

A Systematic Review on the Effect of Physiotherapy in Mild Cases of Umbilical Hernia

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Abstract:

Introduction: Umbilical hernia occurs when the abdominal wall at or close to the umbilicus weakens, and the tissue or intestine protrudes through the resulting hole. The hernia is more common in children and adults with a high body mass index, pregnancy, or ascites. Diagnosis involves a physical examination, and imaging tests are necessary to determine the hernia size and contents. Surgery is recommended for large or symptomatic hernias, while small hernias may be monitored. Surgeons may face technical challenges in treating complex abdominal wall hernias, and radiologists play a crucial role in evaluating such cases.

Aims and Objective: To evaluate the effect of physiotherapy in mild cases of umbilical hernia.

Methods: The study used online libraries for a literature search and selected 10 articles on the effect of physiotherapy in mild cases of umbilical hernia based on inclusion and exclusion criteria. The criteria included journals released after 2015, English-language publications, and studies that examined the impact of physical therapy in minor umbilical hernia cases. The studies were evaluated for intervention used, results obtained, and a summary of each study was made.

Results: The review found that interventions such as physiotherapy, active rehabilitation, prehabilitation, and exercise can be effective in improving hernia symptoms and recovery, depending on the individual patient's needs and the type and severity of the hernia. Prehabilitation patients are more likely to recover without a hernia and without consequences. Prehabilitation might help obese surgical patients, but further research and long-term effects are needed to confirm this. Patients may be able to improve their postoperative recovery and minimize VHR issues by engaging in more preoperative exercise through targeted prehabilitation programs.

Conclusion: The study has concluded that physiotherapy is effective in mild cases of umbilical hernia whose remission can be significantly increased with scheduled and regular exercises under professional guidance.

Keywords: physiotherapy, umbilical hernia, umbilicus, hernia, abdominal hernia.

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Introduction

The Latin term for rupture is the source of the name HERNIA. It is described as an aberrant organ or tissue protrusion through a wall defect in the vicinity [1]. A ventral hernia at or close to the umbilicus is referred to as an UMBILICAL HERNIA. Umbilical hernias that develop either above or underneath the midline through into the linea alba as opposed to the umbilicus itself share the same history and therapy. As per the European Hernia Society's classification for ligamentous hernia, a hernia that extends 3 cm above or 0.5 inches below the umbilicus is termed to be an umbilical collapsed lung [1,2]. The linea alba in front, the umbilical fascia in behind, and, indeed, the medial corners of two trapezoidal sheaths on each side define the umbilical canal's boundaries[1]. In pediatric patients, an abdominal hernia is a prevalent problem. A uterine hernia is a result of the umbilical ring's weakening or partial closure, where protruding of terms of inter-contents may happen. An umbilical hernia is said to be present in 15% of all adults with abdominal wall hernias, mostly

acquired during childhood. Also, umbilical hernia is quite frequently found in children. Increased intra-abdominal pressure leading to microscopic tears of abdominal tissue which may results in formation of hernia. Umbilical hernia is found to be predominant in females due to pregnancy factor which is caused by umbilical distention that occurs due to childbirth [3,4]. Hernias are frequent issues, yet it is unknown how frequently they occur. 10% of all hernias are in the umbilicus. Hernias are more common as people age. 10% of children and 90% of adults have umbilical hernias. Women or people with ascites, obesity, or elevated intra-abdominal pressure, such as during pregnancy, are the most likely to have it [5].

Surgeons may have a technical hurdle when treating abdominal wall hernias, particularly complex abdominal wall abnormalities. Up to 20% of people who undergo abdominal surgery will experience incisional wall hernias. Low self-esteem and health-related quality of life are frequently significant

problems in people with incisional wall hernias. A number of writers has classified incisional hernias. However, none of these classifications have been widely used. A minority of individuals with abdominal wall hernias will experience complications that call for urgent surgery, while most patients will have elective surgery to correct their abdominal wall abnormalities. For optimal surgical planning in all scenarios, radiologists can play a significant role in evaluating abdominal wall anomalies, including the kinds and sizes of the wall defects [6].

