



## **LAPAROSCOPIC APPROACH TO THE TREATMENT OF RECURRENT INCISIONAL HERNIA: TECHNICAL ADVANCES AND LONG-TERM OUTCOMES**

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### **NARRATIVE REVIEW**

#### **ABSTRACT**

Recurrent incisional hernia represents a relevant challenge in abdominal wall surgery because of the anatomical changes resulting from previous procedures, the presence of adhesions, compromised tissue quality, and the risk of further recurrence. In this context, the laparoscopic approach has become established as an alternative to open repair, particularly because it allows access to the abdominal cavity through planes different from those previously dissected, wide visualization of the defect, and placement of prostheses with adequate overlap, in addition to a potential reduction in wound-related complications. At the same time, the evolution of laparoscopic repair, from the conventional intraperitoneal onlay mesh (IPOM) to strategies involving fascial defect closure, IPOM-plus, and minimally invasive extraperitoneal and retromuscular techniques, has substantially changed the principles of abdominal wall reconstruction. The objective of this study was to critically review the available evidence on the laparoscopic approach to the treatment of recurrent incisional hernia, with emphasis on technical advances, perioperative outcomes, recurrence, complications, and long-term outcomes. A narrative review of the literature was carried out using a structured search strategy for studies related to recurrent incisional hernia, laparoscopic repair, mesh placement, fascial closure, and surgical outcomes. The available evidence suggests that laparoscopic repair can provide satisfactory results in appropriately selected patients, with recurrence rates comparable to those of open repair and a lower occurrence of certain wound complications, although it carries specific risks, particularly bowel injury during adhesiolysis. Advances such as primary defect closure and improved prosthetic positioning have sought to restore abdominal wall function and reduce seroma, bulging, and recurrence. However, the technical and methodological heterogeneity of the studies, together with the scarcity of investigations specifically addressing recurrent hernias with prolonged follow-up, still limits definitive conclusions. It is concluded that laparoscopy holds a relevant position in the treatment of recurrent incisional hernia, but its indication should be individualized according to defect



characteristics, previous procedures, clinical conditions, and the experience of the surgical team.

**Keywords:** Incisional Hernia. Recurrence. Laparoscopy. Herniorrhaphy. Surgical Mesh. Abdominal Wall.

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## **1- INTRODUCTION**

Incisional hernia is an important late complication of abdominal operations and remains associated with a substantial impact on quality of life, functional capacity, and use of healthcare resources. Despite improvements in abdominal wall closure techniques and the growing use of prosthetic materials, recurrence after repair remains a relevant clinical problem, and nationwide registry data show that the cumulative rate of reoperation for recurrence after incisional hernia repair continues to rise even after 15 years of follow-up (Henriksen; Helgstrand, 2024). Recurrent incisional hernia presents additional complexity, since it occurs in an abdominal wall that has undergone not only the operation responsible for the original defect but also one or more reconstruction attempts. Consequently, these patients may present anatomical distortion, fibrosis, adhesions, altered vascularization, previously implanted meshes, and compromised tissue quality, which makes a new intervention technically more demanding and potentially associated with greater morbidity (Köckerling, 2019; Hoffmann *et al.*, 2021).

Historically, recurrent incisional hernias were treated predominantly through an open approach, using different reconstruction techniques and prosthetic positions. However, a new dissection through previously operated planes may increase operative complexity and the occurrence of wound complications. The introduction of laparoscopic repair offered an alternative based on access to the abdominal wall from the peritoneal cavity, allowing identification of the defect from its inner surface, adhesiolysis when necessary, and wide prosthetic coverage. Studies specifically addressing recurrence suggested that, in selected patients, particularly after previous open repairs and in the presence of defects of dimensions compatible with the technique, laparoscopy is a viable option, although the available evidence is less robust than that for incisional hernias in general (Köckerling, 2019; Chen *et al.*, 2023).

