Comparative Study of Non-Absorbable Versus Delayed Absorbable Suture Material and Suturing Technique in Midline Abdominal Closure

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Received: July 2019
Accepted: July 2019

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ABSTRACT

Background: Closure of the abdominal wall is a routine procedure and one of the first things a surgeon is taught in his career. Secure wound closure is an essential requirement for an uncomplicated and expedient recovery after an abdominal operation. Methods: We assessed, wound infection rates in 320 patients in the four randomized groups according to the suture and technique of closure used. Patients were followed for a period of 2 weeks and using well set definition were placed in infected, uninfected and burst abdomen.

Results: Older age, male sex, diabetes, anemia, malnutrition and sepsis were found to be highly significant risk factor for wound infection. Suture material (Prolene vs Vicryl) and technique (continuous vs interrupted) arms did not showed statistically significant differences outcomes in regard to wound infection rates, however there appears to be less incidences of wound sinus formation with delayed absorbable sutures (Vicryl).

Conclusion: Closure of a mid-line laparotomy wound can be done by using either Prolene or Vicryl suture material, with either continuous or an interrupted fashion. Continuous technique is time saving and delayed absorbable suture (Vicryl) results in less wound sinus formation.

Keywords: Suture, Absorbable, Delayed Absorbable, Interrupted, Continuous.

INTRODUCTION

Surgeons have to inflict wounds on their patients and it’s their duty to endeavor constantly to get such wounds to heal as quickly, reliably and securely as possible. It has been said that nearly half of all post-operative complications are related to wounds. It increases the morbidity and hospitalization of the patient as well as total cost of treatment and at times leads to an increase in mortality.

MATERIALS AND METHODS

The present study was carried Vardhman Institute of Medical Sciences, Pawapuri, Nalanda, on 100 patients during the period of Jan. 2019 to Mar 2019 in whom mid line incision laparotomy was carried out. The aim of the above study was to compare the incidence of wound infection and burst abdomen between non-absorbable like Prolene and delayed absorbable like Vicryl suture material and concurrently continuous versus interrupted suture technique. Age of patients ranged from 16-75 years. Overall, nearly 50% of patients were in 16-35 years age group in both suture material and suture technique group. Total male to female ratio was found to be 70:30 (3:1), indicating a male predominance in the study.

The occurrence of various risk factors such as diabetes mellitus, anemia, malnutrition, jaundice, uremia, sepsis, cough, other pulmonary complications and also the duration of surgery and the suturing technique were identical (p>0.05) for the two groups in both study and was attributed to an adequate randomization process.

RESULTS

The rate of wound complications in suture material study such as wound infection (A1 = 20; A2 = 19); Burst abdomen (A1 = 11; A2 = 10) were not statistically significant (p>0.05) but 25 cases developed sinus formation with prolene suture in contrary, no patient with vicryl group develop such complication. [Table 1]

The rate of wound complication in suture technique study such as wound infection (B1 = 20; B2 = 20); Burst abdomen (B1 = 11; B2 = 11) were not statistically significant (P>0.05) but 2 cases of continuous technique with prolene suture had sinus
significant risk factor for wound infection (p<0.001).

Table 2: Rate of wound complications (suture technique)

<table>
<thead>
<tr>
<th></th>
<th>Continuous (B 1)</th>
<th>Interrupted (B 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>wound infection</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Burst abdomen</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

In infected cases the rate of wound complications in the suture material, study group such as wound infection (A1 = 28; A2 = 25); Burst abdomen (A1 = 19; A2 = 17) were not statistically significant (p>0.05) but 12 cases develop sinus formation with Prolene suture in contrary, no case with Vicryl group develop such complication.

Table 3: Rate of wound complications in infected case (suture material)

<table>
<thead>
<tr>
<th></th>
<th>Non absorbable (A 1)</th>
<th>Delayed absorbable (A2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>wound infection</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Burst abdomen</td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>sinus formation</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>

In infected cases the rate of wound complications in suture technique study such as wound infection (B1 = 26 ; B2 = 28); Burst abdomen (B1 = 16 ; B2 = 16) were not statistically significant (p>0.05) but 1 case of continuous technique with Prolene suture had sinus formation while in interrupted technique with Prolene suture 9 patients develop sinus formation.

Table 4: Rate of wound complications in infected case (suture technique)

<table>
<thead>
<tr>
<th></th>
<th>Continuous (B 1)</th>
<th>Interrupted (B 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>wound infection</td>
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<td>28</td>
</tr>
<tr>
<td>Burst abdomen</td>
<td>16</td>
<td>16</td>
</tr>
</tbody>
</table>

Older age (>55 years), male sex, diabetes, anemia, malnutrition and sepsis were found to be a highly significant risk factor for wound infection (p<0.001). Older age (>55 years), male sex, malnutrition and cough were found to be a highly significant risk factor for burst abdomen. (P<0.001)

CONCLUSION

As the continuous technique is time saving, reducing the length of time under anesthesia, and as there appear to be fewer cases of wound sinus formation when using delayed absorbable sutures (Vicryl), we recommend continuous delayed absorbable suture in the closure of the fascial layer.

REFERENCES


Source of Support: Nil, Conflict of Interest: None declared