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"AN EVALUATION OF LAPAROSCOPIC VENTRAL/INCISIONAL HERNIA REPAIR A PROSPECTIVE STUDY"

General Surgery

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ABSTRACT

Introduction: Abdominal hernia occurs through the layers of the abdominal wall at a weak point. It can be congenital or acquired. Hernias are often painful and aesthetically displeasing to patients, whether symptomatic or asymptomatic. Abdominal hernia includes umbilical hernia, epigastral hernia, spiral hernia, lumbar hernia and incisional hernia. Laparoscopic ventral hernia repair (LVHR) is an established treatment for ventral hernias. Laparoscopic ventral hernia repair (LVHR) is an established treatment for ventral hernias. Randomized trials have shown that surgery is comparable to or better than open mesh surgery in terms of key surgical outcome parameters, recurrence rates, and infectious complications. This is a single-center, prospective,descriptive study in patients undergoing LVHR was conducted to characterize postoperative pain, recovery time, and quality of life in detail. **Aim & Objectives:** The primary objective of the present study is to investigate patients presenting with Primary Ventral/ Incisional Hernia undergoing Laparoscopic repair to determine- Short- term and Long-term outcomes regarding 1. Health-related quality of life aspects using SF(Short form)-36 Health Survey Pre-and postoperatively at 6 months. 2. Assess pain pre-op and post op at 6 months using VAS (visual analogue scale). **Materials And Methods :** Patients were examined thoroughly preoperatively at least a day before the proposed procedure.Using SF-36(Short form survey 36) and VAS (Visual analogue scale) After Laparoscopic repair Patients will be examined and followed-up at Day1, 7, 15, 1 month, 3 month and 6 month using SF-36 and VAS. **Result:** LVHR had a significant negative influence on a broad spectrum of recovery parameters. The well-established benefits of laparoscopy repair are less postoperative pain, reduced hospital stay and recovery time, low complication and recurrence rates based on numerous reports, meta-analysis and few randomized trials.

KEYWORDS

INTRODUCTION

Abdominal hernia occurs through the layers of the abdominal wall at a weak point. It can be congenital or acquired. Hernias are often painful and aesthetically displeasing to patients, whether symptomatic or asymptomatic.Advances in basic and clinical science have improved our understanding of the pathophysiology of herniation. The field of hernia repair has evolved as a result of surgical innovation and has greatly benefited from technological advances.

By definition, it represents disruption or loss of continuity of fascial closure. Abdominal hernia is the protrusion of abdominal viscera through a non-hiatal, non-inguinal defect in the fascia of the abdominal wall. They are commonly seen in clinical practice. Patients usually present with swelling or bulging across the abdomen, which usually decreases when lying down. It can also be a dull pain [1].

Abdominal hernia includes umbilical hernia, epigastral hernia, spiral hernia, lumbar hernia and incisional hernia. Laparoscopic ventral hernia repair (LVHR) is an established treatment for ventral hernias. A primary ventral hernia occurs over previously normal skin, while an incisional hernia occurs over a previously surgical incision. They are further classified based on the length and width of the defect size[2].

Microtissue tearing due to repetitive stress is the etiology of ventral hernia. Some of the major contributing factors include chronic cough, urgency, constipation, pregnancy, and obesity [3].

Ventral hernias are usually treated open or laparoscopically. Recently, many surgeons prefer a hybrid approach, mainly for incisional hernia repair [4]. Laparoscopic hernia repair is usually associated with reduced postoperative pain, reduced wound infections, and a significant improvement in long-term quality of life [5].

Laparoscopic ventral hernia repair (LVHR) is an established treatment for ventral hernias. Randomized trials have shown that surgery is comparable to or better than open mesh surgery in terms of key surgical outcome parameters, recurrence rates, and infectious complications [6-9].

In the treatment of benign conditions such as ventral hernia, parameters such as symptomrelief,patient satisfaction, generalhealth status,quality of life(QoL), and recoveryare as important as traditional outcome parameters[10].

This is a single-center, prospective,descriptive study in patients undergoing LVHR was conducted to characterize postoperative pain, recovery time, and quality of life in detail. Predefined preoperative and perioperative factors were examined for their potential impact on postoperative pain.

AIM & OBJECTIVES:

The primary objective of the present study is to investigate patients presenting with Primary Ventral/ Incisional Hernia undergoing Laparoscopic repair to determine- Short- term and Long-term outcomes regarding

1. Health-related quality of life aspects using SF(Short form)-36 Health Survey Pre-and postoperatively at 6 months
2. Assess pain pre-op and post op at 6 months using VAS (visual analogue scale)

This is a clinical study, which will evaluate the actual impact of minimal invasive procedures like laparoscopic ventral/incisional hernia repair on the health related aspects of quality of life and assess the intensity of pain a patient undergoes pre and post operatively.

