

SURGICAL AND NON-SURGICAL APPROACHES IN THE MANAGEMENT OF ABDOMINAL WALL HERNIAS IN ELDERLY PATIENTS: A SYSTEMATIC REVIEW

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Abstract: Objectives: The primary objective of this review is to compare the outcomes of surgical and non-surgical management strategies for abdominal wall hernias in elderly patients. The focus is on evaluating key outcomes such as recurrence rates, complications, recovery times, quality of life, and mortality in patients aged 65 years and older. This review aims to guide clinical decision-making by assessing the risks and benefits associated with both approaches, considering patient-specific factors such as comorbidities and frailty. **Methods:** A systematic review of the literature was conducted using databases such as PubMed, Cochrane Library, and Google Scholar. Search terms included “abdominal wall hernias,” “elderly patients,” “surgical repair,” “non-surgical treatment,” and “outcomes.” The inclusion criteria targeted randomized controlled trials, cohort studies, and observational studies published from 2004 to 2024. Studies focusing exclusively on non-elderly populations, non-abdominal hernias, or irrelevant interventions were excluded. The data extracted from the selected studies were analyzed based on surgical and non-surgical approaches, including variables such as recurrence rates, postoperative complications, recovery, and patient satisfaction. **Results:** Surgical management, especially with mesh repairs, was consistently shown to result in lower recurrence rates and better long-term outcomes compared to non-surgical approaches. For instance, mesh repair demonstrated a 32% recurrence rate, significantly lower than the 63% observed in suture repairs. Laparoscopic surgery resulted in faster recovery times (3 to 4 weeks) compared to open surgeries (6 to 8 weeks). However, non-surgical management, often pursued in high-risk patients, presented higher rates of emergency surgeries, with studies like Proaño-Zamudio et al.

reporting a 12% mortality rate in emergency procedures compared to 3% in elective surgeries. **Conclusion:** Surgical management, particularly elective procedures with mesh repair, should be the preferred option for most elderly patients with symptomatic or complex hernias due to superior long-term outcomes and lower recurrence rates. Non-surgical management remains an option for patients with significant comorbidities or asymptomatic hernias but is associated with a higher risk of complications and emergency surgeries. Individualized treatment plans that consider patient frailty, comorbidities, and life expectancy are essential for optimizing outcomes. Further research is required to assess the long-term effectiveness of non-surgical management in high-risk elderly patients.

Keywords: Abdominal wall hernias, Elderly patients, Surgical management, Non-surgical management, Mesh repair.

INTRODUCTION

BACKGROUND ON ABDOMINAL WALL HERNIAS

Abdominal wall hernias are a significant clinical concern, affecting approximately 5% of the general population, with the rate increasing to 20% in those aged 65 and older ⁽¹⁾. Munoz-Rodriguez et al. ⁽¹⁾ observed that recurrence rates for hernias after abdominal surgeries can reach as high as 30%, particularly in elderly patients due to weakened abdominal muscles and poor tissue healing. They are prevalent across a wide spectrum of patients, with an increased occurrence in populations with risk factors such as obesity, prior abdominal surgery, and chronic diseases. Hernias are commonly classified based on their location and the underlying anatomical defect, with ventral, incisional, and inguinal hernias being among the most common types. Despite

advancements in surgical techniques, hernias continue to pose challenges due to their high recurrence rates, particularly following abdominal surgeries. Factors like surgical site infections and poor wound healing can contribute to the development of incisional hernias, affecting a patient's quality of life and potentially leading to life-threatening complications, such as strangulation and bowel obstruction.

SIGNIFICANCE OF HERNIA MANAGEMENT IN ELDERLY PATIENTS

The elderly population is especially vulnerable to hernias due to age-related physiological changes, including weakened abdominal musculature, reduced tissue elasticity, and diminished healing capacity. Additionally, older adults often present with comorbidities such as diabetes, chronic pulmonary disease, and cardiovascular issues, which complicate both the development of hernias and their subsequent management. Studies indicate that hernias in elderly patients have a higher risk of complications, such as incarceration and strangulation, if not managed promptly. Furthermore, surgical interventions in older adults carry heightened risks due to factors like frailty, polypharmacy, and compromised immune function. As the global population ages, there is an increasing need to understand the most effective approaches for managing hernias in this demographic.

THE RATIONALE FOR COMPARING NON-SURGICAL AND SURGICAL APPROACHES

Traditionally, hernias have been managed surgically through methods such as mesh repair or tissue approximation techniques. While surgery is considered the gold standard for hernia treatment, particularly

for symptomatic or complicated cases, the risks associated with surgery in elderly patients have led to interest in non-surgical management options. These non-surgical approaches, such as watchful waiting and the use of external supports like trusses, have been proposed for asymptomatic or minimally symptomatic hernias. However, there remains a debate in the medical community regarding the appropriate indications for surgery versus conservative management, particularly in older adults where surgical risks may outweigh the benefits. Thus, a comprehensive review comparing non-surgical and surgical management strategies is critical for optimizing care in elderly patients.

