

# Examine the Wound Infection Rate by Using Periumbilical Incision and Intraumbilical Incision Techniques in Patients Underwent Laparoscopic Appendectomy

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## ABSTRACT

**Aim:** To determine the rate of wound infection by using periumbilicalincision and intraumbilicalincision methods in laparoscopic appendectomy patients.

**Study design:** Randomized control trial research.

**Place and duration of study:** This multi-centre study conducted at Department of Surgery, Shahida Islam Medical Complex Lodhran and Jinnah Postgraduate Medical Centre, Karachi from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2017.

**Methods:** In this observational study, two hundred and sixty patients of both genders selected for appendectomy were included. Patient's ages were ranging from 15 to 55 years. All the patients were equally divided into two groups. Patient's detailed history was examined after taking informed consent from all the patients. Infection score/values were calculated.

**Results:** Out of all 260 patients,160 (61.54%) patients were men while rest 100 (38.46%) patients were women. 64 (24.62%) patients were ages between 15 to 25 Years, 76 (29.23%) patients had an ages from 26 to 35 Years, 85 (32.69%) patients were ages between 36 to 45 years and 35 (13.46%) patients had ages 46 to 55 years. 5 (3.85%) patients had found surgical wound infection in periumbilical incision group while 2 (1.54%) patients had wound infection whom treated with intraumbilical incision technique.

**Conclusion:** The patients whom were treated with intraumbilical incision technique had less rate of wound infection as compared to periumbilical incision technique.

**Keywords:** Intraumbilical Incision, Periumbilical Incision, Laparoscopic appendectomy

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## INTRODUCTION

Appendicitis is one of the most common diseases found in all over the world. It is the most frequently performing surgery in hospitals settings and approximately 10% of all surgical operation followed by appendectomy.<sup>1</sup>Appendix is a pouch like structure and found in the right lower quadrant of the abdominal cavity. It is unimportant organ in human body at adult and middle age, but in childhood it has some role in immune function.<sup>2</sup> Acute or inflamed appendix is commonly found in hospital emergencies and it required accurate diagnoses and early surgical treatment. Appendectomy is the surgical treatment of inflamed appendix and currently laparoscopic appendectomy is most useful and latest surgical treatment and performing worldwide.<sup>3</sup>

In laparoscopic appendectomy, laparoscopic port can be inserted from vagina and rectum but this method is not easy and safe, port inserted from umbilicus can be safe and easy.<sup>4</sup>Laparoscopic appendectomy may converted to open appendectomy due to intra-operative complications,<sup>5</sup> therefore it is very important for surgeons to select the method for incision. A small incision on the upper and lower border of umbilicus is very useful and safe technique for insertion the laparoscopic port into the abdominal cavity. Another method for insertion the port into the abdominal cavity is intraumbilical incision and it is also used in

laparoscopic appendectomy and this method is more useful, safe and easy technique. Only fat and fascia need to be divided in the intraumbilical incision method and this technique resulted better cosmetic results as compared to other insertion methods in laparoscopic appendectomy treatment.<sup>6,7</sup> Some surgeons demonstrated that there is no significant difference in complication of intra and periumbilical incision method if applied with proper sterilization. Many of researches resulted that the wound infection after laparoscopic surgery may be due to the ligation of appendix. Absorbable clip, thread and endoscopic stapler are the most common methods used for the ligation of appendix.

Some of experts reported that endoscopic stapler may lead to less complication or lower the risk of wound infection as compared to other methods used for ligation.<sup>8</sup>Endoscopic stapler technique is most frequent and useful method in worldwide surgical emergencies.<sup>9</sup>A study conducted by Jun et al<sup>10</sup>demonstrated that there is no major difference resulted in both incisional techniques. They resulted 2.5% infection in periumbilical technique and 0.6% wound infection in intraumbilical technique.

The recent research was conducted to examine the rate of wound infection by using periumbilical and intraumbilical technique for incision in laparoscopic appendectomy. This study also aiming a helpful research for newly graduates and for providing better treatment to the patients with less complications.

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**MATERIALS AND METHODS**

This multi-centre study conducted at Department of Surgery, Shahida Islam Medical Complex Lodhran and Jinnah Postgraduate Medical Centre, Karachi from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2017. Two hundred and sixty patients of both genders selected for appendectomy were included. Patient's ages were ranging from 15 to 55 years. All the patients were equally divided into two groups. Patient's detailed history was examined after taking informed consent from all the patients. Patients having diabetic history and patients with cancer surgery were excluded from this study. Infection score/values were calculated. Complete follow-up were taken after surgical treatment. All the statistical data was analyzed by computer software SPSS 21.

