

# Quality of life after laparoscopic ventral hernia repair, a prospective observational study

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## Abstract

**Introduction:** Studies on post-operative quality of life in Indian patients undergoing laparoscopic ventral hernia repair are scarce. In recent times, the focus of the surgical outcomes is taking a paradigm shift from traditional and surgeon centered approach of post-operative complications, recurrence rates etc. towards patient centered outcomes like quality of life. Hence the current study has been conducted to assess the quality of life of patients undergoing laparoscopic ventral hernia repair, using Hernia-Related Quality-of-Life Survey (HerQLes) in a tertiary care teaching hospital. **Materials & methods:** The study was a prospective observational study, conducted in Rajiv Gandhi institute of medical sciences, a tertiary care teaching hospital in South India on 27 subjects, who underwent ventral hernia repair. Data related to quality of life was collected using a structured and validated instrument, Hernia-Related Quality-of-Life Survey (HerQLes), proposed by Krpata, D. M., et al. **Results:** The improvement in mean Hernia-Related Quality-of-Life Survey (HerQLes) at 1 week after surgery was only 1.9 (-8.18 to 11.98, P value 0.967), which was statistically significant. When compared to preoperative score, there was 13.50 units increase in mean HerQLes at 1 month (3.41 to 23.58, p value 0.003), and this improvement was 22.60 units (12.51 to 32.68, p value < 0.001) at 6 months after surgery. The improvement in mean HerQLes at 1 month and 6 months were statistically significant. **Conclusions:** Laparoscopic ventral hernia repair has led to significant improvement in quality of life at 1 month and 6 months after surgery, when compared with pre-operative quality of life. Even within the post-operative period, there is gradual improvement in quality of life at different follow up periods.

**Keywords:** laparoscopic, ventral hernia, HerQLes.

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## Introduction

Incisional hernias and ventral abdominal hernias are defects in the fascia of abdominal wall, are a common occurrence in people undergoing open abdominal surgery [1]. The consequences can range from asymptomatic presence of disease, cosmetic disfigurement to severe consequences like strangulation of herniated bowel segments [2]. But as documented by numerous studies, the negative effect of these hernias on a person's quality of life can be immense [3, 4].

Traditionally open surgical repair has been the mainstay of the treatment for incisional hernia repair [2, 5, 6]. But in last few years, many randomized controlled trials, comparing open and laparoscopic approaches have proposed laparoscopic approach may offer several advantages and may result in better outcomes [7-10]. In recent times, the focus of the surgical outcomes is taking a

paradigm shift from traditional and surgeon centered approach of post-operative complications, recurrence rates etc [11, 12]. Increasingly more emphasis is being given to more sophisticated and patient centered outcomes like quality of life [3, 4, 13]. Even though various validated tools are available to assess quality of life in general, the focus again is being shifted towards disease specific quality of life assessment methods. Some of the disease specific quality of life scales like Carolina comfort scale are in use to assess quality of life in patients with hernias in general. [14] A new quality of life scale specific to ventral hernia's has been recently proposed and validated by Krpata, D. M., et al.[3]. Studies on post-operative quality of life in Indian patients undergoing laparoscopic ventral hernia repair are scarce.

## Objectives

To assess the quality of life of patients undergoing laparoscopic ventral hernia repair, using Hernia-Related

Quality-of-Life Survey (HerQLes) in a tertiary care teaching hospital

## Materials & Methods

The study was conducted in Rajiv Gandhi institute of medical sciences, a tertiary care teaching hospital in South India. The study was a prospective observational study of 27 subjects, who underwent ventral hernia repair in the study setting, between august 2014 to December 2015, over a 15 month period.

All the study participants were followed up for a period of 6 months, to assess the recurrence rates of the hernia and quality of life following laparoscopic ventral hernia repair (LVHR).

All adult subjects belonging to both genders, who were undergoing surgical repair for the first time were included in the study. Subjects who were undergoing repeat ventral hernia repair were excluded from the study.