IMPORTANCE OF THE TOPIC AND THE NEED FOR THIS REVIEW

Given the increasing prevalence of hernias in an aging population and the complex decision-making involved in their management, particularly in elderly patients, this topic is of considerable clinical importance. While surgery can offer definitive treatment, the associated risks in elderly individuals necessitate a nuanced approach to patient care. Current literature on the management of hernias in elderly patients is fragmented, with no clear consensus on the best practices for balancing the benefits and risks of surgical versus non-surgical interventions. This review aims to consolidate existing knowledge, highlight the significance of individualized patient assessment, and provide recommendations based on the latest evidence to guide clinicians in making informed decisions about hernia management in elderly patients. Through this review, we seek to address gaps in the literature and offer a comprehensive overview of the outcomes and challenges associated with both surgical and non-surgical hernia management in the elderly.

OBJECTIVES

The primary objective of this review is to evaluate and compare the outcomes of surgical and non-surgical management strategies for abdominal wall hernias in elderly patients. The review aims to assess short-term and long-term outcomes, including the risks and benefits associated with each approach, with a particular focus on complications, recurrence rates, quality of life, and mortality. Additionally, it seeks to explore how patient-specific factors such as age-related comorbidities, frailty, and functional status influence the decision-making process for hernia management in elderly individuals. By providing a balanced perspective on surgical versus non-surgical treatment, this review aims to guide clinical decision-making, especially in determining when conservative management may be appropriate, such as for asymptomatic or minimally symptomatic hernias. The review will cover various types of abdominal wall hernias, including ventral hernias, incisional hernias, umbilical hernias, and epigastric hernias, with a focus on patients aged 65 years and older. Surgical interventions such as mesh repair and suture repair, along with non-surgical strategies like watchful waiting, will be evaluated. The outcomes of interest include recurrence rates, postoperative complications, mortality, recovery times, quality of life, and cost-effectiveness, aiming to provide evidence-based recommendations to optimize patient care and outcomes in this high-risk population.

METHODOLOGY

This literature review followed a systematic approach to identify, select, and analyze relevant studies comparing surgical and non-surgical management of abdominal wall hernias in elderly patients. The inclusion criteria for this review encompassed studies published in peer-reviewed journals, written

in English, and focusing on patients aged 65 years and older with various types of abdominal wall hernias, including ventral, incisional, umbilical, and epigastric hernias. Both randomized controlled trials (RCTs) and observational studies, including cohort studies, case-control studies, and prospective and retrospective studies, were considered. Exclusion criteria included studies that focused exclusively on non-elderly populations, non-abdominal hernias, or interventions unrelated to hernia management, editorials, and studies with insufficient or outdated data.

A comprehensive search strategy was employed to gather relevant literature from databases such as PubMed, Cochrane Library, and Google Scholar. The search terms included combinations of keywords such as “abdominal wall hernias,” “elderly patients,” “hernia management,” “surgical repair,” “non-surgical treatment,” “watchful waiting,” and “outcomes.” The literature search was limited to articles published from 2004 to 2024 to ensure the inclusion of contemporary data and practices. Studies were initially screened based on titles and abstracts, and full texts were retrieved for those that met the inclusion criteria.

The data from the selected studies were extracted and organized into categories based on study design, patient population, hernia type, intervention type (surgical or non-surgical), and outcomes such as recurrence rates, complications, mortality, and quality of life. Comparative analyses were performed to identify trends and draw conclusions regarding the effectiveness and safety of surgical versus non-surgical management strategies. The quality of studies was assessed using standard evaluation tools, such as the Cochrane Risk of Bias tool for RCTs and the Newcastle-Ottawa Scale for observational studies. Results from various studies were synthesized, and a narrative comparison was made to highlight key findings, limitations, and areas where further research is needed.

LITERATURE REVIEW

EPIDEMIOLOGY AND PATHOPHYSIOLOGY

Prevalence and Risk Factors of Abdominal Wall Hernias in Elderly Patients

Abdominal wall hernias are a significant health issue in the elderly population, with the prevalence increasing substantially with age. Studies estimate that around 5% of the general population will develop some form of abdominal hernia during their lifetime, and this rate increases to approximately 20% among individuals aged 65 years and older ⁽¹⁾. The most common types of hernias in this age group include inguinal, ventral, and incisional hernias, with incisional hernias being particularly prevalent among those who have undergone previous abdominal surgery ^(2,5).

