



## Comparison of outcome of interrupted versus continuous closure technique of rectus sheath in emergency laparotomies patients in terms of wound dehiscence.

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**ABSTRACT... Objective:** To compare outcome of interrupted versus continuous closure of rectus sheath in emergency laparotomy patients, in terms of wound dehiscence. **Study Design:** Randomized Controlled Trail. **Setting:** Department of Surgery Pir Abdul Qadir Shah Institute of Medical Sciences, Gambat. **Period:** 1<sup>st</sup> January to 30<sup>th</sup> June 2020. **Material & Methods:** Total duration of study was 6 months. Total of 150 patients (75 in each group) were studied. Interrupted closure of rectus sheath was done in group "A" patients while continuous closure was done in group "B" patients, and efficacy in terms of wound dehiscence was compared in both groups. **Results:** Overall male to female ratio was 1.29:1. The average age of the patients was 39.41 years + 13.02SD. Wound dehiscence in Group "A" was 2.6% while 10.7% in Group "B" patients with significant p-value of 0.049. **Conclusion:** Interrupted closure of Rectus sheath in emergency laparotomy is more effective than continuous closure in preventing wound dehiscence.

**Key Words:** Continuous Closure, Dehiscence and Laparotomy, Interrupted Closure.

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## INTRODUCTION

Fascial dehiscence is a common complication in post-emergency laparotomy patients, which appear early as burst abdomen or late as incisional hernia. Patients with this morbidity often need secondary fascial closure.<sup>1,2</sup>

Emergency laparotomy is a common surgical procedure, and wound dehiscence in these patients remains a worrisome complication in postoperative period. Incidence of post-laparotomy wound dehiscence is quoted as 0.25% to 3%.<sup>3</sup>

The proper abdominal wall closure needs combination of an accurate surgical technique and an appropriate suture material with sufficient suture length and diameter, in order to prevent this complication.<sup>4</sup> Technique of abdominal wall closure plays an important role in fascial dehiscence prevention. Also, during surgery, measures should be taken to reduce tissue

hypoxia and surgical infections. Comorbidities like chronic pulmonary disease, ascites, jaundice, anemia and malnutrition also affect wound healing.<sup>5</sup> Evaluation and possible correction of these factors is very essential in prevention of dehiscence.<sup>6</sup>

According to another study, excessive tension should be avoided during closure.<sup>7</sup> Patients with generalized peritonitis and malignancy need special attention regarding wound closure.<sup>8</sup>

Many new techniques have been developed in a hope to prevent or reduce the risk of fascial dehiscence, but burst abdomen remains an unavoidable morbidity.<sup>9</sup> Also, in recent large multicenter trials surgeons at various institutions showed lack of consensus regarding optimal technique for midline abdominal incision closure in emergency laparotomies.<sup>4</sup>

The aim of this study was to determine the superior

technique for midline abdominal incisions closure in emergency laparotomy patients. This study will provide us local statistics and the results will be shared with the general surgeons.

## MATERIAL & METHODS

This randomized controlled study was conducted at Surgical department at of Pir Abdul Qadir Shah Institute of Medical Sciences, Gambat from 1<sup>st</sup> January to 30<sup>th</sup> June 2020. Total Duration of study was 06 months. Total 150 Patients were studied. 75 in each group. All patients with age group between 18 to 60 years who underwent emergency laparotomy were included in this study. Malnourished patients with body mass index of <15 Kg/m<sup>2</sup>, obese patient with BMI of >30 Kg/m<sup>2</sup>; Diabetics, patients with underlying malignancy and immuno-compromised patients were excluded from this study.

Approval was taken from the hospital ethical committee PASQJIMS/IRB/710. The purpose and benefits of study were explained to all patients. Verbal and written informed consent was obtained from all patients. Demographic characteristics like name, age, sex, address of all patients were recorded. Complete history was taken and examination of all patients was done. Base line investigations like FBC, serum creatinine, x-ray chest, ECG, RBS and viral profile were done. Appropriate resuscitation of all patients followed by emergency laparotomy was done. Patients in Group "A" were closed with Interrupted closure technique and Group "B" patients underwent continuous closure. All laparotomies were done by consultant surgeon. Same suture material i.e. Prolene No. 1 with a length of at least 4 times the length of the wound was used in both groups. All patients were followed Post operatively for 4 weeks for wound dehiscence.

All information's were recorded on a pre-designed proforma. All the analysis was done in SPSS 20.0.

## RESULTS

Gender wise distribution showed male to female ratio of 1.41:1 in Group "A" while Group "B" patients was having male to female ratio of 1.14:1. Overall Male to female ratio was 1.29:1.

Average age of the patient in Group "A" was 38.64 years  $\pm$  13.14SD. While in Group "B" average age of the patient was 40.17 years  $\pm$  12.92SD. The overall average age of the patients was 39.41 years  $\pm$  13.02SD. Wound dehiscence in Group "A" was 2.6% while 10.7% in Group B patients with significant P-value of 0.049% (Table-I)

Variable	Group A	Group B
Number of Patients	75	75
Gender		
Male	44 (58.6%)	40 (53.3%)
Female	31 (41.4%)	35 (46.7%)
Fascial Dehiscence	2 (2.6%)	8(10.7%)

**Table-I.**

## DISCUSSION

Most commonly used incision during emergency laparotomies is midline incision, because it is easy to open in no time, usually blood sparing and gives access to all quadrants of the abdomen.<sup>10</sup>

Post-operatively wound dehiscence appears mostly between fifth and eighth day.<sup>11,12</sup> Wound strength during this period depends on the suture technique and material.<sup>13</sup> Technique of wound closure involves selection between interrupted and continuous closure, fascial bite size, stitch interval, size and length of suture material used.<sup>14</sup> There are numerous studies with contradictory results about wound strength in continuous versus interrupted suture techniques.<sup>15</sup>

With Smead-Jones interrupted closure technique with polypropylene and monofilament steel, fascial dehiscence incidence is less than 1% in laparotomies closure.<sup>16</sup> Polyglycolic acid sutures are also equally effective when used with the same technique.<sup>17</sup> While closures with catgut suture with this same technique does not prevent wound dehiscence because it breaks easily.<sup>16</sup>

In our study, we recorded dehiscence of 10.7% in patients with continuous closure technique compared to 2.6% in patients with interrupted closure. While a study done in India quoted dehiscence rate of 4.55% in patients with interrupted closure technique, compared to

wound dehiscence of 15.70% with continuous closure technique.<sup>18</sup> In another study, done by Murtaza B had showed dehiscence rate of 10% with interrupted technique, compared to dehiscence of 20% in patients with continuous technique.<sup>9</sup>

Himanshu Gupta et al published a Meta-analysis, the most up-to-date and comprehensive analysis, with 23 trials. It showed a significant low risk of fascial dehiscence incidence of 2.17% with interrupted closure technique in comparison of 14.8% incidence with continuous closure technique.<sup>19</sup>

## CONCLUSION

Our study showed that Interrupted closure is more effective than continuous closure technique in dehiscence prevention post-laparotomy midline closure. However, increased cost and more time requirement during closure makes this technique less popular among General surgeons. Also long term complications like knots irritation and more chances of stitch sinus formation has limited the use of this technique. So, large scale studies are recommended to show the actual status of both the techniques.




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### AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Kaleem Ullah	Study conception and design and Acquisition of data.	
2	Shams Uddin	Analysis and Interpretation of data.	
3	Azam Shoib	Drafting of manuscript and review of Discussion.	
4	M. Danish Yaseen	Statistical expertise and Result compilation.	