

Original Research Article

Evaluate the improvement in post-operative quality of life of incisional hernia patients repaired by conventional ventral hernioplasty with regards to physical pain, Functional ability and cosmesis

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Abstract: Background: Incisional hernia (IH) is a frequent complication of open abdominal surgery. Patients with Incisional hernia present with symptoms such as pain, discomfort, limitation of routine activities, skin problems, strangulation of hernia content etc. It is one of the most frequent long-term complications of abdominal surgery and it continues to be a significant problem for patients as well as surgeon.

Methodology: The study was conducted at R. G. Kar Medical College & Hospital; Department of General Surgery. 50 elective patients having ventral hernia who have undergone conventional open ventral hernioplasty were included in the study. All the patients were given a Questionnaire initially in the pre-operative stage and subsequently in the 1st and 7th post-operative day and later on during 1st month and 6th months of post-operative follow up.

Results: In our study pain was the major concern of the incisional hernia patients. Initially 14% of patients were free of pain and rest 86 % were symptomatic for some pain. 14% out of these were having severe pain preoperatively. At one-month post-operative follow up in our series 11 (22%) remained symptomatic for mild to moderate pain. After 6 months of follow up number of patients having pain remains approximately the same. 11(22%).

Conclusion: By 6 months, postoperative symptoms (pain, activity limitation, and overall QOL) are significantly better when compared with preoperative findings and 1-month follow-up levels.

Keywords: Incisional hernia, Hernioplasty; Pain; Cosmesis; Functional ability.

1. Introduction

Incisional hernia (IH) is a frequent complication of open abdominal surgery with an incidence ranging between 3% and 20% [1,2]. Patients with IH may present with various symptoms like pain, discomfort, limitation of daily activities, cosmetic disfigurement, skin problems, or incarceration of viscera/omentum, strangulation of the hernia content etc [3–5]. The incidence of incisional hernia has increased with each increment of abdominal surgical intervention. The recent introduction of continuous ambulatory peritoneal dialysis has been followed by its own unique harvest of incisional hernias. Laparoscopic surgery has also added a new entity: 'port site hernia" although infrequent with advent of smaller ports and the currently available instrumentation [6].

Unfortunately, attempts of repair of these hernias have not been uneventful, with high rates of hernia recurrence, and considerable rates of morbidity and mortality, making many surgeons hesitant to undertake incisional hernia repair. Apart from discomfort and pain, incisional hernias may predispose to incarceration or strangulation of primarily small bowel, which is almost certainly fatal if not promptly reduced. In recent years, the surgery for incisional hernias has undergone a tremendous development with the introduction of new prosthetic material, laparoscopic methods, and the principles of component separation [7]. Several factors may influence quality of life after incisional hernia repair such as pain, mobility impairment, cosmesis and length of convalescence [8]. Impairment in quality of life is a major reason why hernia patients seek surgical repair, and changes in health-related quality of life are how patients evaluate the efficacy of their operations.

Quality of-life assessments explore the repercussions of the medical condition and treatments as perceived by the patient [9–11]. Some surgical procedures or surgical approaches, such as much of minimally invasive surgery, are felt to be beneficial not because of better long-term outcomes but because they cause less pain and disability in the immediate postoperative period [11]. The hernias especially through a lower abdominal scar usually increase steadily in size and more and more of its contents become irreducible. Patients who develop these hernias have an unusually high number of comorbidities and risk factors prone to abdominal wound dehiscence. Incisional Hernias are also responsible for considerable economic loss to the patient and the family. It is therefore, important to perform the type of operation, which will offer the best chance for a permanent cure with minimal risk.

In the present study, we have tried to find if there is any improvement in the quality of life of patients who have undergone conventional ventral hernioplasty in terms of physical pain, functional ability and cosmesis.