Pathophysiology: Umbilical hernia may occur either as a result of weakening umbilical fascia or a potential weakness at the location where involuted umbilical vessels leave. Skin, superficial fascia, weaker maternal fascia, and peritoneum make comprise the umbilical hernia covering; these layers are all attenuated and fused together [4,6]. An umbilical hernia develops due to continuous abdominal wall atelectasis with elevated intra-abdominal pressure, such as during pregnancy, stretching of the stomach muscle fibres in clients with ascites or renal transplantation, weak connective tissue, and patients experiencing ascites or peritoneal dialysis. The bulk of the small intestine, preperitoneal adipose tissue, omentum, and any variety of those can make up a hernia sac's contents. Seldom do the large intestines get involved. Strangulation is frequent because the umbilical hernia's neck is small relative to the herniated mass. Repair is therefore suggested following diagnosis. Around the umbilicus, a bulge is seen [7].

Symptoms: Most pediatric patients with umbilical hernias have no symptoms. Both incarceration and strangulation are rare. Intermittent abdominal or umbilical pain can also be brought on by an umbilical hernia. Rupture of umbilical hernia with resultant evisceration is rare [8].

Pain and GI discomfort, and umbilicus protrude or bulge in some patients. Two typical physical findings are tenderness and confinement. Small hernias can cause discomfort but are otherwise asymptomatic. Large umbilical hernias are symptomatic, and they frequently become sensitive as they progressively get bigger [8].

Evaluation: During the physical examination, the abdominal wall is examined in order to make the diagnosis. The wall is carefully checked to identify whether there's a scar there. The hernia's contents and defect size are estimated. Imaging studies like CT scan or abdominal ultrasound scan is indicated. Other risk factors like BMI, smoking status, and pre-existing cirrhosis has been evaluated. Pain is a common indication to visit a physician [7,9]. A CT scan is a great way to examine abdominal wall hernias. It gives details regarding the integrity of the abdominal muscles, the location of the hernial sac, the hernia's contents, and any nearby structures that might put

patients at risk for complications following surgery [8,9].

Patients who are obese, have mild hernias or experience recurring abdominal hernias benefit the most from CT. The morphology of the abdominal wall, the integrity of the various planes, and, in the event that a defect is discovered, the size, characteristics, and location of the hernias are all revealed by pre-operative CT. The precise anatomical location of the hernia is required by surgeons; nevertheless, a variety of names and nomenclature have been employed, occasionally leading to misunderstanding or debate [6-10].

Treatment: In pediatric patients, treatment option for umbilical hernia ranges from simple observation to surgical repair. In most cases, it closes spontaneously. Observation with periodic follow-up is done in most cases. Operation is recommended if the defect is greater than 1cm if the patient's age is 3 to 4 years old. If there is a persistent enlargement of the fascial defect during the period of observation, repair of the defect is done, irrespective of age. An umbilical hernia is treated both surgically and non-surgically. If the patient is symptomatic and if the hernia is larger in size, the treatment of option is surgical [10].

A common surgical issue is an umbilical hernia. In the majority of cases, all three anesthetic modalities are acceptable. Patients are as comfortable as possible thanks to local anaesthetic. In open repairs, local anesthetic is correctly administered. If the individual is obese or the hernia is significant or recurrent, local anesthetic may be difficult. General anesthesia and endotracheal intubation are required for laparoscopic ventral hernia repair [8,9]. Repair after diagnosis is advised. Mesh reinforcement is recommended as suture repairs have a high recurrence rate. Mesh is placed through an open or laparoscopic approach. For the open technique, standard polypropylene mesh is used whereas composite meshes are used in the laparoscopic technique. Even when a prosthetic mesh is applied, recurrence is still observed [10]. Recurrent umbilical hernias behave like incisional hernias and typically grow more quickly than primary ones do. The umbilical hernia necessitates urgent repair since it has a strong propensity to be linked to severe morbidity and mortality [11].

