

## MESH VERSUS NON-MESH REPAIR OF VENTRAL ABDOMINAL HERNIAS

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**Background:** To investigate the relative effectiveness of mesh and suture repair of ventral abdominal hernias in terms of clinical outcome, quality of life and rate of recurrence in both the techniques. **Methods:** This is a retrospective descriptive analysis of 236 patients with mesh and non-mesh repair of primary ventral hernias performed between January 2000 to December 2004 at Surgery Department, Liaquat University of Medical and Health Sciences, Jamshoro. The record sheets of the patients were analyzed and data retrieved to compare the results of both techniques for short-term and long-term results. The data retrieved is statistically analyzed on SPSS version 11. **Results:** There were 43 (18.22%) males and 193 (81.77%) females with a mean age of 51.79 years and a range of 59 (81–22). Para-umbilical hernia was the commonest of ventral hernia and accounted for 49.8% (n=118) of the total study population followed by incisional hernia comprising 24% (n=57) of the total number. There was a significant difference in the recurrent rate at 3 years interval with 23/101 (22.77%) recurrences in suture-repaired subjects compared to 10/135 (7.40%) in mesh repair group. Chronic pain lasting up to 1–2 years was noted in 14 patients with suture repair. Wound infection is comparatively more common (8.14%) in mesh group. The other variables such as operative and postoperative complications, total hospital stay and quality of life is also discussed. **Conclusion:** Mesh repair of ventral hernia is much superior to non-mesh suture repair in terms of recurrence and overall outcome.

**Keywords:** Primary ventral hernias, Mesh repair, Suture repair, short-term complications, Recurrence, Morbidity, Mortality

### INTRODUCTION

The common ventral abdominal hernias include para-umbilical, incisional, umbilical, and epigastric hernias. All varieties of ventral hernias are characterized by a defect in the anterior abdominal wall. The optimum treatment for such hernias is still under debate and there are no guidelines as to the most appropriate treatment.<sup>1</sup> In developing countries such hernias are not treated on priority basis because of their benign nature in general and due to economical reasons.<sup>2</sup> Among the common ventral hernias are the incisional and para-umbilical hernias constituting about 85% of the overall ventral abdominal hernias. The incisional hernias usually result when, due to various reasons, a previous incision gives way and abdominal contents herniate through the defect. Such incisional hernias result after 2–20 % of laparotomies for various diseases. The para-umbilical and umbilical hernias result through a defect in the linea alba or weakened umbilical scar. A number of factors are postulated as predisposing factors for these common ventral hernias such as obesity, post-operative wound infection, diabetes mellitus, steroids, smoking and faulty surgical technique. A failure of treatment in the form of recurrence of hernia is the most dreaded complication as it causes a lot of psychological as well as financial trauma to the patient. Conventionally these hernias are treated by suture repair which has led to a substantial rate of recurrence whereby increasing demand for a better technique of repair.<sup>3</sup> The introduction of mesh repair of these hernias has shown encouraging results over the past few years and many studies have shown a substantial decrease in the rate of recurrence with this technique.<sup>4-7</sup> Suture repair (Mayo's repair) has remained

the conventional mode of repair for para-umbilical and umbilical hernias but high recurrence have been reported.<sup>8</sup> This study is conducted to compare the outcome of conventional suture repair with mesh repair in various ventral abdominal hernias in terms of operative and postoperative complications, recurrence and subjective satisfaction in the long run between two groups.

### MATERIALS AND METHODS

In the past 4 years, 236 consecutive patients of different ventral hernias were operated and repaired in our unit. The patients were randomly allocated to undergo either a suture (n=101) or a mesh repair (n=135) regardless of the type of hernia. The suture repair was done by Prolene-I and the mesh repair was done by using proline mesh of different sizes depending upon the size of the defect. The same surgical team, having adequate experience in hernia surgery, performed all the operations. General anaesthesia was employed in all the patients regardless of type of hernia, gender and age of the patient. All patients were investigated and examined by physicians and anaesthetists from fitness point of view before surgery. The patients were followed up on a regular schedule at 1 week, 2 weeks, 2 months, 6 months, 12 months and 36 months. The operative and postoperative complications, duration of surgery, hospital stay and quality of life following surgery were assessed by using a proforma, and statistical analysis of the data using SPSS version 11.