One of the key risk factors contributing to the higher incidence of hernias in the elderly is the weakening of the abdominal wall muscles and fascia, which naturally occurs with aging ⁽³⁾. This degeneration of the abdominal wall's structural integrity, combined with increased intra-abdominal pressure due to chronic conditions such as constipation, chronic obstructive pulmonary disease (COPD), and ascites, significantly raises the risk of hernia formation in older adults ⁽⁴⁾. Furthermore, conditions such as obesity, diabetes, and abdominal aortic aneurysms are also common comorbidities in the elderly and serve as additional risk factors for hernia development ⁽⁵⁾.

The postoperative risks in elderly patients are further exacerbated by age-related physiological changes, such as reduced collagen synthesis and decreased tissue elasticity, which impair wound healing and contribute to a higher incidence of hernia recurrence following repair ^(4,6). Gender

also plays a role, with women being more prone to incisional hernias due to the effects of pregnancy and hormonal changes on abdominal wall integrity (7). These factors underscore the need for tailored approaches to managing hernias in older adults, considering their unique risk profile.

The prevalence of hernias in elderly populations also reflects the cumulative effect of lifetime risk factors, such as prior surgeries, heavy physical labor, and episodes of significant weight gain or loss (4,8). The recurrence of hernias is common, with rates ranging from 10% to 30% depending on the type of hernia and the method of repair used, further complicating the management of these conditions in the elderly (9).

As the global population continues to age, the burden of hernia-related health issues in elderly patients is expected to rise, emphasizing the importance of understanding both the epidemiology and pathophysiology of abdominal hernias in this demographic (3,10).

NON-SURGICAL MANAGEMENT

Non-surgical management of abdominal wall hernias in elderly patients is often considered when the risk of surgery outweighs the potential benefits, or when patients present with significant comorbidities that complicate operative intervention. Non-operative strategies may involve watchful waiting, lifestyle modifications, and management of symptoms such as pain or discomfort. These approaches aim to improve patient quality of life without the associated risks of surgery (1).

The criteria for non-surgical management typically include patients who are asymptomatic or have minimal symptoms that do not significantly impact daily activities. Age-related factors significantly elevate surgical risk in elderly patients. Hamilton et al. (8) found that frailty, defined as a reduced physiological reserve and increased

vulnerability to stressors, was associated with a 25% higher incidence of postoperative complications. Additionally, multimorbidity, such as the presence of diabetes and cardiovascular disease, increased surgical risks by 35% in this demographic. In elderly patients, especially those with life-limiting conditions, the likelihood of complications from surgical intervention may be prohibitive, and non-operative management can be more appropriate (2,3). For instance, in cases of obturator hernias—more common in elderly women—a conservative approach might be pursued unless the patient experiences acute symptoms, such as obstruction or strangulation, which would necessitate emergency surgery (6).

Studies assessing the outcomes of non-surgical management show varying results, often depending on the patient's baseline health and the type of hernia. Some studies indicate that elderly patients managed non-operatively for hernias may avoid the immediate risks of surgery, but face an increased risk of hernia-related complications over time, including incarceration or strangulation (3,6). For example, Proaño-Zamudio et al. (4) highlight that in elderly patients with complicated abdominal wall hernias, comorbidities significantly impact the decision to avoid surgery, but the potential for life-threatening complications remains a concern.

Quality of life remains a critical measure in deciding whether to pursue non-surgical management. Patients who are asymptomatic or have mild symptoms may lead relatively normal lives without surgical intervention, as long as they are monitored regularly for potential complications. However, studies such as those by Muysoms et al. (7) and Proctor et al. (5) suggest that patients managed conservatively must be carefully monitored for signs of worsening, as emergency surgical interventions tend to have higher morbidity

and mortality rates in elderly patients compared to elective procedures.

A key benefit of non-surgical management is the avoidance of perioperative risks, which can be significant in the elderly due to factors like frailty, polypharmacy, and the presence of multiple comorbid conditions⁽¹⁰⁾. However, a watchful waiting approach is not without risk. In the case of incisional hernias, for instance, conservative management is often associated with an increased likelihood of complications such as bowel obstruction or strangulation, particularly in cases of large or symptomatic hernias^(8,11).

In conclusion, while non-surgical management is a viable approach in select elderly patients, it must be carefully considered in light of the potential risks and benefits. Regular monitoring is essential, and any changes in symptoms should prompt a reevaluation of the treatment strategy. The decision-making process should involve patient preferences, life expectancy, and the risks associated with both surgical and non-surgical management strategies^(9,12).

SURGICAL MANAGEMENT OF ABDOMINAL HERNIAS IN ELDERLY PATIENTS

Surgical intervention remains the definitive treatment for abdominal hernias, particularly when complications such as strangulation or incarceration occur, or when the hernia significantly impacts a patient's quality of life. The choice of surgical technique—whether open repair, laparoscopic repair, or mesh augmentation—depends on several factors, including the type of hernia, patient comorbidities, and surgeon expertise. In elderly patients, where age-related factors such as frailty, multimorbidity, and diminished physiological reserve complicate recovery, careful selection of the appropriate surgical approach is critical⁽¹⁾.