Traditional laparoscopic repair was largely developed on the basis of the intraperitoneal onlay mesh (IPOM) technique, in which a prosthesis is positioned intraperitoneally with overlap of the defect and fixed to the abdominal wall. The technique made it possible to avoid extensive incisions over the defect and to reduce certain wound-related complications, but it introduced specific issues, including contact



of the prosthesis with the viscera, pain related to fixation methods, seroma formation, abdominal wall bulging, and the risk of bowel injury. Long-term follow-up studies have shown acceptable results after laparoscopic repair with intraperitoneal mesh, but have also shown that complications and recurrences may occur years after the intervention, reinforcing the importance of evaluating outcomes beyond the immediate postoperative period (Kokotovic; Bisgaard; Helgstrand, 2016; Lavanchy *et al.*, 2019).

The technical evolution of laparoscopy led to a revision of the concept of simply bridging the defect with a prosthesis. Laparoscopic closure of the fascia before mesh placement, a strategy often referred to as IPOM-plus, came to be used with the aim of restoring the continuity of the abdominal wall, reducing dead space, and improving its anatomical configuration. A meta-analysis published in 2024, involving 1,585 patients from three randomized trials and 11 cohort studies, found an association between IPOM-plus and lower rates of recurrence, seroma, and mesh bulging compared with IPOM without fascial closure, although the studies were heterogeneous and not restricted to recurrent incisional hernias (Huang *et al.*, 2024). More recently, the multicentre PROSECO randomized trial showed that, although fascial closure did not reduce the composite primary endpoint of hernia site complications at one year, it was associated with lower rates of recurrence and mesh bulging and with less postoperative pain (Lindmark *et al.*, 2025).

At the same time, the development of minimally invasive abdominal wall surgery expanded beyond IPOM. Extraperitoneal and retromuscular approaches and minimally invasive reconstructions began to seek the benefits of reduced access combined with contemporary principles of anatomical reconstruction, avoiding, whenever possible, direct exposure of the prosthesis to the viscera. This evolution is particularly relevant in view of concerns about the long-term consequences of intraperitoneal mesh placement. A meta-analysis comparing minimally invasive IPOM-plus with enhanced-view totally extraperitoneal (eTEP) repair found less early postoperative pain with eTEP, at the cost of a longer operative time, with no differences in recurrence, seroma, or length of stay (Rasador *et al.*, 2025). Contemporary incisional hernia guidelines also reinforce the importance of an individualized assessment of defect anatomy, patient characteristics, and the principles of fascial closure and prosthetic positioning when choosing the surgical strategy (Sanders *et al.*, 2023).



Given this scenario, understanding the current role of laparoscopy in recurrent incisional hernia requires integrating the results of traditional laparoscopic techniques with the recent transformations of minimally invasive abdominal wall surgery. Thus, the present study aimed to critically review the available evidence on the laparoscopic approach to the treatment of recurrent incisional hernia, with emphasis on technical advances, patient selection, perioperative results, and long-term outcomes, particularly recurrence, complications, pain, and the need for further interventions.

## **2- METHODS**

The present study was developed as a narrative literature review aimed at synthesizing and critically analysing the available evidence on the use of the laparoscopic approach in the treatment of recurrent incisional hernia. The choice of this methodological design was based on the possibility of integrating studies with different designs and from different historical periods, allowing simultaneous consideration of the evolution of operative techniques, the anatomical foundations of abdominal wall reconstruction, the complications related to the different methods, and medium- and long-term clinical outcomes.

Although narrative reviews do not necessarily require the formal protocols of systematic reviews, a structured strategy for the identification, selection, and interpretation of the literature was adopted in order to increase methodological transparency and reduce arbitrary selection of evidence. Studies directly related to recurrent incisional hernia were prioritized and, when necessary for the analysis of technical evolution, complemented by studies on ventral or incisional hernia that investigated specific aspects of laparoscopic repair, fascial closure, mesh positioning, and long-term outcomes.

The bibliographic search covered biomedical databases and sources of scientific literature related to general surgery and abdominal wall surgery, with priority given to PubMed/MEDLINE and to studies indexed in the main international databases. The reference lists of reviews and studies considered relevant were also examined to identify additional publications. Special attention was given to comparative studies, series with prolonged follow-up, registry analyses, systematic reviews, meta-analyses, and



recommendations from scientific societies related to the treatment of incisional hernias.

