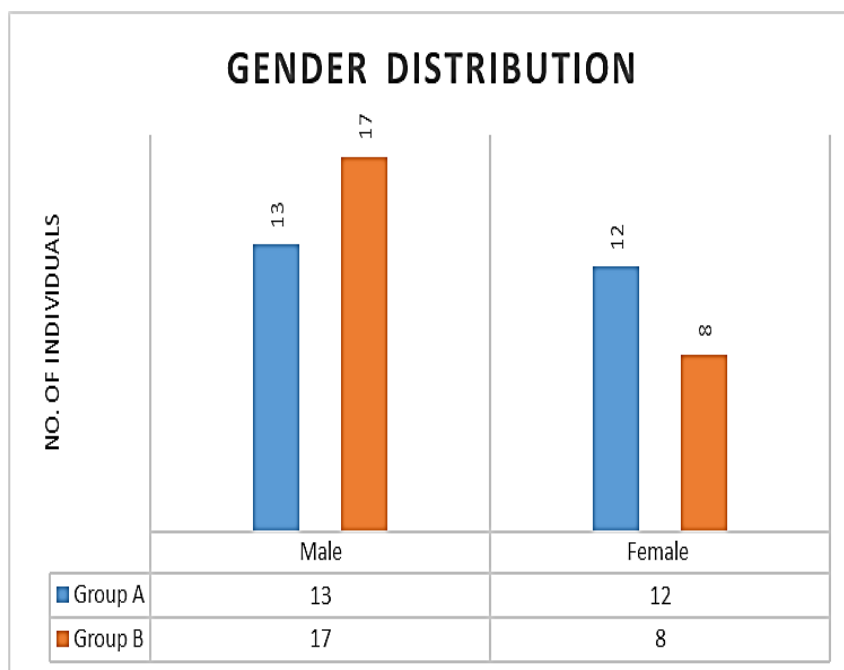


Figure 1: Distribution of individuals based on age



**Figure 2: Distribution of individuals based on gender**

VAS (Visual Analogue Score) was noted from 1 hour to 48 hours with regular intervals (VAS 1, VAS 2, VAS 4, VAS 6, VAS 12, VAS 24, VAS 48) in both the groups. The mean of both the groups were compared and p value was found to be statically significant. (Table 1)

**Table 1: Comparison of mean VAS scores between the groups**

Hours	Group A	SD	Group B	SD	t value	P value
VAS 1	2	0.05	3.3	0.11	18.6	0.000025*
VAS 2	1.9	0.05	3.3	0.11	20.06	0.000018*
VAS 4	1.6	0.049	3	0.05	34.63	<0.00001*
VAS 6	0.8	0.049	2.8	0.06	44.71	<0.00001*
VAS 12	0	0	2	0.05	69.28	<0.00001*
VAS 24	0	0	2	0.05	69.28	<0.00001*
VAS 48	0	0	2	0.05	69.28	<0.00001*

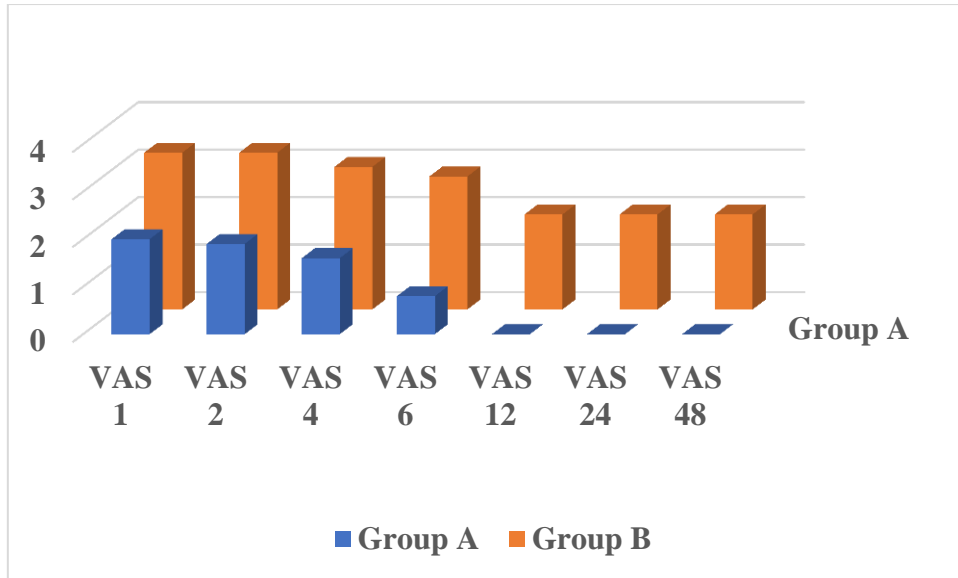


Figure 3: Mean VAS Score

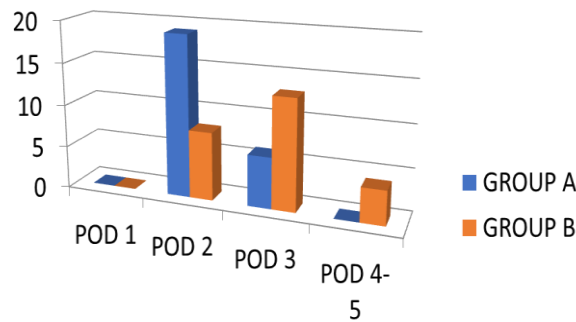


Figure 4: Comparison of Mean hospital day between the groups

Table 2: Mean hospital stay between the groups

Parameter	SDLA	CLA	P value
Hospital stay (days)	2.43	3.7	0.001*

The difference in the mean hospital stay between the groups was found to be statistically significant with  $p < 0.05$ .