SURGICAL TECHNIQUES: OPEN, LAPAROSCOPIC, AND MESH REPAIRS

Open Repair: This traditional approach involves making a large incision at the hernia site to directly access and repair the abdominal wall defect. While open surgery is often preferred for larger hernias or in cases where complications are anticipated, it is associated with longer recovery times and a higher risk of complications, such as infections and chronic pain, particularly in elderly patients. Studies suggest that older patients undergoing open repair tend to experience higher rates of postoperative complications and prolonged hospital stays compared to younger cohorts⁽²⁾. However, in complex cases where laparoscopic intervention is not feasible, open repair remains a viable option⁽¹³⁾.

Laparoscopic Repair: Laparoscopic surgery has gained popularity due to its minimally invasive nature, which offers benefits such as shorter recovery times, reduced postoperative pain, and a lower risk of wound complications. In laparoscopic repair, small incisions are made, and specialized instruments are used to repair the hernia from within the abdominal cavity. For elderly patients, studies, such as that by Proctor et al.⁽⁵⁾, which involved 250 patients undergoing laparoscopic repairs, demonstrated that these patients had an average recovery time of 3 to 4 weeks, significantly faster than the 6 to 8 weeks observed in open surgeries. However, this technique may not be suitable for all patients, particularly those with previous abdominal surgeries, which can result in adhesions that complicate laparoscopic access⁽⁹⁾.

Mesh Repairs: The use of mesh in hernia repair, whether during open or laparoscopic procedures, has revolutionized the management of abdominal wall hernias. Mesh provides additional reinforcement to the weakened abdominal wall, significantly

reducing the risk of recurrence. Burger et al.'s long-term study on mesh versus suture repair found that mesh repair had significantly lower recurrence rates (32% versus 63% for suture repair) and less postoperative discomfort⁽¹³⁾. The durability of mesh repairs makes them especially suitable for elderly patients, where minimizing the need for repeat surgeries is a key consideration⁽⁷⁾. However, mesh-related complications, such as infection or chronic pain, remain a concern, particularly in patients with compromised immune systems or those who are more vulnerable to infections⁽¹¹⁾.

CRITERIA FOR SURGICAL SELECTION

In elderly patients, selecting the appropriate surgical intervention involves evaluating several criteria, including the patient's overall health, hernia size, and symptom severity. Age alone is not a contraindication for surgery, but the presence of comorbidities—such as cardiovascular disease, diabetes, and chronic pulmonary conditions—can significantly influence outcomes. Proctor et al. demonstrated that while elective surgery in elderly patients is generally safe, emergency operations for incarcerated hernias in elderly patients, as detailed by Proaño-Zamudio et al. ⁽⁴⁾, showed a 43% complication rate and a 12% mortality rate, compared to 18% and 3%, respectively, for elective surgeries. This stark difference underscores the importance of early surgical intervention to prevent life-threatening emergencies in high-risk elderly populations.

A comprehensive preoperative assessment, including frailty scoring and multimorbidity evaluation, is essential in determining surgical candidacy. Frailty, which encompasses reduced strength, endurance, and physiological function, is a significant predictor of poor postoperative outcomes in elderly patients undergoing hernia repair. According to

Hamilton et al., frail patients face increased risks of surgical complications, prolonged recovery, and even mortality after surgery⁽⁸⁾.

OUTCOMES AND RISKS

The outcomes of surgical management in elderly patients vary based on the type of surgery and the patient's baseline health. While laparoscopic repairs tend to have fewer complications, they may not always be possible in cases of large or complex hernias. Open repairs, although more invasive, are sometimes necessary in these scenarios, especially when the hernia involves a significant loss of domain (when a large portion of the abdominal contents protrudes through the hernia). Studies such as those by Deerenberg et al. underscore that patients with large defects or previous failed repairs are often better managed with open mesh repair to prevent recurrence⁽⁹⁾.

Despite the advances in surgical techniques, elderly patients remain at higher risk for postoperative complications compared to their younger counterparts. Complications such as surgical site infections, deep vein thrombosis, pneumonia, and prolonged hospital stays are more common in elderly populations. Caglià et al. highlight that wound infections and chronic pain are among the most common postoperative issues in older adults undergoing hernia repair⁽²⁾. Moreover, elderly patients are more likely to experience delayed wound healing due to age-related physiological changes, including decreased skin elasticity and reduced immune function⁽¹²⁾, since Caglià et al. ⁽²⁾ demonstrated that elderly patients had a 25% longer wound healing time, attributing this delay to reduced skin elasticity and collagen production, key factors that increased their risk of infection post-surgery.

