



E-ISSN: 2616-3470  
P-ISSN: 2616-3462  
© Surgery Science  
www.surgeryscience.com  
2019; 3(2): 67-69  
Received: 08-02-2019  
Accepted: 11-03-2019

**Aybala Yıldız**  
Yenimahalle Training and  
Research Hospital/Ankara/Turkey

**Alp Yıldız**  
Yenimahalle Training and  
Research Hospital/Ankara/Turkey

## Evaluation of postoperative pain in ventral herniorrhaphy using 3 different techniques

**Aybala Yıldız and Alp Yıldız**

**DOI:** <https://doi.org/10.33545/surgery.2019.v3.i2b.14>

### Abstract

**Background:** Pain is an unpleasant sensory and emotional experience associated with acute or potential tissue damage. With this study we compare the postoperative pain scores of 3 ventral hernia repair techniques.

**Patients and Methods:** This was a clinical study done in the department of surgery in a tertiary care hospital. A total of 62 patients included the study.

**Results:** The VAS scores showed statistically significant difference between all groups. On 4th hour mean VAS scores were 4.1/6.8/8.9 respectively DM/RPS/PMR groups ( $P<0.05$ ). On 10th hour VAS scores were 3.2/5.9/8.0 respectively DM/RPS/PMR groups ( $P<0.05$ ). On 24th hour VAS scores were 2.1/5.1/6.7 respectively DM/RPS/PMR groups ( $P<0.05$ ).

**Conclusion:** While the primary repair and prolene mesh placement with high intraabdominal pressure leads more aggressive and wide dissection of soft tissues we think that a tension-free repair with peritoneal mesh causes significantly lower postoperative pain. As thinking the importance of reducing postoperative pain, and in the light of our study we think that hernia repair with dual mesh placement is a very considerable option.

**Keywords:** Postoperative pain, dual-sided mesh

### Introduction

Pain is an unpleasant sensory and emotional experience associated with acute or potential tissue damage <sup>[1]</sup>. Unrelieved acute pain may lead to major harmful physiological and psychological effects, which may actually result in significant morbidity and even mortality <sup>[2-4]</sup>. In the contrary, effective acute postoperative pain relief directly results in decreasing morbidity and mortality, shortening of hospital stay postoperatively and improving patient satisfaction <sup>[5-6]</sup>. With this study we compare the postoperative pain scores of 3 ventral hernia repair techniques.

### Patients and Methods

#### Patient Demographics

This was a clinical study done in the department of surgery in a tertiary care hospital. A total of 62 patients included the study. The study was approved by the Institutional Ethical Committee. All the patients who attended surgical outpatient department with ventral hernia (VH) (umbilical, paraumbilical, incisional hernias) were enrolled in our study. All patients operated by same surgical team. Patients who underwent hernia repair with dual mesh formed the DM group (DM: 21 patients), who underwent repair by primary suture formed RPS group (RPS: 17 patients), whereas those who underwent repair with prolene mesh placement formed the PMR (PMR: 24 patients) groups.

#### Operative Approach

All cases were done under general anaesthesia. Antibiotic was prophylactically given before incision and two doses given postoperatively. Urinary bladder catheterization is done in all groups. The surgical technique was chosen on a patient-by-patient basis using the surgeons' judgment. Factors that influenced the decision consisted of age, complex hernia conditions, diameter of hernial sac and body mass index etc. The RPS technique consisted of a primary repair with interrupted non-absorbable sutures. In the PMR technique, the prolene mesh (polymesh polypropylene®, Betatech Medical, Istanbul/Turkey) was placed anterior to the rectus fascia after supporting the fascia with non-absorbable sutures. It consisted of a wide dissection

**Correspondence**  
**Aybala Yıldız**  
Yenimahalle Training and  
Research Hospital/Ankara/Turkey

of subcutaneous tissue to allow a mesh overlap of 3 cm beyond the outer border of the fascial defect. The mesh was fixed using interrupted long-term absorbable sutures at 1-cm intervals. With the same approach, in DM group the dual-sided mesh (polymesh dual®, Betatech Medical, Istanbul/Turkey replaced tension-free with long-time absorbable stitches. Drains were placed after any repair of a defect that required extended subcutaneous tissue dissection that resulted in bleeding or creation of a dead space.