The search strategy combined controlled descriptors and free terms related to the central concepts of the investigation, including incisional hernia, recurrent incisional hernia, ventral hernia, laparoscopic repair, laparoscopic hernia repair, intraperitoneal onlay mesh, IPOM, IPOM-plus, fascial closure, mesh repair, abdominal wall reconstruction, recurrence, complications, and long-term outcomes. The terms were combined using the Boolean operators AND and OR, with adaptations according to the indexing characteristics and the specific objectives of each search.

Eligible studies included original observational or experimental studies, clinical trials, comparative studies, registry analyses, systematic reviews, meta-analyses, and consensus documents or guidelines addressing the surgical treatment of recurrent incisional hernia or technical aspects directly related to the laparoscopic approach. Studies presenting information on recurrence, morbidity, infection, seroma, visceral injury, pain, reoperation, length of hospital stay, or medium- and long-term follow-up were prioritized. Publications not directly related to the objectives of the review, isolated case reports, and studies with insufficient description of clinical outcomes were excluded from the main synthesis.

The research question was organized according to the components of the PICO model. The population (P) comprised patients with recurrent incisional hernia undergoing a new surgical treatment; the intervention (I) was laparoscopic repair or its technical developments; the comparison (C), when available, comprised open repair or different modalities of minimally invasive repair; and the outcomes (O) included recurrence, perioperative complications, infection, seroma, bowel injury, pain, reoperation, length of hospital stay, and long-term results. Based on these components, the following guiding question was established: what are the main technical advances of the laparoscopic approach in the treatment of recurrent incisional hernia, and what are its clinical and surgical results, particularly with regard to recurrence, complications, and long-term outcomes?

### **3- RESULTS**



The evidence analysed shows that recurrent incisional hernia is a heterogeneous and technically complex surgical condition. Unlike primary repair, reoperation may involve extensive adhesions, scar tissue, anatomical changes, the presence of prosthetic materials, and defects of different sizes and locations. A review specifically dedicated to recurrent incisional hernias, which identified 47 relevant publications, found mainly case series and only a few comparative studies, each including between 27 and 85 recurrent hernias, which highlights the limited scientific basis available for universal recommendations. This review suggested that, after previous open repair and in selected defects, particularly those smaller than approximately 8 to 10 cm, the laparoscopic approach may be considered when performed by surgeons with adequate experience (Köckerling, 2019).

Specific clinical series have shown favourable results of laparoscopy in patients with recurrence. In a ten-year experience involving 69 patients undergoing laparoscopic repair of recurrent incisional hernia with intraperitoneal ePTFE mesh, Ferrari *et al.* observed five intraoperative complications (7.2%), including three bowel injuries treated laparoscopically, overall postoperative morbidity of 13%, and a recurrence rate of 5.7% during a mean follow-up of 41 months (Ferrari *et al.*, 2013). In an earlier prospective series of 41 consecutive patients whose previous repairs had all been performed through an open approach, complications occurred in 17% of cases, including one enterotomy, and recurrence was 2.4% after a mean follow-up of 38 months (Verbo *et al.*, 2007). These results demonstrated the feasibility of the approach, but should be interpreted in light of their observational nature, the relatively small sample sizes, and the technical particularities of the periods in which the procedures were performed.

More recent comparative evidence helps to contextualize these findings. Chen *et al.* analysed 255 patients with recurrent incisional hernia who underwent open sublay repair or laparoscopic IPOM and performed propensity score matching, which resulted in 85 matched pairs. In the unmatched analysis, laparoscopic IPOM was associated with shorter operative time (median of 75 versus 95 minutes), shorter postoperative hospital stay (median of 8 versus 11 days), and less wound infection, whereas the open group had significantly larger defects and more risk factors, which underlines the importance of patient selection when interpreting non-randomized comparisons (Chen *et al.*, 2023). In incisional hernias in general, a single-centre propensity-matched study of



laparoscopic versus open IPOM found similar recurrence rates after a mean follow-up of 5.5 years (20% versus 19%), with less morbidity, fewer surgical site infections, and shorter hospital stay in the laparoscopic group (Lavanchy *et al.*, 2019). In contrast, the INCH randomized trial, which included primary and recurrent incisional hernias with at least five years of follow-up, found no differences in length of stay or quality of life and an overall recurrence rate of 19% (16% in the open group and 23% in the laparoscopic group, without statistical significance), and was stopped early for futility (Van Veenendaal *et al.*, 2023).