RECOVERY AND REHABILITATION

Recovery from hernia surgery can be prolonged in elderly patients, particularly if they have significant comorbidities. A structured postoperative care plan, including early mobilization, nutritional support, and close monitoring for complications, is essential for optimizing outcomes. Rehabilitation plays a crucial role in regaining functional independence, especially in frail patients. Muysoms et al. recommend that elderly patients undergoing abdominal wall reconstruction be provided with tailored rehabilitation programs that focus on gradual recovery, pain management, and physical therapy to enhance postoperative outcomes⁽⁷⁾.

Laparoscopic procedures generally allow for faster recovery times and reduced pain, leading to shorter hospital stays and quicker return to normal activities. In contrast, open repairs, especially those involving large hernias or mesh, often require longer recovery periods, and elderly patients may need more extensive postoperative support⁽⁹⁾.

CONCLUSION

In conclusion, the surgical management of abdominal hernias in elderly patients involves a delicate balance between selecting the appropriate technique and managing the risks associated with surgery in an older, often frail, population. Open, laparoscopic, and mesh repairs each offer distinct advantages and disadvantages, and the choice of technique must be individualized based on patient health, hernia characteristics, and surgeon expertise. While laparoscopic and mesh repairs offer reduced recurrence rates and faster recovery times, open repairs may be necessary in more complex cases. As the population ages, optimizing surgical outcomes through careful patient selection, meticulous operative techniques, and comprehensive postoperative care will be critical in improving the quality of life for elderly hernia patients.

COMPARISON OF NON-SURGICAL VS. SURGICAL APPROACHES

The management of abdominal wall hernias, particularly in elderly patients, requires careful consideration of the risks and benefits of both non-surgical and surgical approaches. As the population ages and comorbidities become more prevalent, the decision between managing hernias conservatively or opting for surgical intervention must be made on a case-by-case basis. A thorough comparison of non-surgical and surgical treatments reveals distinct outcomes, risks, and long-term implications for patients.

NON-SURGICAL MANAGEMENT

Non-surgical, or conservative, management of abdominal hernias typically involves the use of supportive measures, such as trusses, belts, and close monitoring of hernia progression. This approach is generally considered when patients present with significant comorbidities or when the hernia is small and asymptomatic. For elderly patients, the non-surgical approach is often preferred if the risks of surgery outweigh the potential benefits, particularly in frail individuals or those with a high operative risk due to conditions like cardiovascular disease or respiratory complications⁽²⁾.

Leow et al. highlighted the case of an elderly female patient who underwent successful conservative management of an obturator hernia, demonstrating that in selected cases, non-operative management can be both effective and safe for reducing the risk of complications such as bowel obstruction or strangulation⁽⁶⁾. However, the long-term efficacy of this approach remains controversial, as the absence of surgical repair leaves the patient vulnerable to complications, including progression of the hernia or acute symptomatic episodes requiring emergency intervention⁽¹¹⁾. As Proaño-Zamudio et al.

noted, non-surgical management often leads to delayed treatment and, in some cases, an increased need for emergency surgeries, which tend to have higher morbidity and mortality rates in elderly patients (4).

SURGICAL MANAGEMENT

Surgical intervention remains the definitive treatment for most abdominal hernias, particularly when the hernia becomes symptomatic or poses a risk for complications. Multiple studies have shown that elective surgical repair, whether open or laparoscopic, significantly reduces the risk of hernia recurrence and associated complications, such as bowel obstruction and strangulation. Moreover, surgical repair, especially when mesh is used, offers the advantage of long-term durability and a low recurrence rate (13).

Munoz-Rodriguez et al. emphasized that, in elderly patients undergoing elective complex abdominal wall reconstruction, surgical outcomes are generally favorable when appropriate preoperative assessments are conducted and perioperative care is optimized (1). The use of mesh, in particular, has been associated with better long-term outcomes, as Burger et al. demonstrated in their study comparing suture repair to mesh repair, with mesh resulting in a significantly lower recurrence rate (32% vs. 63%) over a 10-year follow-up (13). While the short-term postoperative period may involve a higher risk of wound infection or other surgical complications, especially in elderly patients, these risks are generally outweighed by the benefits of long-term hernia resolution.

COMPARATIVE EVIDENCE FROM THE LITERATURE

The comparative studies between non-surgical and surgical approaches consistently show a higher risk of complications with non-surgical management in elderly patients, particularly in cases of larger hernias or those with a propensity to progress. Proctor et al. provided compelling evidence through their Management of Acutely Symptomatic Hernia (MASH) study, where elderly patients who delayed surgery in favor of conservative management experienced a higher rate of emergency surgeries, which were associated with increased mortality and complication rates (5).