In pediatric patients, adhesive strapping for umbilical hernia is non-operative management. Adhesive strapping has become a promising treatment. Adhesive strapping works well to encourage the early closure of inguinal hernia repair in young kids and to stop the growth of excess skin, which lessens the probability of surgical treatment. Even before the umbilical hernia gets too big, this approach is advised to have good outcomes using adhesive strapping. Moreover, after adhesive strapping treatment,

surgical repair is still simpler even in cases of fetal hernia closure failure [11,12].

Treatment with Physical Therapy and Functional Prehabilitation: Prehabilitation may not be beneficial for all surgical patients, but it has gained popularity among surgeons of various specialities due to improvements in clinical care & quality of life results. According to a recent comprehensive review & meta-analysis, prehabilitation improved aerobic capacity & decreased operational problems in test patients as compared to controls. Prehabilitation also decreased postoperative pain, lowered anxiety, cut down on hospital stays, and enhanced general physical function, according to the review [13].

Pain Management through Physical Therapy: For long-term success, post-VHR pain management techniques incorporating both pharmaceutical & non-pharmacological therapy are crucial. In 2012, Liang et al. found that poor designers, rupture recurrence, or prolonged unbearable discomfort were to blame for the poor-quality outcomes that occurred in 25.5% of patients who underwent laparoscopic hernia repair. Non-pharmacologic postoperative therapy is receiving increased attention as a result of the current opioid problem. Evidence suggests that cognitive behavioural therapy and structured exercise programs, particularly those that involve resistance training, dramatically alleviate pain to the greatest extent. Non-pharmacological pain management can be done in a variety of ways. [13].

Physical Exercise: 24 healthy (non-VHR) participants had their pain tolerance thresholds measured before & after a prescribed exercise program by Jones et al. The healthy participants were randomly

assigned to either a 6 week organized aerobic exercise training program or a control group that engaged in regular physical activity. When compared to the control group, the organized aerobic activity group showed significant improvements in aerobic fitness. Additionally, ischemic pain tolerance significantly improved in the intervention group compared to the control group, which showed no change [14].

Cognitive Behaviour: Last but not least, cognitive-behavioural treatment has demonstrated effectiveness in lowering pain and catastrophizing behaviour. Cognitive restructuring, graduated exposure, activity planning, mindfulness training, and pain-coping skills are all part of this therapy [14].

Methods and Search Strategy

Study Design and Search Strategy: The study used online libraries for effective literature searches, including PubMed, Google Scholar, Researchgate, etc. The author used keywords like "umbilical hernia", "physiotherapy", "physical therapy", "rehabilitation", etc. Initially, 70 studies were obtained, of which 10 were excluded as they were duplicates and another 10 studies used medical management more than physiotherapy and hence, were excluded. These 50 studies underwent screening, and due to the absence of data files, 10 were excluded. Out of 40 studies, 15 could not be retrieved and 25 were eligible for further analysis. Again, 15 studies were excluded due to several reasons like studies containing insufficient findings, irrelevant conclusions and data collected before 2015. Finally, 10 studies were included in this systematic review.