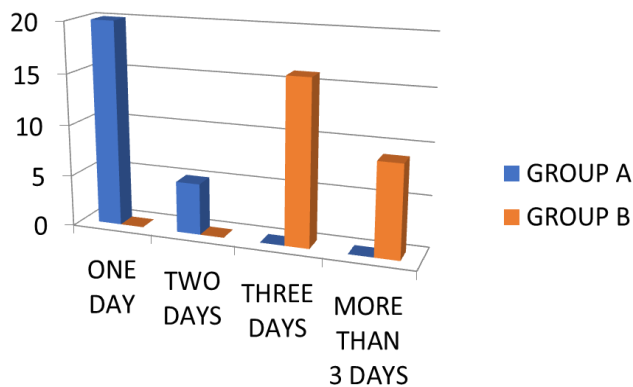
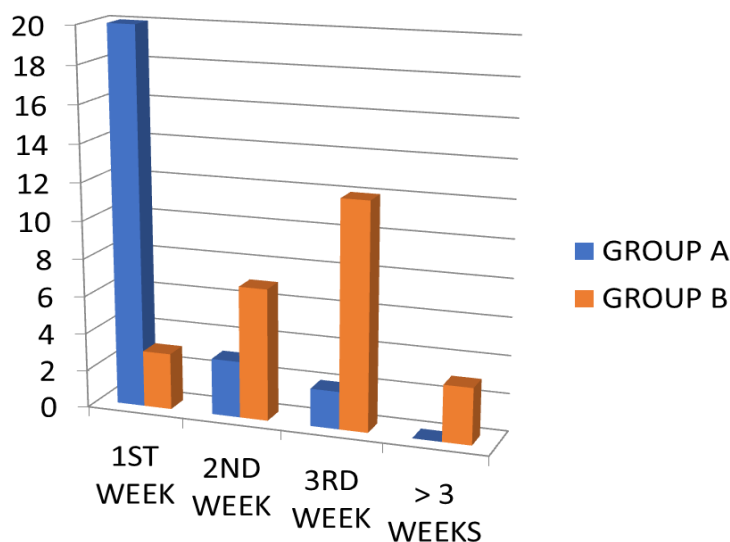


Figure 5: Comparison of duration of analgesia given between the groups

**Table 3: Mean Analgesia between the groups**

Parameter	SDLA	CLA	P value
Duration of Analgesia	1.8 days	3.1 days	0.002*

**Figure 6: Comparison of return of duty period**

The difference between the comparison of return of duty period is found to be statistically significant between the groups.

### Discussion

Laparoscopy is a minimal invasive technique practiced since an era as it is less invasive technique to perform surgeries without having scars.<sup>4</sup> The first LA was performed successfully in 1983, later Pelosi et al in 1992 reported first single dermatome laparoscopic appendectomy. Natural Orifice Transluminal Endoscopic Surgery (NOTES) and Single Dermatome Laparoscopic Appendectomy (SDLA) are the most predominant techniques in the current era.<sup>5</sup> The present study compares the differences between single dermatome laparoscopic appendectomy and conventional laparoscopic appendectomy. The results of the study proves that single dermatome laparoscopic appendectomy results in scarless surgical procedure which is correlated with the study results of Hong TH.<sup>6</sup>

The duration of the hospital stay and analgesia were statistically significant in single dermatome laparoscopic appendectomy which is similar to the study reports of others. Laparoscopic appendectomy seems to have several advantageous over several other methods as reported by Sauerland S et al which is comparable with the present laparoscopic results where SDLA is advantageous over CLA.<sup>7</sup>

Another study by Van Dalen R et al stated that acute appendicitis in women of reproductive age can be best treated by laparoscopy which is similar finding.<sup>8</sup> In the present study, we also found SDLA is safe and effective technique in treating appendicitis of females of reproductive age.

Hellberg A et al in his observation stated that, conversion of laparoscopic surgery to open appendectomy is one of the major drawback but significant patient satisfaction score is

well established with single dermatome laparoscopic appendectomy over conventional laparoscopic appendectomy.<sup>9</sup>

The study results also proved that pain scores between the groups was statistically significant with  $P < 0.05$ .

#### **Conclusion:**

The study results conclude that, post operative pain, duration of hospital stay and usage of analgesics were less in single dermatome appendectomy. Patient satisfaction was significantly higher in SDLA than CLA.

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