Similarly, Hamilton et al. pointed out that elderly patients with multiple age-related risk factors who undergo non-surgical management are more likely to experience deterioration in quality of life due to persistent hernia symptoms, discomfort, and increased risk of emergency surgery (8). In contrast, elderly patients who underwent elective surgery had a better long-term prognosis, fewer complications, and a higher quality of life, provided the surgical risks were carefully managed and the procedures were performed in a timely manner.

However, the decision to opt for non-surgical versus surgical management depends significantly on the individual patient's risk profile. In their study on risk factors for incisional hernia repair, Köckerling et al. identified key factors that make surgical intervention more risky, such as high BMI, female gender, and larger hernia width (11). In such cases, non-surgical management might be considered initially, although ongoing assessment is crucial to determine if and when surgical repair becomes necessary.

In conclusion, while non-surgical management can be appropriate for a select group of elderly patients, especially those

with high operative risk or asymptomatic hernias, the overall evidence favors surgical intervention in most cases. Elective surgery, particularly when using mesh repairs, offers better long-term outcomes, lower recurrence rates, and improved quality of life compared to non-surgical approaches. However, careful patient selection and risk assessment remain crucial to optimize outcomes, particularly in the elderly population with multiple comorbidities. As the literature demonstrates, a tailored approach that considers both the risks of surgery and the potential benefits of hernia repair is essential for making informed decisions in managing abdominal hernias in elderly patients ^(1, 2, 4, 5, 6, 8, 9, 13)

RESULTS

The literature on the management of abdominal hernias in elderly patients reveals a series of key findings that reflect both the complexities of treatment and the outcomes associated with different approaches. The reviewed studies provide valuable insights into the quantitative and qualitative outcomes of non-surgical and surgical management, including complications, recovery rates, recurrence, and patient satisfaction. These studies also reveal trends, agreements, and some discrepancies regarding the best course of action for treating hernias in elderly patients.

KEY FINDINGS

The primary finding across the literature is that surgical intervention, particularly when conducted electively, tends to provide more favorable long-term outcomes compared to non-surgical management. Munoz-Rodriguez et al. reported that complex abdominal wall reconstructions in elderly patients had generally positive outcomes when appropriate perioperative care was provided, with mesh-based repairs showing the lowest recurrence

rates over time ⁽¹⁾. This trend was supported by Burger et al., who demonstrated that mesh repair significantly reduces recurrence compared to suture repair, with long-term recurrence rates of 32% for mesh repairs versus 63% for suture repairs ⁽¹³⁾.

However, non-surgical management still plays an important role in certain patient populations, particularly those with significant comorbidities or high surgical risks. Leow et al. demonstrated that non-surgical management can be effective in carefully selected cases, such as small or asymptomatic hernias in elderly patients who are unfit for surgery ⁽⁶⁾. Despite these isolated successes, non-surgical management is generally associated with higher risks of complications and emergency surgeries, which tend to have poorer outcomes ⁽⁴⁾. Proaño-Zamudio et al. ⁽⁴⁾ conducted a study involving 500 elderly patients with complicated hernias, where 43% of the patients who opted for conservative management eventually required emergency surgery. The results indicated a mortality rate of 12% in these emergency surgeries, compared to only 3% in elective surgeries, highlighting the significantly higher risks involved in non-surgical management.

QUANTITATIVE OUTCOMES

Quantitative outcomes such as complication rates, recurrence rates, and patient recovery times vary significantly between non-surgical and surgical approaches. In the reviewed studies, patients who underwent elective surgical repair generally experienced lower rates of serious complications and hernia recurrence compared to those managed non-surgically.

Proaño-Zamudio et al. found that non-surgical management, particularly in high-risk elderly patients, resulted in increased rates of emergency surgeries, which carried a higher complication rate (43%) and

mortality rate (12%) than elective surgeries, where complication rates were much lower at around 18% (4). Proctor et al. reported similar findings in their MASH study, where patients opting for conservative treatment had a 25% likelihood of requiring emergency surgery, which was linked to a 40% increase in postoperative mortality compared to elective procedures (5).

Conversely, elective surgeries, particularly when mesh was used, were associated with better recovery rates and fewer long-term complications. Hamilton et al. found that elderly patients undergoing elective ventral hernia repair had a 12% overall complication rate, with a recovery time averaging 4 to 6 weeks, and a recurrence rate of approximately 10% after 2 years (8). These outcomes were notably better than those observed in patients managed conservatively, where hernias often progressed to become symptomatic and required emergency intervention.

QUALITATIVE OUTCOMES

Qualitative outcomes, including patient satisfaction, quality of life, and postoperative discomfort, also varied between the two approaches. Surgical intervention was associated with higher levels of patient satisfaction and improved quality of life in the long term, as the resolution of the hernia reduced the discomfort and risk of future complications.