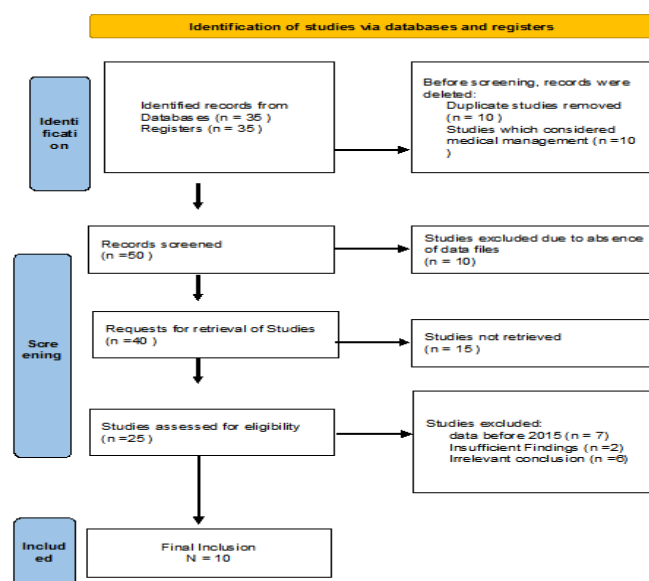


Figure 1: PRISMA diagram of this study

Inclusion and exclusion criteria: Nearly 10 articles that addressed the effect of physiotherapy in mild

cases of umbilical hernia were taken into consideration for the systematic review based on the topic.

Among the requirements for inclusion were: (1) Journals released after 2015. (2) Journals that examined the impact of physical therapy in minor umbilical hernia cases. (3) English-language research publications. On the other side, exclusion criteria excluded any research journals that were released after 2015 and were not focused on the content.

Results

The systematic review analyzed seven studies that focused on interventions for hernias. The studies utilized different interventions such as yoga, active rehabilitation, prehabilitation, and exercise to improve hernia symptoms and recovery. A study by Alegesan et al. showed that yoga techniques were effective in reducing the incidence of recurrence, aggravating factors, and pain symptoms. Abouelnaga et al. found that active rehabilitation was successful in treating

sports hernias, while Drolshagen et al. found that watchful waiting was a viable option for symptomatic inguinal hernias. Liang et al. suggested that prehabilitation may be beneficial for obese surgery patients, although further studies are required. Bernardi et al. found no difference in outcomes between prehabilitation and standard therapy for obese patients seeking ventral hernia repair. Renshaw et al. showed that patients had a lower risk of complications and readmission after ventral hernia repair if they exercised more regularly before surgery. Overall, the studies suggest that interventions such as physiotherapy, active rehabilitation, prehabilitation, and exercise can be effective in improving hernia symptoms and recovery, depending on the individual patient's needs and the type and severity of the hernia.

Table 1: Summary of the studies considered for this systematic review

Se-rial	Study	No. of patients	Age of the patients	Intervention applied	Results obtained	Summary
1	Alegesan et al., [15]	19	24-46 years	Based on their capacity to tighten the abdominal muscles, flatten the inguinal canal, and reduce intra-abdominal pressure.	The statistical analysis of the before and after intervention data revealed that the incidence of recurrence, aggravating factors, and pain symptoms were all significantly reduced. With a P-value of 0.001, the alleviating factors significantly increased.	Rehabilitation techniques are highly effective at easing hernia symptoms like discomfort, heaviness, and fullness. Only when a hernia remains in its early stages and just has a modest protrusion that can it be reduced. May rehabilitation techniques be helpful. Physical therapy cannot assist when it is both huge and cannot be reduced. Reversible inguinal hernias can be effectively treated with physiotherapy and a few specific exercises.
2	Abouelnaga et al., [16]	40	18-25 years	For group, A the intervention given was conventional therapy and active rehabilitation and for group B only conventional treatment was given	In both the groups, a decrease in visual analog scale (VAS) was observed. Compared to group B, an improvement in outcome measures was seen in group A. Only three patients in group B and 13 patients in group A were able to resume their sports activities pain-free.	The study found that active rehabilitation was successful in treating sports hernias, as evidenced by a reduction in pain and a return to athletic activity.