2. Materials and methods

This prospective Observational Study was conducted at R. G. Kar Medical College & Hospital; Department of General Surgery after getting the ethical permissions from the Institutional ethics committee. The duration of the study was from January 2013 to June 2014. 50 elective patients having ventral hernia who have undergone conventional open ventral hernioplasty were included in the study. Patients age less than 18 years, ASA score>III, patients unwilling to undergo prosthetic repair and those who were unavailable for follow-up were excluded from the study. Predesigned proforma, adapted from and based on "HerQLes, (Final Hernia related Quality-Of-Life Assessment Tool)" was used after scheduled interview with patients. The HerQLes is a 12-item Quality-Of-Life tool that has been validated for use to assess quality of life specific to abdominal wall function and proved to be reliable. It is a valuable tool to assess abdominal wall functional improvement after ventral hernia repair. We have modified it according to the sociodemographic distribution of our patient population. A written informed consent in patient's own language, was taken for participation after explaining the purpose and design of the study. All the patients were given a Questionnaire (reference taken from HerQLes) [12] initially in the pre-operative stage and subsequently in the 1st and 7th post-operative day and later on during 1st month and 6th months of post-operative follow up. Follow up examinations were also taken at frequent intervals and /or if any patient developed any complaints. Patients Bed Head Ticket notes, Out Patient Tickets, Discharge certificates were studied in details. The data was collected and compiled in a predesigned Microsoft Excel sheet, 2010.

Table 1. Questionnaire (reference taken from HerQLes)

For the following statement, please circle the no that is most appropriate for you	Not at All	A Little	Quite a Bit	Very Much	In Extremes
a) My abdominal wall causes me physical pain	1	2	3	4	5
b) My abdominal wall interferes when I perform moderate activities, e.g. bending over	1	2	3	4	5
c) My abdominal wall interferes when I walk or climb stairs	1	2	3	4	5
d) My abdominal wall interferes when I dress myself, take showers and cook	1	2	3	4	5
e) My abdominal wall limits me in doing my outdoor activities	1	2	3	4	5
f) My abdominal wall makes me short of breath	1	2	3	4	5
g) My abdominal wall gives me trouble in sleeping	1	2	3	4	5

3. Results

Table 2. Age distribution of incisional hernia patients in our study

Age-group	No of patient	Percentage
25-34	9	18
35-44	9	18
45-54	12	24
55-64	14	28
65-74	5	10
75-84	1	2
Total	50	100

The Table 2 shows that the majority of patients are above 45 years of age. In this study, the youngest patient was 25 yrs. old and the oldest was 80 yrs. old

Table 3. Distribution of patients on basis of severity of pain perception

My abdominal wall causes me physical pain

	pre-operative	day 1	day 7	1 month	6 month
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
not at all	7 (14)	13 (26)	25 (50)	39 (78)	39 (78)
a little	20 (40)	27 (54)	21 (42)	8 (16)	9 (18)
quite a bit	16 (32)	9 (18)	4 (8)	3 (6)	2 (4)
very much	7 (14)	1 (2)	0 (0)	0 (0)	0 (0)
Extreme	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)

Pain was the major concern of the incisional hernia patients. Initially 14% of patients were free of pain and rest 86 % were having some amount of pain. 14% of these were having severe pain preoperatively. After hernia repair there was significant improvement in pain status of the patients. At the end of my study i.e. 6-month post-operative, 78% of patients were free of pain and remaining 22 % of the patients were having lesser amount of pain with respect to their pre-operative pain.

Table 4. Distribution of patients having interference with moderate activity

My abdominal wall interferes when I perform moderate activities

	pre-operative	day 1	day 7	1 month	6 month
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
not at all	9 (18)	33 (66)	47 (94)	48 (96)	48 (96)
a little	15 (30)	16 (32)	2 (4)	2 (4)	2 (4)
quite a bit	17 (34)	1 (2)	1 (2)	0 (0)	0 (0)
very much	9 (18)	0 (0)	0 (0)	0 (0)	0 (0)
extreme	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)

Pre-operative 82% of incisional hernia patients were having interference while performing moderate activity like bending over. On post-operative day 1 itself most of the patients were satisfied with the operative outcome as there was no swelling to interfere with the moderate activity. At the end of 6th months 96% of the patients were able to perform moderate work without any interference.