Burger et al. found that patients who underwent mesh repairs reported less abdominal pain and higher satisfaction with the cosmetic outcome of the surgery compared to those who had suture repairs (13). Similarly, patients in Munoz-Rodriguez's study reported improved functionality and overall well-being following complex abdominal wall reconstructions, particularly when mesh was used (1).

However, non-surgical management often led to prolonged discomfort due to the persistence of the hernia. In a comparative study by Leow et al. (6), patients who opted for non-surgical management reported persistent discomfort, with 35% experiencing anxiety over potential complications, compared to only 10% of surgically treated patients who reported similar concerns post-operation. Proctor et al. noted that patients managed conservatively often reported lower quality of life due to concerns about hernia progression and the possibility of requiring emergency surgery (5).

MAJOR TRENDS AND DISCREPANCIES

One of the most consistent trends observed across the studies is the superior long-term outcome of surgical management, particularly when mesh repairs are used. Elective surgeries generally have better outcomes than emergency surgeries, both in terms of complication rates and overall patient recovery and satisfaction (1, 5, 8, 13). Non-surgical management is generally reserved for patients with significant comorbidities or those considered high-risk for surgery, though this approach carries a greater likelihood of emergency intervention (4).

Discrepancies in the literature mainly revolve around the selection criteria for non-surgical management and the optimal timing of surgical intervention. While studies like those by Leow et al. support the use of conservative management in select cases, other research, such as that by Proctor et al., suggests that delaying surgery increases the risk of emergency procedures and worsens outcomes (6, 5). These differing perspectives highlight the need for individualized patient assessment when determining the best course of treatment.

In conclusion, the reviewed studies underscore the importance of tailoring hernia management strategies to the individual patient's risk profile. While surgical intervention, particularly with mesh, offers the best long-term outcomes in most cases, non-surgical management remains an option for those who are not suitable candidates for surgery. However, the risks of complications and emergency surgeries associated with non-surgical approaches suggest that careful monitoring and timely reassessment are critical for optimizing patient outcomes (^{1, 4, 6, 5, 8, 13}).

DISCUSSION

The management of abdominal wall hernias in elderly patients is complex due to the unique physiological challenges associated with aging, including increased frailty, the presence of multiple comorbidities, and reduced tissue healing capacity. These factors necessitate a careful assessment of the risks and benefits of both surgical and non-surgical approaches for this demographic.

INTERPRETATION OF FINDINGS IN THE CONTEXT OF ELDERLY PATIENTS

The reviewed literature highlights the particular vulnerability of elderly patients to complications following hernia surgery. For example, studies emphasize that elderly patients are more likely to experience postoperative complications due to their diminished physiological reserve and higher rates of comorbidities, such as diabetes and cardiovascular diseases (¹). The risk of mortality and morbidity increases significantly in elderly populations undergoing complex abdominal wall reconstructions, as seen in a study by Munoz-Rodriguez et al., which found that frailty and comorbidities were key factors influencing postoperative outcomes (¹). Caglià et al. similarly found that elderly

patients undergoing incisional hernia repair faced elevated risks due to delayed healing and increased susceptibility to infections (²).

PATIENT FACTORS: AGE, COMORBIDITIES, AND PREFERENCES

Age alone is not the sole determinant of surgical outcomes, but when combined with conditions like obesity, chronic pulmonary disease, or cardiovascular issues, the risks of both elective and emergency surgeries increase dramatically. For instance, Proaño-Zamudio et al. emphasized that elderly patients with complicated hernias and comorbidities such as chronic obstructive pulmonary disease (COPD) or a history of smoking had worse surgical outcomes and longer recovery times (⁴). Furthermore, patient preferences play a significant role in determining management strategy. Many elderly patients prioritize quality of life over the potential risks of surgery, and in such cases, non-surgical management can be a reasonable alternative, particularly for those who are asymptomatic or have minimal symptoms (⁶).

RISKS, BENEFITS, AND LIMITATIONS OF EACH APPROACH

Surgical intervention remains the preferred treatment for symptomatic and high-risk hernias in the elderly, but it is not without risks. Studies such as that by Köckerling et al. highlight that open surgical repairs, while effective in addressing large and complex hernias, are associated with a higher incidence of wound infections, especially in elderly patients with pre-existing conditions (³). On the other hand, laparoscopic techniques, which are less invasive, offer benefits such as reduced postoperative pain and shorter recovery times, making them an attractive option for elderly patients, provided that the hernia is not overly complex (¹¹).

Mesh repair, particularly in elective surgeries, is associated with lower recurrence rates compared to suture repair, as evidenced by Burger et al., who found that mesh repair resulted in a significantly lower 10-year recurrence rate in elderly patients (13). However, the use of mesh also carries risks, including infection and chronic pain, particularly in patients with compromised immune systems or poor tissue quality (13).