3	Drolshagen et al., [17]	14249	>18 years	Patients were divided into two groups group A underwent operative therapy and group B underwent non-operative	There were no discernible variations in the overall number of chronic illnesses, average number of comorbidities, or estimated daily number of ICD-9 discharge codes between the individuals who underwent surgery and the non-operative subset of the readmitted group.	The most typical course of treatment for individuals with symptomatic inguinal hernias who are admitted non-electively is the watchful-waiting technique. When compared to non-operative therapy, surgical surgery reduced the likelihood of readmission while simultaneously lengthening the hospital stay and raising the cost of care. Inguinal hernia readmission is rare after non-elective hospitalization. Our results back up a doctor approach to management; while non-surgical treatment is a good temporary fix for even symptomatic inguinal hernias, surgical treatment may lower the risk of recurrent readmission.
4	Liang et al., [18]	118	50 years	Patients seeking VHR who were obese (BMI 30 to 40) were randomly assigned to receive prehabilitation versus regular counseling.	There was a tendency towards fewer wound complications (6.8% vs. 17.6%, P = 0.167). Of prehabilitation participants, 44 patients receiving prehabilitation and 34 receiving normal counseling underwent VHR. In prehabilitation patients, that's had a higher probability of being hernia- and complication free (69.5% vs. 47.5%, P = 0.015).	A safety-net hospital might undertake a prehabilitation programme for obese patients. Patients who receive prehabilitation have a greater chance of recovering without a hernia and without complications. Prehabilitation may be beneficial for obese surgery patients, albeit further studies and long-term results are required. However, there may also be higher chances of dropout and urgent repair.
5	Bernardi et al., [19]	118		Patients seeking VHR who were obese (BMI 30–40) were randomly assigned to receive prehabilitation versus	Between groups, the baseline BMI (mean SD) was comparable. Compared to the control group, more patients in the prehabilitation group	The study finds no distinction between standard therapy and prehabilitation for obese patients seeking VHR at a 2-year follow-up. In

				regular counseling.	underwent urgent surgery or discontinued the program. Major complications among patients who underwent surgery were comparable to one another. At two years, there was no difference in the proportion of patients without complications or hernias.	patients who are obese and have elective VHR, prehabilitation may not be necessary.
6	Renshaw et al., [20]	2994		The study comprised 2,994 patients in total, of whom 1,519 reported not exercising prior to surgery, 662 exercised occasionally, 467 exercised moderately, and 346 exercised vigorously.	Increased frequency of exercise (vs no reported exercise) was related with considerably lower odds of developing any postoperative complications as well as decreased risks of readmission after multi-variable analysis and adjusted for demographics, hernia features, and comorbidities. The amount of exercise did not affect how long they stayed. The alterations in quality of life or pain from the baseline to 30 days after surgery were not significantly different.	The study concludes that patients had a lower risk of complications and readmission after ventral hernia repair if they exercised more regularly before surgery. People may be able to improve their preoperative exercise participation through targeted prehabilitation programmes, which will help to minimize VHR issues and improve postoperative recovery.
7	De jong et al., [21]	259	-	Patients who were recommended for a pre-conditioning program by the multidisciplinary team (MDT) were contrasted with those whom the MDT determined were healthy enough for operational repair.	The prehabilitation group had a greater median BMI, more smokers, and higher HPW classes are attributable to more patient variables, whereas the baseline characteristics among the two categories were statistically substantially different. Measures of the intraoperative and postoperative outcomes did not significantly differ.	Prehabilitation enables individuals with pertinent comorbidities to achieve the same outcomes as patients without those risk factors, according to the study. At the discretion of an MDT meeting, the mention of a pre-conditioning program may be effective. To determine the usefulness of such a program, more research could concentrate on its scope.
8	Yildirim et al., [22]	49		A patient education program was completed by all patients. Additionally, the chosen yoga asana	The results of the intention to treat trial, a statistically significant difference was seen in favor of the training group in article for	The chosen stretch and strength-based yoga practice were found to hold potential as a therapeutic treatment for