MATERIALS AND METHODS

It is a prospective study. A total of 32 patients who underwent Laparoscopic Ventral Hernia Repair(LVHR) for Ventral Hernia who fulfilled the inclusion criteria.

Patients were examined thoroughly preoperatively at least a day before the proposed procedure.Using SF-36(Short form survey 36) and VAS (Visual analogue scale) After Laparoscopic repair Patients will be examined and followed-up at Day1, 7, 15, 1 month, 3 month and 6 month using SF-36 and VAS

Table 1 Patient characteristics and operative data. All values are medians (range) unless stated otherwise -LVHR (n = 32)	
Patient characteristics	
Sex ratio (M:F, no.)	19:13

Age (years)	57 (30–71)
Body mass index (kg/m2)	29 (21–42)
Working status (employed: unemployed, %)	63:37
Physical demands of work (mild:hard, %)	70:30
Former laparotomy (%)	40
With wound infection (%)	3
Smoker (%)	41
Hernia localisation (%)	
Umbilical	16
Infraumbilical midline	3
Supraumbilical midline	53
Infraumbilical transverse	16
Supraumbilical transverse	12
Operative data	
Hernia defect size (cm2)	25 (9–100)
Mesh size (cm2)	245 (150–600)
Operation time (min)	105 (90–202)
Patients with adherent hernia sac content, no.(%)	27 (84%)
Hernia content (omentum:small bowel:colon, %)	93:22:11
Number of trocars used per operation	
5 mm	1 (0–2)
10 mm	1 (0–2)
12 mm	1 (0–2)
Tacks used (no.)	40 (22–76)
Estimated blood loss (ml)	10 (0–30)
Perioperative bowel/organ injury (no.)	0

Table 2 Occurrence of predefined surgical and medical complications, registered at 1-month and at 6-months follow-up visits

%	1-month (n = 31)	6-month (n = 28)
Recurrence	0	0
Seroma	3	0
Superficial wound infection	2	0
Deep mesh infection	0	0
Haematoma	1	0
Fistula	0	0
Bowel obstruction (ileus)	0	0
Pneumonia	0	0
Deep venous thrombosis	0	0

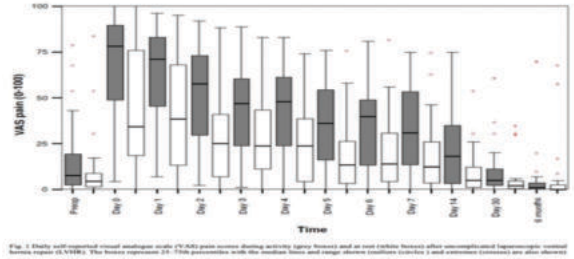
OBSERVATIONS

Total 36 patients were operated on in the study .4 Patients were excluded.

We therefore ended up with a cohort of 32 patients (Table1). One patient was transferred to the intensive care unit on the third postoperative day (no surgical complications) and could not complete the schemes from that time. Three patients did not return the questionnaires 6 months postoperatively and lost to follow up. No operations were converted to open procedures. We observed no major surgical complications during the 6 months follow-up period (Table2).

Postoperative Pain:

The overall VAS-pain scores at rest and during physical activity are shown in Fig. 1. Patients scored significantly more pain during activity than at rest at all times (p\0.01 for preoperative to day 30 scores and p\0.05 at 6 months). The highest median overall VAS- pain score during activity (VAS = 78) and at rest (VAS = 39) was observed on days 0 and 1, respectively. From day 14, VASpain at rest returned to preoperative levels (p = 0.304), but after 6 months, it was lower than the preoperative level (p = 0.008). VAS- pain during activity reached preoperative values at day 30 (p = 0.148), and at 6 months, it was below the baseline score (p = 0.01). There was a large inter-individual variation in the VAS-pain scores (see Fig. 1) and a few patients reported severe pain (defined as VAS-pain[50 after [43]) during activity at long-term follow- up (Fig. 2). There was no significant correlation between long-term pain and the preoperative VAS-pain scores.