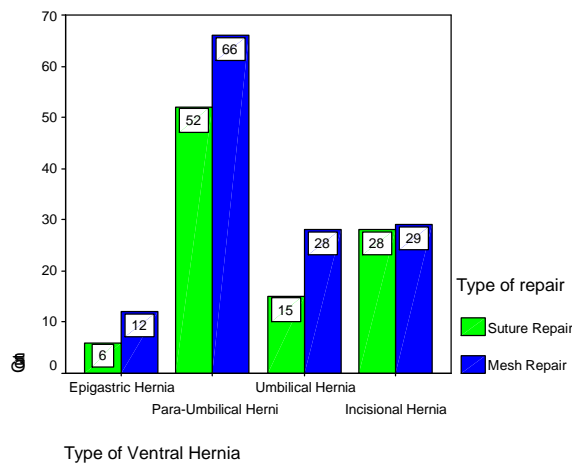
### RESULTS

A total number of 236 patients presented in surgical department of LUMHS with ventral hernia were operated by either suture or mesh repair. The patients were randomly

allocated to either of the operative technique. There were 43 (18.22%) males and 193 (81.77%) females with mean age of 51.79 years and range of 59 (81–22). Different varieties of the ventral hernia and their mode of presentation are shown in Table-1. Para-umbilical hernia remains the commonest type of ventral hernia in both the sexes in this series followed by incisional hernia. The type of hernia and the repair done is shown in Figure-1. Of the total number, mesh repair is done in 135 (57.20%) and suture repair in 101 (42.79%) patients during this period. The total operative time is reasonably less in mesh repair as shown in Table-2. Among the early post-operative complications, seroma formation and wound infection were more frequent in mesh repair compared to suture repair. On the contrary, recurrence of hernia was found significantly low ( $p < 0.001$ ) in mesh repair group compared to suture repair during 3 years of follow up, as shown in Table-3. The mesh was rejected in 2 patients after overwhelming wound infections. In other patients, the wound infection resolved on antibiotics and regular wound dressings. Of the total number of 101 patients repaired by suture technique, 14 patients continued to complain of mild to moderate pain for 1–2 years whereas only 4 patients of the mesh-repaired hernias experienced abdominal pain and foreign body sensation in the long run. The patients operated by mesh repair expressed a high level of comfort and satisfaction compared to the suture repaired patients.

**Table-1: Type and presentation of ventral hernias**

| Type of Ventral Hernia | Presentation of Hernia |           |           |          |          |            |
|------------------------|------------------------|-----------|-----------|----------|----------|------------|
|                        | 1                      | 2         | 3         | 4        | 5        | 6          |
| Epigastric Hernia      | 13                     | 3         | 2         | Nil      | Nil      | 18         |
| Para-Umbilical Hernia  | 76                     | 5         | 29        | 7        | 1        | 118        |
| Umbilical Hernia       | 17                     | 11        | 14        | Nil      | 1        | 43         |
| Incisional Hernia      | 26                     | 8         | 21        | 1        | 1        | 57         |
| <b>Total:</b>          | <b>132</b>             | <b>27</b> | <b>66</b> | <b>8</b> | <b>3</b> | <b>236</b> |



**Figure-1: Type of Hernia and the type of repair done**

**Table-2: Type of repair and duration of surgery**

| Type of repair | Operative time   |                  |                  |                   | Total      |
|----------------|------------------|------------------|------------------|-------------------|------------|
|                | Up to 40 minutes | Up to 60 minutes | Up to 90 minutes | Up to 120 minutes |            |
| Suture Repair  | 4                | 49               | 45               | 3                 | 101        |
| Mesh Repair    | 15               | 77               | 41               | 2                 | 135        |
| <b>Total:</b>  | <b>19</b>        | <b>126</b>       | <b>86</b>        | <b>5</b>          | <b>236</b> |