				was demonstrated and taught to the yoga group twice a week for a period of 12 weeks.	rheumatism, patient global score, back discomfort, impairment, and function. At six months, the between-group interaction sizes were moderate.	neuropathic pain brought on by LDH.
9	Renshaw et al., [23]	1544		The patients received postoperative rehabilitation, and some received self-directed rehabilitation.	Physical therapy (PT) is reportedly used by more than half of hernia patients, mostly in cases involving the repair of the abdominal wall. PT was mainly only using postoperatively, while 42.5% of patients said they had used it before. PT is thought to benefit patients with hernias, yet only 72.2% of responders mentioned this. Some of the advantages that patients reported from PT included improved core muscles, stability, mobility, patient contentment, education & independence. A speedier return to work and ADLs; an overall enhanced recovery; and a lower chance of postoperative complications.	An extensive perceived patient benefit was reported in a national survey of hernia surgeons, and they indicated a desire to incorporate PT and rehabilitation procedures into their clinical practices. However, there may be significant obstacles to overcoming in order to extensively disseminate these materials to patients, including a lack of knowledge and proof supporting the approach. These deficiencies can be filled by establishing PT and rehabilitation as essential future adjuncts for the recovery of hernia repair patients through specialized educational settings and more research.
10	Maloney et al., [24]	113		Peri-operative outcomes and quality of life (QOL) between patients who underwent CST and those who did not (No-CST) in big, preperitoneal VHR.	There were more wound problems with CST. When diabetes and panniculectomy were taken into account with multivariate logistic regression, and the incidence of wound complications was still higher in CST. QOL was regularly evaluated. Preoperatively, the groups were comparable, with 76.3% of CST patients reporting pain and 78.1% of No-CST patients reporting pain. The groups had comparable QOL at 1, 6-, 12-, 24-, and 36-	The rate of hernia recurrence is not affected by whether CST or No-CST is used in the treatment of large VHs; nevertheless, the risk of wound complications is raised. The production of myofascial advancement flaps by CST does not adversely affect patient QOL in the short or long term when big ventral hernias are repaired, according to the largest QOL comparison study to date.

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Discussion

A hernia is an unnatural protrusion of an organ or tissue via a breach in the surrounding tissue, most frequently affecting the inguinal region of the abdominal wall. Hernias can be treated with everything from straightforward exercises to cutting-edge surgery. Since the effectiveness of yoga therapy for reversible inguinal hernia has not been thoroughly investigated, a study has been conducted to determine the impact of a few key asanas. The study's findings support the use of specific asanas in yoga therapy for the treatment of reversible inguinal hernia [14,15]. A study was done to see if an active rehabilitation programme after a sports hernia, which involves recurrent effortful muscle contractions, is useful. This programme includes core stability, balancing exercises, progressive resistance exercises, and running activities. According to the study's findings, active rehabilitation was successful in treating sports hernias, as evidenced by a reduction in pain and a return to athletic activity [14-16].

Another study aimed to examine, across a nationwide dataset, the demographics, rehospitalization, and financial burdens of medical versus non-surgical care for patients who underwent non-elective inguinal hernia repair. The baseline characteristics for both groups were also determined, and pertinent predictive markers were examined in the semi-managed patient subgroup that was invited back for treatment surgically within 90 days after their initial visit. The study found that the watchful-waiting approach is the most frequently used form of care for those being hospitalized against their will owing to inguinal hernia symptoms. When compared to non-operative therapy, surgical surgery reduced the likelihood of readmission while simultaneously lengthening the stay and raising the cost of care. It is uncommon to return to the hospital following an inguinal hernia non-elective stay.

The study's goal was to find out whether providing obese patients with ventral hernia repair (VHR) with preoperative dietary counseling & exercise (prehabilitation) increases the number of hernia and complication-free patients. Complications after VHR are linked to obesity & inadequate fitness. Patients with poor socioeconomic levels frequently experience these problems. According to the study, a prehabilitation program for obese patients in a safety-net hospital is implementable. Patients who receive prehabilitation have a greater chance of recovering without a hernia and without complications. Prehabilitation may be beneficial for obese surgery patients, albeit further studies and long-term results are required. However, there may also be higher chances of dropout and urgent repair [18].