The evolution from conventional IPOM to techniques that incorporate defect closure represents one of the main advances in laparoscopic repair. The IPOM-plus strategy seeks to restore fascial continuity before placing the prosthesis, in contrast to simple prosthetic bridging. In the meta-analysis by Huang *et al.*, which included 1,585 patients with ventral and incisional hernias, fascial closure was associated with lower recurrence (OR 0.51; 95% CI 0.35 to 0.76), lower occurrence of seroma (OR 0.48; 95% CI 0.32 to 0.71), and reduced mesh bulging (OR 0.08; 95% CI 0.01 to 0.42) (Huang *et al.*, 2024). The PROSECO trial provided randomized support for this principle in midline hernias: mesh bulging occurred in 12% of patients when the fascia was not closed, and fascial closure reduced the combined rate of recurrence and bulging, as well as chronic pain (Lindmark *et al.*, 2025). However, these results cover primary and incisional hernias and therefore should not be interpreted as specific estimates for the population with recurrent incisional hernia.

Long-term results also show that the evaluation of effectiveness cannot be restricted to recurrence. In a population-based study with a follow-up of nearly five years, mesh repair, both open and laparoscopic, was associated with a lower need for reoperation for recurrence than open non-mesh repair; however, the cumulative incidence of mesh-related complications increased progressively throughout follow-up. Among patients undergoing laparoscopic mesh repair, the five-year cumulative incidence of mesh-related complications was 3.7%, compared with 5.6% after open mesh repair (Kokotovic; Bisgaard; Helgstrand, 2016). A more recent nationwide analysis of 45,773 elective ventral hernia repairs, of which 9,786 were incisional, showed that the rate of reoperation for recurrence after incisional hernia repair reached 18% to 20% at 15 years and kept rising throughout the observation period, with the authors noting



that the true recurrence rate is probably higher (Henriksen; Helgstrand, 2024). These data, although not exclusive to recurrent hernias, demonstrate the importance of incorporating prosthetic complications, reoperations, and late symptoms into the evaluation of surgical outcomes.

Taken together, the studies indicate that laparoscopy can be an effective strategy for the treatment of recurrent incisional hernia in selected patients, but they do not show universal superiority over open repair. A registry analysis involving 4,015 recurrent incisional hernia repairs from 712 hospitals showed that outcomes depend on multiple factors, including defect size and location, clinical risk factors, the interval between operations, postoperative complications, and pre-existing pain; in that analysis, a laparoscopic IPOM used in the primary repair had no effect on recurrence after the subsequent repair, although there was a trend toward more complication-related reoperations (Hoffmann *et al.*, 2021). An updated meta-analysis of 15 randomized trials comprising 1,502 patients found no significant difference in recurrence between laparoscopic and open repair, but showed a lower risk of postoperative infection (RR 0.31; 95% CI 0.17 to 0.55) and wound drainage with laparoscopy, together with an almost threefold higher risk of bowel injury (RR 2.80; 95% CI 1.15 to 6.80) (Al-Qudimat *et al.*, 2026). Thus, the advantages of minimally invasive access are concentrated mainly in certain wound outcomes and in postoperative recovery, while adhesiolysis and intraperitoneal manipulation maintain the risk of visceral injury as a relevant concern, and adequate patient selection and team experience remain fundamental determinants of outcome (Hoffmann *et al.*, 2021; Chen *et al.*, 2023).