Table 5. Descriptive Statistics for Distribution of patients having interference with moderate activity with post-operative day 1, day 7, at one month & at the end of 6-month

	Pre-operative	Day 1	Day 7	Month 1	6 Month
Mean score	2.52	1.36	1.08	1.04	1.04
Std. dev.	.995	.525	.340	.198	.198
Wilcoxon		-5.700	-5.623	-5.673	-5.673
p-value		.000	.000	.000	.000

Wilcoxon Signed Ranks Test Paired analysis done with pre-operative score as baseline

Table 6. Distribution of patients having interference with walking and climbing

My abdominal wall interferes when I walk or climb stairs

	pre-operative	day 1	day 7	1 month	6 month
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)
not at all	18 (36)	48 (96)	50 (100)	50 (100)	48 (96)
a little	12 (24)	2 (4)	0 (0)	0 (0)	2 (4)
quite a bit	16 (32)	0 (0)	0 (0)	0 (0)	0 (0)
very much	4 (8)	0 (0)	0 (0)	0 (0)	0 (0)
extreme	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Total	50 (100)	50 (100)	50 (100)	50 (100)	50 (100)

36 % of patients were free from any interference while walking or climbing preoperatively, remaining 64% were having definite restriction of such activity. After repair of hernia there was significant improvement in these activities of the patients and on day 7, 100% of patients were free from any interference with such activity and the trend continues thereafter.

Table 7. Descriptive Statistics for Distribution of patients having interference with moderate activity with post-operative day 1, day 7, at one month & at the end of 6-month

	Pre-operative	Day 1	Day 7	Month 1	6 Month
Mean score	2.12	1.04	1.00	1.00	1.04
Std. dev.	1.003	.198	.000	.000	.198
Wilcoxon		-5.078	-5.045	-5.045	-4.963
p-value		.000	.000	.000	.000

Wilcoxon Signed Ranks Test Paired analysis done with pre-operative score as baseline

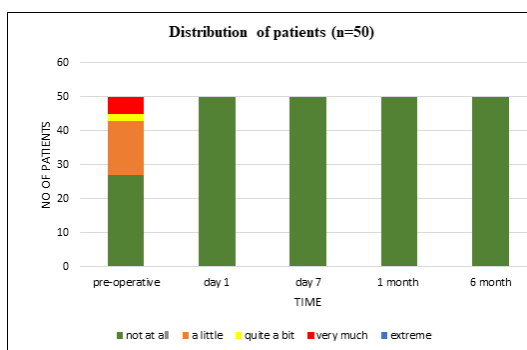


Figure 1. Distribution of patients having interference with dressing, showering & cooking

27 (54%) patients out of total 50 had no problem in their routine activity like dressing, showering and cooking in the preoperative period but remaining 23 (46%) had some amount of interference with these activities. After repair of hernia all the patients were satisfied with their post-operative outcome and were able to perform these activities without any interference.

Table 8. Descriptive Statistics for Distribution of patients having interference with moderate activity with post-operative day 1, day 7, at one month & at the end of 6-month

	Pre-operative	Day 1	Day 7	Month 1	6 Month
Mean score	1.70	1.00	1.00	1.00	1.00
Std. dev.	.953	.000	.000	.000	.000
Wilcoxon		-4.378	-4.378	-4.378	-4.378
p-value		.000	.000	.000	.000

Wilcoxon Signed Ranks Test Paired analysis done with pre-operative score as baseline

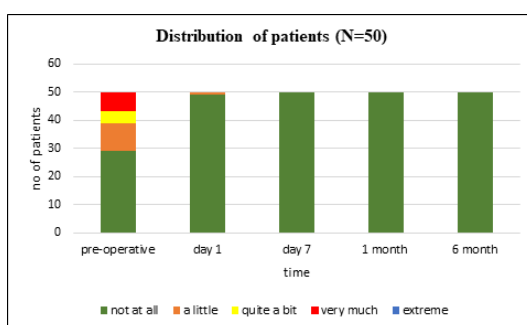


Figure 2. Distribution of patients with limitation of outdoor activities

29 (58%) patients out of total 50 were doing their outdoor activities normally, remaining 21 (42%) were facing problem while doing their outdoor activities. On the very first week all the patients were able to perform their outdoor activities with ease.