Considering the exploratory nature of the study, no formal sample size calculation was done. All the eligible study subjects were recruited into the study consecutively, hence no sampling was done.

As the patients undergoing laparoscopic ventral hernia repair (LVHR), as part of their routine care were included in the study and no additional intervention was carried out, no ethical approval was sought. Informed written consent was obtained from all the study participants. Confidentiality of the study participants was maintained,

## Results

A total of 27 patients underwent laparoscopic ventral hernia repair.

**Table-1: Age and gender distribution of study participants.**

Parameter	Frequency	Percentage
<b>Age group</b>		
<40	5	18.52%
40 to 49	7	25.93%
50 to 59	11	40.74%
60 and above	6	22.22%
<b>Gender</b>		
Male	11	40.74%
Female	16	59.26%

The age distribution of the patients shows the most common age group to be between 50 and 59 years, which constituted 40.74% of the study population. The proportion of subjects between 40 to 49 years was 25.93%. The number of persons less than 40 years were 5 (18.52%) and 6 (22.22%) were aged 60 years or above. (table 1).

as no personal information was disclosed at any point of time during the study.

Data related to quality of life was collected using a structured and validated instrument, Hernia-Related Quality-of-Life Survey (HerQLes), proposed by Krpata, D. M., et al.[3].

The instrument is a 16-question QofL survey tool, constructed and validated by Rasch modeling, fit statistics, person-item mapping, separation index, and reliability in patients undergoing ventral hernia repair.

All the questionnaires were translated into local language by two independent experts and retranslated into English to test for any loss of essence during translation.

The translated version of the questionnaire was administered by the investigator and the responses were documented.

The data was analyzed using mean and standard deviation for quantitative variables, frequency and proportion for categorical variables. The mean Hernia-Related Quality-of-Life Survey (HerQLes), immediately before surgery was compared with the same scores evaluated at 1 week, 1 month and 6 months after surgery. Mean differences in the scores, along with 95% CI were presented.

Paired t-test was used to test the statistical significance of the differences in the mean scores. IBM SPSS version 21 was used for statistical analysis.

**Table-2: Age and gender distribution of study participants.**

Parameter	Frequency	percentage
<b>Duration in years</b>		
< 1 year	8	29.63%
1 to 5 years	6	22.22%
> 5 years	13	48.15%
<b>Grade of hernia</b>		
I	4	14.81%
II	9	33.33%
III	11	40.74%
IV	3	11.11%

Majority (48.15%) of the study population were having the hernia for more than 5 years. The number of subjects with duration of hernia less than 1 year were 8 (29.63%) and the remaining 6 (22.22%) had the hernia between last 1 to 5 years. The most common grade of hernia in the present study was grade III in 11 (40.74%) subjects. Grade I, II and IV hernia were present in 4 (14.81%), 9 (33.33%) and 3 (11.11%) subjects respectively. (Table 2)

**Table-3: Quality of life as assessed by Hernia-Related Quality-of-Life Survey (HerQLes) in study population.**

Timing	HerQLes Mean $\pm$ SD	Mean Difference	95% CI of mean difference		P value
			lower	Upper	
Before surgery (Baseline)	51.2 $\pm$ 12.3				
1 week	53.1 $\pm$ 13.5	1.90	-8.18	11.98	0.967
1 month	64.7 $\pm$ 14.8	13.50	3.41	23.58	0.003
6 months	73.8 $\pm$ 15.9	22.60	12.51	32.68	<0.001

The improvement in mean Hernia-Related Quality-of-Life Survey (HerQLes) at 1 week after surgery was only 1.9 (-8.18 to 11.98, P value 0.967), which was statistically significant. When compared to preoperative score, there was 13.50 units increase in mean HerQLes at 1 month (3.41 to 23.58, p value 0.003), and this improvement was 22.60 units (12.51 to 32.68, p value < 0.001) at 6 months after surgery. The improvement in mean HerQLes at 1 month and 6 months were statistically significant. (Table 3)