**Chart 1.** Main studies on the laparoscopic approach to recurrent incisional hernia and long-term outcomes

| Author (Year)       | Study Design                     | Main Objective                                                                       | Main Findings                                                                 | Clinical Relevance                               |
|---------------------|----------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------|
| Verbo et al. (2007) | Prospective case series (n = 41) | Assess laparoscopic repair of recurrent incisional hernia after previous open repair | Complications in 17% (one enterotomy); recurrence 2.4% at a mean of 38 months | Early evidence of feasibility after open repairs |



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|                                           |                                                     |                                                                                           |                                                                                                                                                          |                                                                  |
|-------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Ferrari et al. (2013)                     | Retrospective single-centre series (n = 69)         | Report 10 years of laparoscopic IPOM for recurrent incisional hernia                      | Intraoperative complications 7.2% (three bowel injuries); morbidity 13%; recurrence 5.7% at 41 months                                                    | Acceptable recurrence, with visceral injury as a specific risk   |
| Kokotovic, Bisgaard and Helgstrand (2016) | Nationwide registry cohort (n = 3,242)              | Assess long-term recurrence and mesh-related complications after incisional hernia repair | Mesh reduced reoperation for recurrence; five-year mesh complications 3.7% (laparoscopic) and 5.6% (open), rising over time                              | Late mesh-related events must be part of outcome assessment      |
| Köckerling (2019)                         | Systematic literature review (47 publications)      | Collate evidence on recurrent incisional hernia repair                                    | Mostly case series; laparoscopy suitable after open repair for defects up to 8 to 10 cm                                                                  | Basis for the tailored indication of laparoscopy                 |
| Lavanchy et al. (2019)                    | Propensity-matched single-centre cohort             | Compare laparoscopic versus open IPOM in the long term                                    | Recurrence 20% versus 19% at 5.5 years; fewer infections and complications with laparoscopy                                                              | Access route influences morbidity more than recurrence           |
| Hoffmann et al. (2021)                    | Herniated registry analysis (n = 4,015)             | Identify risk factors and outcomes of recurrent incisional hernia repair                  | Outcomes linked to defect size, location, risk factors, interval between operations and prior pain; previous laparoscopic IPOM did not affect recurrence | Supports risk-based individualized planning                      |
| Chen et al. (2023)                        | Propensity-matched cohort (n = 255; 85 pairs)       | Compare open sublay versus laparoscopic IPOM in recurrent incisional hernia               | Unmatched analysis: shorter operative time and stay and less wound infection with laparoscopy; open group had larger defects                             | Confirms the weight of patient selection in comparisons          |
| Van Veenendaal et al. (2023)              | Multicentre randomized trial (INCH; n = 88)         | Compare open and laparoscopic repair of primary and recurrent incisional hernia           | No difference in length of stay or quality of life; recurrence 16% (open) versus 23% (laparoscopic), not significant                                     | Randomized evidence against universal superiority of laparoscopy |
| Huang et al. (2024)                       | Systematic review and meta-analysis (n = 1,585)     | Compare IPOM-plus with IPOM without fascial closure                                       | Lower recurrence (OR 0.51), seroma (OR 0.48) and mesh bulging (OR 0.08) with IPOM-plus                                                                   | Supports routine defect closure when feasible                    |
| Henriksen and Helgstrand (2024)           | Nationwide registry analysis (n = 45,773)           | Describe 15-year recurrence after ventral and incisional hernia repair                    | Reoperation for recurrence of 18% to 20% after incisional repair at 15 years, still rising                                                               | Justifies prolonged follow-up                                    |
| Lindmark et al. (2025)                    | Multicentre double-blind randomized trial (PROSECO) | Assess fascial closure before laparoscopic IPOM                                           | No difference in the primary endpoint; less recurrence, mesh bulging and chronic pain with closure                                                       | Randomized support for IPOM-plus                                 |
| Rasador et al. (2025)                     | Systematic review and meta-analysis (n = 521)       | Compare minimally invasive IPOM-plus versus eTEP                                          | Less early pain with eTEP, longer operative time; no difference in recurrence, seroma or stay                                                            | Extraperitoneal options emerge as alternatives to IPOM           |



|                          |                                                         |                                                                     |                                                                                                               |                                                            |
|--------------------------|---------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| Al-Qudimat et al. (2026) | Meta-analysis of randomized trials (15 RCTs; n = 1,502) | Compare laparoscopic and open repair of recurrent incisional hernia | Similar recurrence; less infection (RR 0.31) and wound drainage; more bowel injury (RR 2.80) with laparoscopy | Summarizes the main trade-off of the laparoscopic approach |
|--------------------------|---------------------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|

**Source:** Prepared by the authors (2026), based on the studies included in this review. Abbreviations: IPOM, intraperitoneal onlay mesh; eTEP, enhanced-view totally extraperitoneal; OR, odds ratio; RR, risk ratio; RCT, randomized controlled trial.