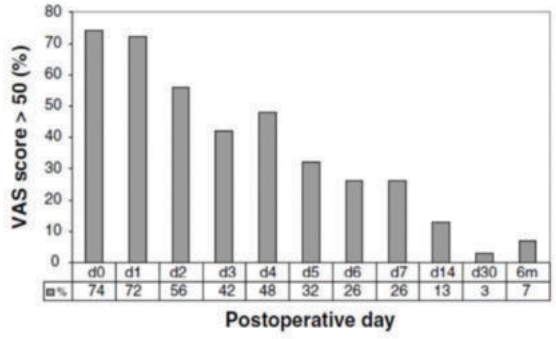


Fig. 2 Ratio (%) of patients reporting VAS-pain C50 during activity at any time in the postoperative period

General well-being

The VAS scores for general well-being (VAS-gwb) and fatigue scores changed significantly during the postoperative period compared with preoperative scores (Fig. 4, p\0.001 for both). The preoperative median VAS-gwb score was 69 (range 2–100) and the lowest score was on day 1 (VAS-gwb = 50, range 4–100). The VAS-gwb score was back to baseline at day 3 (p = 0.06) and improved further from day 30 (VAS-gwb score 94 (range 31–100) vs. 69, p = 0.002) and until 6 months postoperatively (VAS-gwb score 99 (range 35–100) vs. 69, p\0.001) compared with the preoperative score. There was a strong negative correlation between the VAS-gwb and VAS-pain scores at day 30 and after 6 months (r = -0.64 and -0.80, respectively, p\0.001 for both). The median preoperative fatigue score was 3 (range 1–7) and the peak median fatigue score was reached on day 0 (fatigue score 9, range 1–10). Fatigue scores were back to baseline on day 30 (p = 0.46), but at 6 months, it was below the preoperative value (1 (range 1–7) vs. 3, p = 0.005).

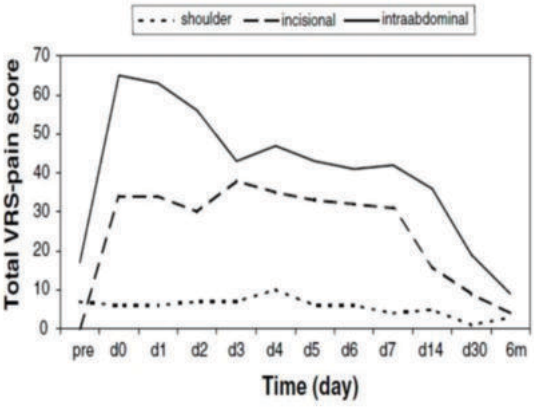


Fig. 3 Pain location, intensity and time course for three different pain components: intraabdominal, incisional and shoulder pain. The total verbal rating scale (VRS) pain scores are added daily tp the VRS-pain scores (0–3) for all patients in the study period. The maximum total VRS-pain score is 96, as the maximum VRS-pain score for each of the three pain components is 3 in 32 patients (32 x 3 = 96)

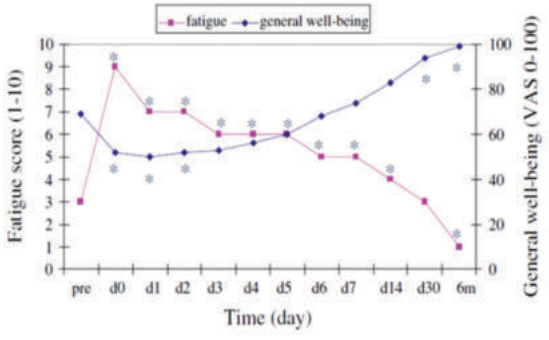


Fig. 4 Changes in fatigue scores (1–10) and general well-being (VAS 0–100 mm) during the study period. *p\0.005, compared with the preoperative values.

Convalescence And Satisfaction

The median in-hospital stay was 2 days (range 0–5 days, mean 1.8 days). On the day of discharge, the median VASpain scores during activity and rest was 60 (range 2–92, mean = 57) and 31 (range 0–93, mean = 34), respectively. Patients resumed normal daily activities after

a median of 14 days (range 1–38 days; mean 15 days), with no difference between employed and unemployed patients (p = 0.334). There was no significant difference between the time to resume work and normal daily activities for employed patients (19 days vs. 16 days (mean), p = 0.65). Smokers took a significantly longer amount of time to resume work than non-smokers (30 days vs. 9 days, p\0.005), and patients with hard physical demands at work took a longer amount of time to resume work compared with patients with light physical demands at work (29 days vs. 9 days, p\0.05).

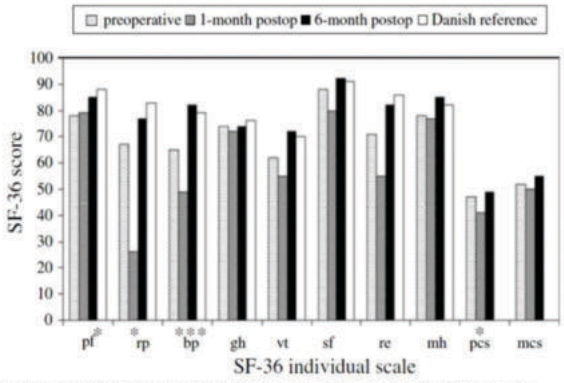


Fig. 5 Self-reported health-related quality of life using the Short Form 36 (SF-36) questionnaire before surgery and 1 month (n = 31) and 6 months (n = 28) postoperatively. The normal Danish population SF-36 scores are shown for reference (n = 4,000). All of the values are means. *p\0.005, compared with preoperative values. Four scales contributing to the scoring of physical health: pf = physical functioning, rp = role physical, bp = bodily pain and gh = general health. Four scales contributing to mental health: vt = vitality, sf = social functioning, re = role emotional, mh = mental health. pcs = physical component scale and mcs = mental component scale