$p=0.005$

**Table-3: Immediate & late complications in both groups**

| Post-operative complications | Total Repair N=236  |                       | p-value     |
|------------------------------|---------------------|-----------------------|-------------|
|                              | Mesh repair (N=135) | Suture repair (N=101) |             |
| Seroma                       | 12                  | Nil                   |             |
| Haematoma                    | 2                   | 4                     |             |
| Wound Infection              | 11                  | 7                     | $p < 0.003$ |
| Wound dehiscence             | 2                   | 3                     |             |
| Mesh rejection               | 2                   | Nil                   |             |
| Recurrence                   | 10                  | 23                    | $p < 0.001$ |
| Chronic pain                 | 4                   | 14                    |             |

## DISCUSSION

The different types of ventral hernia are reasonably common all over the world but their optimum treatment is yet to be decided. The different surgical options have progressed from simple tissue repair to mesh and recently introduced laparoscopic repair technique. Different suture repair methods evolved one after the other due to the unacceptably high recurrence rates as reported by many trials.<sup>9-12.</sup>

The present study determines the efficacy of mesh repair in various types of ventral abdominal hernias compared to conventional suture repair. Incidence of para-umbilical hernias is found to be the highest in our series followed by incisional hernia. A number of studies<sup>13-15</sup> report an increased duration of operation in the mesh repair compared to suture repair in different varieties of ventral abdominal hernias and surprisingly this is contrary to our observation as we found much shorter duration of operation ( $p < 0.001$ ) in mesh repair compared to suture repair. The type of hernia repaired determined the technique of suture repair in our series. The para-umbilical hernias were treated mainly by anatomical repair in two layers by Proline-1 suture as well as Mayo's repair where as incisional hernias were operated by 'keel' or simple anatomical repair depending on the circumstances. The short-term post-operative complications during the same hospitalization occurred more frequently in mesh-repaired patients compared to suture repair group. This is consistent with the observation of Sheikh *et al*<sup>16</sup> reporting lesser short-term complications with suture repair in their study. Wound infection was the commonest complication ( $p < 0.003$ ) with mesh repair (8.14%) in all varieties of ventral hernias in our series. This usually heralds by the onset of fever and signs of inflammation, as suggested by Falagas *et al*.<sup>17</sup> Two of the infected meshes were rejected due to overwhelming infection while others were managed successfully on conservative measures. The overall incidence of short-term complications was acceptable in

the suture repair group (13.86%) compared to 20% in mesh group ( $p < 0.003$ ). The principle benefit of mesh repair is appreciated in terms of recurrence and chronic abdominal pain coupled with the level of satisfaction and feeling of well being of patients in the long run. Of the total number of various ventral hernias operated by suture repair, 23 (22.77%) patients developed recurrence while recurrence occurred in 10 (7.40%) patients with mesh repair of their hernias. This is consistent with various similar trials reporting superiority of mesh repair in terms of recurrence.<sup>18-26</sup> The suture repair in our series resulted in a long continued abdominal pain/discomfort in 14 (13.86%) patients versus 4 (2.96%) in the mesh repaired patients. This again coincides with the results of other similar studies.<sup>18,26</sup> A few patients, however, suffered a foreign body sensation following mesh repair which subsided over a couple of months. To our experience, reassurance is more effective than pain-killers in these patients. An overall high level of satisfaction and a feeling of security against recurrence were found among all the patients operated by mesh repair compared to the suture repair subjects. The data in our series favours the impression that mesh repair of ventral hernias is, by all means, superior to suture repair and is more acceptable to patients also.

## CONCLUSION

The data in our series confirms that mesh repair of ventral hernias is a better and safe options in ventral abdominal hernias compared to conventional suture repair especially in terms of recurrence and patients comfort level in the long term.

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