### Exclusion criterias

1) Patients with obstructed or strangulated VH 2) Patients with abdominal malignancies 3) Patients with coagulopathy, severe cardiopulmonary disease, ascites and renal failure 4) Patients who had VH repair in combination with another major surgical operation such as laparoscopic cholecystectomy and inguinal hernia repair

We collected the demographic data, post operative pain, activity disruption, operating time and length of hospital stay. Postoperative pain evaluated on 4, 10 and 24 hour using Visual Analogue Scale (VAS).

### Statistical Analysis

For categorical data, either the chi-square or Fisher's exact test was used. For continuous parametric variables, either a 2-sided *t* test, Mann-Whitney test, or ANOVA was used. Results are reported as mean ± SEM, and a *P* < 0.05 was deemed significant.

### Results

No significant difference existed in sex, age, or BMI between the 3 groups. Previous

abdominal operations were present in 9 patients in the DM group, in 9 patients in the RPS group, and in 11 patients in the PMR group (*P* = NS). No patients had previous ventral hernia repairs in the RPS group. Previous ventral hernia repairs had been performed in 6 and 4 patients in the DM group. The identification of a previously undiagnosed second ventral hernia defect in 2 patients in DM group, 5 patients in PMR group and 4 patients in RPS group. No difference existed in OT times between all groups and mean operation time was (61 min 44 ± 89). No intraoperative complications occurred in any of the patients.

Few patients required hospitalization longer than 24 hours in all groups (1 in RPS, 2 in PMR and 1 in DM group) due to minor postoperative conditions like urinary retention or patients' desire etc. Only 1 patient in the RPS group required overnight hospitalization due to urinary retention. The use of drains was significantly greater in the PMR group than in the DM and RPS groups (*P* < 0.001). Ninety-seven percent of the patients reported symptomatic improvement shortly after surgery.

The VAS scores showed statistically significant difference between all groups. On 4th hour mean VAS scores were 4.1/6.8/8.9 respectively DM/RPS/PMR groups (*P* < 0.05). On 10th hour VAS scores were 3.2/5.9/8.0 respectively DM/RPS/PMR groups (*P* < 0.05). On 24th hour VAS scores were 2.1/5.1/6.7 respectively DM/RPS/PMR groups (*P* < 0.05).

### Discussion

When ventral hernias considered incisional hernias and umbilical hernias must be evaluated in majority by this manner. Incisional hernia is a common long-term complication of abdominal surgery and is estimated to occur in 3% to 13% of laparotomy incisions [7] However, its incidence is greater than 23% in patients who have developed an infection in the laparotomy wound [8, 9] Approximately 50% of incisional hernias develop within the first 2 years after the primary operation, and

74% develop after 3 years. Approximately more than 100,000 men, women, and children in the USA undergo surgery for ventral hernia repair each year. The recurrence rate of incisional hernia, after primary closure is high, ranging between 10% and 50%, and has been reduced to 3% to 18% after the introduction of prosthetic materials (meshes) in hernia repair [7]

Traditional primary open repair is based on suture approximation of aponeurosis on each side of the hernia defect. However, recurrence rates after this procedure range from 41% to 52% in the long term. [10, 11] The introduction of prosthetic meshes in hernia repair has substantially helped in the reduction of recurrence rates. Indeed, Luijendijk *et al.* [8, 12] demonstrated a significant reduction in recurrence rates between primary suture repair compared with mesh repair, 43% to 24%, respectively, for first-time incisional hernia repairs. However, the mesh repairs still require wide dissection of soft tissue, which contributes to an increased incidence of wound-related complications (more than 12%) [7]

When it comes to umbilical hernias, The umbilicus is one of the potential weak areas of the abdomen and a relatively common site of herniations. Umbilical hernias occur more frequently in women, and obesity and repeated pregnancies are common precursors [13] They have received little attention in comparison with other types of hernias of the abdominal wall. The technique described by Mayo in 1901 is the classic method for umbilical hernia repair, consisting of "vestover-pants" imbrication of the superior and inferior aponeurotic segments. Currently, this technique is infrequently used. For parietal defects smaller than 3 cm in diameter, a primary closure is the preferred technique for most surgeons. For defects larger than 3 cm, a repair with prosthetic material similar to the technique for incisional hernias is recommended [13].