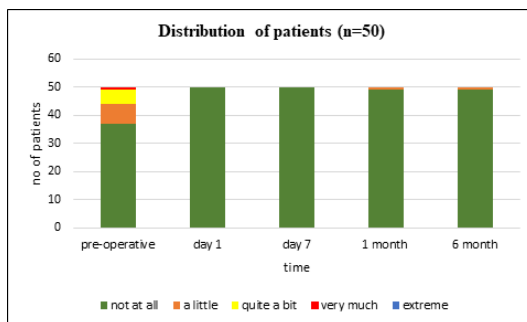


Figure 3. Distribution of patients having shortness of breath

13 (26%) patients of the total number of 50 had some grade of respiratory embarrassment preoperatively. These were the patients presenting with hernias in the upper abdominal scars. The remaining 37(74%) patients had no respiratory difficulty. Immediately after the hernia repair none of the patient had any complaint of any respiratory difficulty probably the effect of adequate analgesia.

Table 9. Descriptive Statistics for Distribution of patients having interference with moderate activity with post-operative day 1, day 7, at one month & at the end of 6-month(COSMESIS)

	Pre-operative	Day 1	Day 7	Month 1	6 Month
Mean score	2.20	1.04	1.00	1.00	1.00
Std. dev.	.969	.198	.000	.000	.000
Wilcoxon		-5.283	-5.274	-5.274	-5.274
p-value		.000	.000	.000	.000

Wilcoxon Signed Ranks Test Paired analysis done with pre-operative score as baseline

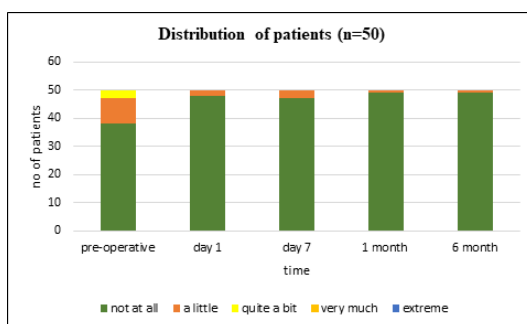


Figure 4. Distribution of patients having trouble in sleeping

12 (24%) patients out of 50 used to have disturbed sleep pre-operatively. After hernia repair 49 (98%) patients were able to have a sound sleep.

4. Discussion

The mean age of the patients included in this study was 48 years ± 12.8 years range 25-78 years. Colavita *et al.*, [13] in the year 2012 had a study on 402 patients with incisional hernia treated with OVHR. The mean age of patients in their study was 56.9 year with S.D. 13.7 which was higher comparable to our study where mean age of patients was 48 yrs. with SD 12.8. Similar observation was found by the study of Warmer *et al.*, [14] in the year 2013 on 327 patient (mean age 55 year with SD 14). Conze *et al.*, [15] studied 165 patients undergoing hernia repair from June 1999 to December 2000. Mean age of the patients in their study was 58.2 year with SD 12.7.

In comparison to all the above studies it was detected in our series that the mean age of patients developing incisional hernia in our area is lesser than signified in the available data.

Colavita *et al.*, [13]. studied 402 patients of OVHR in the period of 2007 to 2011 in which 55.1 % of patients were having some amount of pain preoperatively. After 1 month of hernia repair 36% of patients were having pain, at the end of 6-month only 25% remain symptomatic for pain. Klima *et al.*, [16] studied 154 patients from 2005 to 2010 and at short-term follow-up by 1 month, they found pain scores were statistically similar to preoperative scores. At long-term follow-up (average of 10.5 months; range = 7 months to 1 year), pain (preoperative, 2.59 ± 1.25 vs postoperative, 1.59 ± 0.78 ; $P = .003$).

In our study pain was the major concern of the incisional hernia patients. Initially 14% of patients were free of pain and rest 86 % were symptomatic for some pain. 14% out of these were having severe pain preoperatively. After hernia repair there was significant improvement in pain status of the patients. At one-month post-operative follow up in our series 11 (22%) remained symptomatic for mild to moderate pain. After 6 months of follow up number of patients having pain remains approximately the same. 11(22%). Which is comparable to the findings of Colavita *et al.*, [13] and Klima *et al.*, [16].