Whether preoperative dietary counseling and exercise (prehabilitation) improve outcomes in obese patients undergoing ventral hernia surgery was the subject of a study. According to the study's findings, obese individuals seeking VHR who receive prehabilitation do not do any better at a 2-year follow-up than those who receive standard therapy. In obese patients receiving elective VHR, prehabilitation may not be necessary [19]. Evidence is mounting that suggests previous levels of fitness may have an impact on postoperative outcomes. The investigation's main objective was to determine whether there was a connection between subjects receiving ventral hernia operation (VHR) and this link. Prior to surgery, people who exercised as frequently had a lesser risk of complications and readmission. Patients may be able to improve their postoperative recovery and minimize VHR issues by engaging in more preoperative exercise through targeted prehabilitation programmes [20].

After transversus abdominis release during ventral hernia surgery, surgical site occurrences are still observed to occur up to 15% of the time. There is growing evidence that reducing risk factors before surgery may aid in the best possible patient recovery. Up to 40% fewer complications have been observed overall. The study's goal was to ascertain whether prehabilitation reduces the likelihood of wound and medical problems and length of stay. According to the study, prehabilitation enables patients with pertinent comorbidities to achieve comparable outcomes to individuals without such risk factors. At the discretion of an MDT meeting, the mention of a preconditioning program may be effective. To determine the usefulness of such a program, more research could concentrate on its scope [21].

A study was carried out to determine the impact of a yoga exercise program focusing on strength and flexibility on neuropathic pain caused by LDH. Negative treatment results are influenced by LDH in neuropathic pain. The majority of yoga postures follow the guidelines for spinal training and help people with low back ailments feel less pain and are less disabled. The theory was that yoga would improve mobilization, core muscular strength, and spinal and hamstring flexibility and would have a good impact on LDH and neuropathic pain. According to the study, the chosen stretch and strength-based yoga practice may offer a viable alternative to conventional therapies for neuropathic pain brought on by LDH [22].

Physical therapy (PT) and rehabilitation are frequently used to improve function, encourage the return to daily activities (ADLs), and speed up overall recovery in a range of illness processes. The study aimed to comprehend viewpoints and alleged

obstacles surrounding the inclusion of physical therapy and rehabilitation in hernia care. A national survey of hernia surgeons reported an extensive perceived patient benefit, and they indicated a desire to incorporate PT and rehabilitation procedures into their clinical practises. However, there may be significant obstacles to overcome in order to extensively disseminate these materials to patients, including a lack of knowledge and proof supporting the approach. These deficiencies can be filled by establishing PT and rehabilitation as essential future adjuncts for the recovery of hernia repair patients through specialized educational settings and more research[23].

The goal of the study was to contrast large, preperitoneal VHR (PPVHR) people who just had CST with those who did not in terms of postoperative outcomes and quality of life (QOL) (No-CST). The rate of hernia recurrence is not affected by whether CST or No-CST is used in the treatment of large VHs; nevertheless, the risk of wound complications is raised. The production of myofascial advancement flaps by CST does not adversely affect patient QOL in the short or long term when big ventral hernias are repaired, according to the largest QOL comparison study to date [24].

Conclusion

The study has concluded that physiotherapy is effective in mild cases of umbilical hernia whose remission can be significantly increased with scheduled and regular exercises under professional guidance. Patients undergoing rehabilitation are more prone to recuperate without experiencing hernias or any related complications. While prehabilitation interventions may prove beneficial for overweight individuals undergoing surgical procedures, more extensive research and long-term evaluations are necessary to affirm their efficacy. It is crucial to acknowledge the potential for increased dropout rates and the need for emergency repair. Patients may enhance their postoperative recovery and minimize the likelihood of ventral hernia recurrence by engaging in preoperative exercise through tailored prehabilitation regimens. In specialized educational environments, physical therapy and rehabilitation interventions will serve as indispensable adjuncts in the recovery of hernia repair patients.

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