Health-related quality of life (SF-36) The SF-36 scores were significantly worse in three domains at the 30th postoperative day (role physical, bodily pain and physical component scale) compared with preoperative scores (Fig. 5). After 6 months, all of the scores were back to baseline values and the SF- 36 bodily pain score had increased significantly.

DISCUSSION

The present prospective study showed that LVHR had a significant negative influence on a broad spectrum of recovery parameters. Pain was considered to be the most important factor, as the postoperative pain scores were surprisingly high and returned to preoperative values as late as day 30.Consequently, prolonged pain reduced the general well-being, fatigue and QoL scores, which returned to preoperative values by day 3, day 30 and after 6 months, respectively.We identified intraabdominal (visceral) pain as the main pain component (compared with incisional and shoulder pain) in overall VAS-pain scores.

In a non-randomised study comparing open and laparoscopic ventral hernia repair, postoperative pain was assessed on the first three postoperative days using a 0–10-point VAS scale [11].

There was a significant difference in the mean VAS-pain scores at the third postoperative day (2.9 vs. 4.2), in favour of LVHR.

LVHR is painful compared with other laparoscopic procedures, such as cholecystectomy and inguinal hernia repair.

The time to resume normal daily activity was 14 days(median). Despite the acute pain problem after LVHR, patients reported great satisfaction with the operation and the satisfaction scores increased during the follow-up period.

Furthermore, general well-being and fatigue scores improved significantly compared with preoperative scores.

Three physical "SF-36 scores (role physical, bodily pain and physical component score) were significantly reduced at day 30 compared with the preoperative scores. This indicates that SF-36 is well suited to detecting the pain (physical) problem, as we consider the main recovery problem after LVHR. The SF-36 scores reached the general population scores 6 months postoperatively. Several comparison studies on both open and laparoscopic inguinal hernia repairs have been conducted and a recent review concluded that the use of lightweight meshes probably has some advantages with respect to early postoperative pain [12].

Pain at day 30 and after 6 months was strongly correlated to general well-being, patient satisfaction and quality of life (SF-36). Even though patients were discharged after a median of 2 days, they had long (painful) periods of recovery at home. Different mesh materials could potentially influence the time course of postoperative pain. Our study could not demonstrate a significant correlation between the number of tacks and postoperative pain, During physical activity, the intraabdominal pressure increases and the abdominal wall is stretched in different directions. As a result, painful traction is produced between the fixed tacks and the moving "abdominal wall. Furthermore, tacks can induce nerve damage, haematoma and adhesions, which could induce postoperative (chronic) pain.

SUMMARY & CONCLUSION

LVHR had a significant negative influence on a broad spectrum of recovery parameters. The well-established benefits of laparoscopy repair are less postoperative pain, reduced hospital stay and recovery time, low complication and recurrence rates based on numerous reports, meta-analysis and few randomized trials.

Pain was considered to be the most important factor, as the postoperative pain scores were surprisingly high and returned to preoperative values as late as day 30. Consequently, prolonged pain reduced the general well-being, fatigue and QoL scores, which returned to preoperative values by day 3, day 30 and after 6 months, respectively. Despite the acute pain problem after LVHR, patients reported great satisfaction with the operation and the satisfaction scores increased during the follow-up period. General well-being and fatigue scores improved significantly compared with preoperative scores LVHR has been found to have shorter operating time depending on the surgeon's experience, shorter hospital stay, and lower complication rates especially wound and mesh infections and lower recurrence rate during the follow-up period. Laparoscopic ventral hernia repair (LVHR) techniques are based on the fundamental principles of the open preperitoneal repair described by Stoppa and Rives.

The placement of a large mesh in the preperitoneal location allows for an even distribution of forces along the surface area of the mesh, which may account for the strength of the repair and the decreased recurrence associated with it. The repair capitalizes on the physics of Pascal's principle of hydrostatics by using the forces that create the hernia defect to hold the mesh in place. We found mild and chronic pain after LVHR with tacks for mesh fixation. There was a great impact on the quality of life (SF-36), fatigue, general wellbeing and other recovery parameters during the first postoperative month, and patients improved to above baseline values in certain parameters at up to 6 months postoperatively.

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