The mean scores in the case of moderate activity were 2.52, 1.36, 1.08, 1.04 and 1.04 with (p value= .000) i.e. <0.001 for each category for pre-operative, POD-1, POD-7, one month and 6 months respectively with a significant improvement. The mean scores in the case of interference with walking, climbing were 2.12, 1.04, 1.00, 1.00 and 1.04 with (p value= .000) i.e. <0.001 for each category for pre-operative, POD-1, POD-7, one month and 6 months respectively which shows a significant improvement. The mean scores in the case of dressing, showering and cooking were 1.70, 1.00, 1.00, 1.00 and 1.00 with (p value= .000) i.e. <0.001 for each category for pre-operative, POD-1, POD-7, one month and 6 months respectively with a significant improvement.

Hope *et al.*, (2008) [17] study was to compare quality-of-life outcomes in patients with symptomatic hernias who were undergoing laparoscopic and open repairs. This study included 56 symptomatic patients. They found that the postoperative quality-of-life scores on the SF-36 survey were significantly improved in the laparoscopic group, when compared with the open group. Postoperative quality-of-life scores on the Carolinas Comfort Scale (CCS) were significantly improved in the laparoscopic group, in comparison with the open group, in bending over (3.15 vs. 5.87, P 0.0158), sitting up (2.51 vs. 5.13; P 0.0211), activities of daily living (2.48 vs. 5.75; P 0.0139), coughing or deep breathing (2.95 vs. 5.75; P 0.0314), walking (2.36 vs. 4.62; P 0.0427), exercising (3.19 vs. 6.14; P 0.0222), and total comfort scale (17.62 vs. 40.23; P 0.0084).

None of the studies in the past took difficulty in respiration due to incisional hernia into consideration. This was one of the significant complaints 13 out of 50 patients in our series had. It was found that 12 out of these 13 patients had upper abdominal incisional hernia. This particular problem was not detected in any of the patients in the immediate postoperative period and late postoperative period.

None of the studies in past included clear questionnaire on cosmesis. We included this important question in our study and our results were highly satisfying with Mean score of 2.20 ,1.04, 1.00 ,1.00 &1.00 preoperatively, POD-1,POD-7, 1month & 6 months respectively with p value-0.000(<0.001) for each.

Itani *et.al* [18] studied 146 patients comparing laparoscopic repair with OVHR. Their conclusion was that there was no difference between the post-operatives QoL of both groups as far as cosmesis is concerned.

We included a question on sleep pattern of the patients. Our results indicate there is significant improvement in the post-operative sleep pattern of patients.

Taken the total results together we could easily conclude that open mesh repair of incisional hernias significantly improves quality of life.

5. Conclusion

The purpose of this study was to assess changes in quality of life in patients of incisional hernia after open ventral hernioplasty. On average, as early as 7 days after surgery, there was an increase in patients' scores. They continued to show improvement as time and the healing process progressed, as shown by patients' scores significantly increasing at the 6-months postoperative time point when compared with baseline scores. To the best of our knowledge, our study is the first attempt to demonstrate the potential to measure significant improvement in quality of life with a disease-specific quality-of-life survey after treatment of an incisional hernia.

Patients with minimal preoperative symptoms experienced complete resolution of pain by 6 months. Most patients' symptoms resolved by 6 months after surgery, but those with severe preoperative pain are at increased risk for persistent postoperative pain. Incisional hernia hinders normal abdominal wall function which limits patients' day to day activity like climbing, walking, dressing etc. The QOL outcomes are significantly improved at 1 month after open ventral hernia repair compared with preoperative scores. By 6 months, postoperative symptoms (pain, activity limitation, and overall QOL) are significantly better when compared with preoperative findings and 1-month follow-up levels. Our questions included a question regarding physical disfigurement due to presence of an incisional hernia. The study concluded with a significant improvement in the score as far as cosmesis is concerned. Our patients were highly satisfied with the postoperative results.

Although these findings are promising a larger study population with a longer follow up will further enlighten the surgeons about the QoL changes in an incisional hernia patients undergoing surgical correction.

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Conflicts of Interest: "The authors declare no conflict of interests."

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