**Table-4: Improvement in the Hernia-Related Quality-of-Life Survey (HerQLes) score in the post-operative period.**

Timing	HerQLes Mean $\pm$ SD	Mean Difference	95% CI of mean difference		P value
			lower	upper	
1 week (Baseline)	53.1 $\pm$ 13.5				
1 month	64.7 $\pm$ 14.8	11.60	1.51	21.68	0.017
6 months	73.8 $\pm$ 15.9	20.70	10.61	30.78	<0.001
1 month (Baseline)	64.7 $\pm$ 14.8	9.10	0.98	19.18	0.09
6 months	73.8 $\pm$ 15.9				

When compared to 1 week post-operative mean score, there was statistically significant improvement in the Hernia-Related Quality-of-Life Survey (HerQLes) score at 1 month (11.60, P value 0.017) and at 6 months (20.70, P value < 0.001). The improvement in the mean quality of life score between 1 month and at 6 months (9.10, p value 0.09) was statistically not significant. (Table 4).

## Discussion

In many surgical interventions, the focus is being shifted from traditional surgical outcomes to more patient oriented outcomes like quality of life. Few studies in the past have assessed quality of life in patients undergoing ventral hernia repair. Even though many other studies like studies by Lomanto, D., et al [10]. Sauerland, S., et al.[15] have documented laparoscopic ventral hernia repair may lead to better quality of life, as the recurrence rates, self-reported pain and discomfort by patients in various activities of daily living was lesser, these studies did not use any validated tool to assess quality of life. Other studies as in study by, Nielsen, K., et al. have done comparative analysis of Dutch and English versions of the Carolinas Comfort Scale (CCS) in subjects with abdominal hernia repairs. The authors have reported significant correlation between the two versions of CCS. The authors also reported, that “79% of the patients preferred the CCS to the SF-36, and 83 % considered the CCS a better reflection of their quality of life after hernia repair with mesh.”[14].

There is also a realization that, disease specific quality of life scores may be more appropriate than generalized questionnaires, as the way each disease condition affects quality of life is unique. Considering lack of studies on quality of life improvement following ventral hernia repair, the current study has been conducted on a group of 27 subjects and used newly recommended QOL score by Krpata, D. M., et al.[3] majority of the study population were between 50 and 59 years and were having the hernia for more than 5 years.

In the current study, no significant improvement was found in HerQLes score 1 week after surgery. But there was 13.50 units increase at 1 month 22.60 units increase at 6 months after surgery in mean HerQLes scores, which was statistically significant. Even when assessing the progress in the post operative period, the mean Hernia-Related Quality-of-Life Survey (HerQLes) score has shown significant progress till 6 months. In their study, Krpata, D. M., et al. have documented a mean pre operative QoL score of 47 and there was significant improvement in abdominal wall function and QoL 6 months after laparoscopic ventral hernia repair.[3] Abdalla, R. Z., et al, who have used Carolinas Equation for Quality of Life, to assess quality of life among 21 patients undergoing anterior abdominal wall laparoscopic hernioplasty have reported high satisfaction rates and improvement in quality of life after surgery. The questionnaire was administered through telephonic interview in this study [16]. In study by Criss, C. N., et al, in which quality of life was measured using HerQLes

survey in 13 patients at the time of each dynamometric analysis, all patients reported an improvement in quality-of-life.[11]

## Conclusions

1. Laparoscopic ventral hernia repair has led to significant improvement in quality of life at 1 month and 6 months after surgery, when compared with pre-operative quality of life
2. Even within the post-operative period, there is gradual improvement in quality of life at different follow up periods.

## Limitations

1. The study tool in the study used Hernia-Related Quality-of-Life Survey (HerQLes), is not yet validated in the local language and on Indian population
2. The sustainability in quality of life, after 6 months was not assessed

## Recommendations

1. There is a need to conduct large scale validation studies on various newly constructed quality of life assessment tools and necessary culture specific local adaptations to be made
2. Long term follow up studies are required to know the sustainability of short term improvements in quality of life.

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