**RESULTS**

There were 160 (61.54%) male patients while rest 100 (38.46%) patients were females. Seventy six (29.23%) patients were ages between 15 to 25 Years, 85 (32.69%) patients had an ages from 26 to 35 Years, 64 (24.62%) patients were ages between 36 to 45 years and 35 (13.46%) patients had ages 46 to 55 years. All the patients were divided into two groups i) intraumbilical, ii) periumbilical group, each group contain 130 patients 50 females and 80 males. We found 5/130 (3.85%) patients had found surgical wound infection in which 4 patients were men and 1 patient was woman while 125 (96.15%) patients had no infection, in periumbilical incision group while 2 (1.54%) patients had wound infection and those were men and 128 (98.46%) patients found no surgical infection whom treated with intraumbilical incision technique.

Table 1: Demographic information of the patients

Variable	No.	%
<b>Gender</b>		
Male	160	61.54
Female	100	38.46
<b>Age (years)</b>		
15 - 25	76	29.23
26 - 35	85	32.69
36 - 45	64	24.62
46 - 55	35	13.46

Table 2: Distribution of patients as per incision technique

Wound Infection	Intraumbilical (n=130)	Periumbilical (n=130)
Yes	2 (1.54%)	5 (3.85%)
No	128 (98.46%)	125 (96.15%)

Table 3: Age and gender wise distribution of wound infection

Variable	Intraumbilical Group (n=130)	Periumbilical Group (n=130)
<b>Gender</b>		
Male (160)	2	3
Female (100)	0	2
<b>Age (years)</b>		
15 - 25	0	1
26 - 35	1	2
36 - 45	1	1
46 - 55	0	1
Total	2 (1.54%)	5 (3.85%)

**DISCUSSION**

Globally appendicitis found most frequent malignant disorder and appendectomy is the most commonly performed surgical treatment for inflamed appendix. Worldwide, surgeons and healthcare expertise working for the better treatment of appendectomy with lower rate of wound infection and scar free skin after surgical treatment. Many of procedures done for appendectomy but laparoscopic appendectomy resulted better outcomes with lower risk of complications. Chow et al<sup>11</sup> reported that the Single Incision Laparoscopic Appendectomy, an incision in the intraumbilical region resulted scar free skin after surgical treatment. Another research demonstrated that the use of SILA technique resulted as remarkable method for incision in laparoscopic appendectomy patients.<sup>12</sup> But in many surgical emergencies periumbilical technique is still using for insertion of laparoscopic port into the abdominal cavity.

In this study, out of all 260 patients, 160 (61.54%) patients were men while rest 100 (38.46%) patients were women. A study conducted by Sumroet al<sup>13</sup> reported male population was high as compared to females. In our research, we found that 5/130 (3.85%) patients had found surgical wound infection in which 4 patients were men and 1 patient was woman while 125 (96.15%) patients had no infection, in periumbilical incision group while 2 (1.54%) patients had wound infection and those were men and 128 (98.46%) patients found no surgical infection whom treated with intraumbilical incision technique. These results shows no significant different in both techniques but intraumbilical group shows less wound infection rate as compared to periumbilical group. Patients having wound infection with Intraumbilical incision techniques visited hospital after 7 day of surgery at outpatient and found no severe infection and recommend medication. A study conducted by Lee et al<sup>14</sup> regarding comparison the rate of wound infection with SILA technique in intraumbilical, region reported that single incision laparoscopic appendectomy resulted less complication regarding infection as compared to open surgery.

Laparoscopic appendectomy is a very easy and safe procedure and every surgeon should be trained for this technique before performing any kind of operation.<sup>15</sup> It is very important to perform this operation by a well trained and experienced surgeon for patients satisfaction because now-a-days 30 to 40% of people considered their umbilicus is an important for better image of their body.<sup>16,17</sup> In this study, we observed that intraumbilical incision technique is very useful and easy method for insertion with remarkable outcomes and less infection rate as compared to periumbilical incision technique in laparoscopic appendectomy patients and these results shows similarity to some other studies in which intraumbilical consider better technique with respect to infection rate as compared to other methods.<sup>18,19</sup> Moreover, Intra abdominal laparoscopic surgery may benefits from intraumbilical incision. Laparoscopic surgery is an easy and safe alternative for open surgery not only for minor but also for major surgical treatments.<sup>20,21</sup>

## CONCLUSION

Patients whom were treated with intraumbilical incision technique had less rate of wound infection as compared to periumbilical incision technique. Also lower risk of complication with better cosmetic results. Moreover, intraumbilical incision method is easy and safe alternative of open surgery and most of the patients shows satisfaction to this technique.

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