All over these, the postoperative pain after herniorraphy stands as a great problem over the surgeons. It had been once said that the single most important factor in preventing infection is the gentleness of surgical technique, i.e., the minimization of tissue injury. However, sophisticated methods directed at reducing contamination, if the operative technique is poor, can lead to higher infection rate. The same concept also applies perfectly for postoperative pain, i.e., whatever is the method of postoperative pain control, clumsy aggressive tissue manipulation increases the intensity and duration of postoperative pain. Although sharp dissection is the preferable and advisable method of dissection, blunt dissection is still used as a major type of dissecting the abdominal wall flaps in the repair of ventral hernia in some schools [1].

In this study we compared 3 different ventral herniorraphy techniques in respect of postoperative pain. This study showed that herniorraphy with tension-free dual-mesh placement method has significantly lower VAS scores. As we mentioned before by Shams and Atef's research [1], postoperative pain is a very important part of the quality of life and satisfaction of the patient about the management. While the primary repair and prolene mesh placement with high intraabdominal pressure leads more aggressive and wide dissection of soft tissues we think that a tension-free repair with peritoneal mesh causes significantly lower postoperative pain. As thinking the importance of reducing postoperative pain, and in the light of our study we think that hernia repair with dual mesh placement is a very considerable option.

### References

1. Shams, Mohamed E, ATEF, Hosam M. Evaluation of the surgical factor in postoperative pain control. Saudi journal

- of anaesthesia. 2010; 4(3):127.
2. Cousins MJ. Acute pain and the injury response: Immediate and prolonged effects. *Reg Anesth.* 1989; 14:162-78.
3. Scott N, Kehlet H. Regional anesthesia and surgical morbidity. *Br J Surg.* 1988; 75:199-204.
4. Yeager MP, Glass DD, Neff RK, Brinck-Johnson T. Epidural anesthesia and analgesia in high risk surgical patients. *Anesthesiology.* 1987; 66:729-39.
5. Cullen ML, Staren ED, el-Ganzouri A, Logas WG, Ivankovich AD, Economou SG. Continuous epidural infusion for analgesia after major abdominal operations: A randomized, prospective double blind study. *Surgery.* 1985; 98:718-28.
6. Rawal N, Sjostrand U, Christoffersson E, Dahlstorm B, Avril A, Raymond H. Comparisons of intramuscular and epidural morphine for postoperative analgesia in the grossly obese: Influence on postoperative ambulation and pulmonary function. *Anesth Analg.* 1984; 63:583-92.
7. Misiakos, Evangelos P *et al.* Laparoscopic ventral hernia repair: pros and cons compared with open hernia repair. *JSLs: Journal of the Society of Laparoendoscopic Surgeons*, 2008; 12(2):117.
8. Bucknall TE, Cox PJ, Ellis H. Burst abdomen and incisional hernia: a prospective study of 1129 major laparotomies. *BMJ.* 1982; 284:931-933.
9. Carlson MA, Ludwig KA, Conlon RE. Ventral hernia and other complications of 1.000 midline incisions. *South Med J.* 1995; 88:450-453
10. Luijendijk R, Hop W, Van den Tol M *et al.* A comparison of suture repair with mesh repair for incisional hernia. *N Eng J Med.* 2000; 343:392-398.
11. Hesselink VJ, Luijendijk RW, de Wilt JH *et al.* An evaluation of risk factors in incisional hernia recurrence. *Surg Gynecol Obstet.* 1993; 176:228-234.
12. White TJ, Santos MC, Thompson JS. Factors affecting wound complications in repair of ventral hernias. *Am Surg.* 1998; 64:276-280
13. Gonzalez, Rodrigo *et al.* Laparoscopic versus open umbilical hernia repair. *JSLs: Journal of the Society of Laparoendoscopic Surgeons*, 2003; 7(4):323.