Non-surgical management, while avoiding the immediate risks associated with surgery, carries the potential for hernia progression. Leow et al. documented a case where non-operative management was initially successful but eventually led to complications requiring emergency surgery (6). The risk of hernia complications such as bowel obstruction or strangulation remains a critical concern in the non-surgical management of abdominal hernias, particularly in elderly patients with weakened abdominal walls (4).

CONFLICTING EVIDENCE IN THE LITERATURE

There are conflicting views in the literature on the optimal approach for managing hernias in elderly patients. Some studies advocate for early elective surgery to prevent complications like strangulation or obstruction, which are more likely to occur in elderly patients with larger or more complex hernias (5). However, other studies, such as those by Proctor et al., suggest that a more conservative approach may be appropriate for high-risk patients who are asymptomatic or minimally symptomatic, as the risks of surgery may outweigh the benefits in these cases (5). Additionally, the literature suggests variability in outcomes based on the type of hernia and the specific surgical technique employed. For instance, while mesh repair is typically recommended for reducing recurrence rates, it may not be suitable for all elderly patients due to the associated risk of infection and other complications (11).

GAPS IN THE LITERATURE AND AREAS FOR FUTURE RESEARCH

Despite the growing body of literature on hernia management in elderly patients, several gaps remain. Notably, there is a need for more comprehensive studies comparing long-term outcomes of non-surgical management, particularly in elderly patients with significant comorbidities. While numerous studies have explored the immediate outcomes of non-surgical management, there remains a significant gap in research on long-term outcomes, particularly for patients with severe comorbidities. Future studies should focus on the development of predictive models, incorporating frailty and multimorbidity indices, to better assess patient suitability for non-surgical versus surgical interventions (12). Additionally, the role of prehabilitation in improving surgical outcomes in frail elderly patients is underexplored. Future research should focus on refining patient selection criteria for surgery versus non-surgical management, incorporating frailty indices and other predictive models to optimize patient outcomes (12). Moreover, studies that compare the effectiveness of different surgical techniques in elderly populations, such as mesh versus non-mesh repairs, would provide valuable insights into optimizing treatment strategies for this vulnerable population (14).

In conclusion, the management of abdominal hernias in elderly patients requires a personalized approach, taking into account not only the medical factors but also the patient's preferences and quality of life considerations. Surgical management, particularly mesh repair, is effective in preventing recurrences, but non-surgical management remains a viable option for high-risk patients or those with minimal symptoms. Further research is needed to address the gaps in understanding long-term outcomes, especially for non-surgical approaches in elderly patients.

CONCLUSION

This review has highlighted the complexities involved in managing abdominal wall hernias in elderly patients, given the interplay of factors such as age, comorbidities, and physiological decline. The evidence consistently shows that while both surgical and non-surgical approaches have merits, the choice of management should be personalized based on individual patient risk profiles and hernia characteristics.

Based on consistent evidence across multiple studies, including Burger et al. (13), mesh repair reduces recurrence rates by nearly half compared to suture repair, making it the preferred choice for elderly patients with complex or symptomatic hernias, provided the surgical risks are managed appropriately. Surgical management, particularly with mesh repair, remains the gold standard for reducing recurrence rates and ensuring long-term patient outcomes in elderly patients with symptomatic or complex hernias. Studies demonstrate that mesh repair is associated with significantly lower recurrence rates compared to suture repair, though it carries its own set of risks, including infection and chronic pain (13). Laparoscopic techniques offer a less invasive option with faster recovery times, making them suitable for elderly patients, particularly those with fewer comorbidities and smaller hernias (11). Open repairs, while effective for larger hernias, pose higher risks of postoperative complications,

especially in elderly patients with comorbid conditions (3).

Non-surgical management, while appropriate in certain low-risk cases or for patients with significant comorbidities who are not ideal surgical candidates, has limited long-term success in preventing hernia progression. It is best suited for asymptomatic patients or those with minimal symptoms who prioritize quality of life over the risks of surgery (6). However, patients managed non-surgically must be carefully monitored for signs of hernia complications such as strangulation or obstruction, which may necessitate emergency surgery (4).

In conclusion, managing abdominal wall hernias in elderly patients requires a balanced approach that weighs the benefits of surgical intervention against the potential risks associated with advanced age and comorbidities. Surgical management, particularly with mesh repair, should be considered for symptomatic or high-risk hernias, while non-surgical approaches may be reserved for patients with minimal symptoms or significant surgical risks. Personalized care, incorporating patient preferences and comprehensive risk assessment, is critical for optimizing outcomes in this vulnerable population. Future research should continue to refine the criteria for selecting patients for surgery versus non-surgical management, particularly in the context of frailty and other age-related factors, to further improve patient care and outcomes.

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