## 4- DISCUSSION

The evidence gathered in this review shows that the treatment of recurrent incisional hernia should not be understood simply as a repetition of the repair of a primary hernia. Each previous intervention modifies the anatomy of the abdominal wall and may alter the available dissection planes, the quality of the fascia, and the relationship between the abdominal contents and previously implanted prosthetic materials. In this context, one of the main historical contributions of laparoscopy was to provide an access route different from that used in previous open repairs, allowing intraperitoneal assessment of the extent of the defect and placement of a prosthesis with wide coverage. However, the anatomical heterogeneity of recurrences prevents this technical advantage from being converted into an indiscriminate indication for the laparoscopic approach (Köckerling, 2019; Chen *et al.*, 2023).

The comparison between open and laparoscopic approaches reinforces the need for this balanced interpretation. Comparative studies do not show a consistent reduction in recurrence that would allow laparoscopy to be considered superior in all patients, and randomized evidence with long follow-up has not confirmed benefits in length of stay or quality of life (Van Veenendaal *et al.*, 2023). On the other hand, less abdominal wall trauma and the absence of a wide incision over the defect may explain the reduction in certain wound complications observed in comparative studies. An updated meta-analysis published in 2026 found recurrence rates without significant difference between laparoscopic and open repairs, while observing a lower risk of postoperative infection with laparoscopy. Conversely, the same analysis identified a higher risk of bowel injury with the laparoscopic approach, highlighting one of the main trade-offs of adhesiolysis and intraperitoneal dissection (Al-Qudimat *et al.*, 2026). It



should be noted, however, that a subsequent methodological critique pointed out that none of the randomized trials included in that meta-analysis enrolled exclusively patients with recurrent incisional hernia, and that at least three explicitly included primary hernias, which limits the direct transferability of these estimates to the recurrent population (Zhuang, 2026).

Another fundamental aspect is that the very definition of "laparoscopic repair" has changed over time. Conventional IPOM was based predominantly on covering the defect with an intraperitoneal prosthesis, without necessarily reconstructing the continuity of the midline. The introduction of IPOM-plus modified this principle by incorporating fascial closure, bringing the procedure closer to an anatomical reconstruction of the abdominal wall. The reduction in recurrence, seroma, and bulging found in the meta-analysis by Huang *et al.*, together with the randomized findings of the PROSECO trial, supports this conceptual evolution (Huang *et al.*, 2024; Lindmark *et al.*, 2025). Nevertheless, extrapolating these results to recurrent hernias should be done with caution, since closure of complex, previously operated defects may present technical limitations different from those observed in primary hernias or in less complex repairs.

The contemporary discussion has also progressively moved away from a simplified opposition between open and laparoscopic surgery toward more specific questions related to the plane of mesh placement, fascial reconstruction, and functional preservation of the abdominal wall. Concern about late complications associated with intraperitoneal contact of the prosthesis has stimulated the development of minimally invasive strategies capable of placing the mesh in extraperitoneal or retromuscular planes, and comparative data already suggest less early pain with eTEP than with IPOM-plus, without differences in recurrence, although with longer operative times (Rasador *et al.*, 2025). This transformation suggests that the future of minimally invasive surgery for recurrent incisional hernia may be less related to IPOM alone and more to the combination of minimally invasive access with established principles of abdominal wall reconstruction, in line with current guideline recommendations (Sanders *et al.*, 2023). However, the technical complexity of these approaches and their learning curve must be considered when interpreting their results and disseminating them into clinical practice.



Long-term evaluation is another critical point. Anatomical recurrence, although a fundamental outcome, does not by itself represent treatment success. Chronic pain, foreign body sensation, bulging, infection, prosthetic complications, reoperations, and quality of life should also be part of the assessment. The analysis of more than four thousand recurrent repairs showed that pain and new recurrence are influenced by the clinical and anatomical characteristics of the patient, and long-term follow-up studies show that mesh-related events may continue to occur years after the operation, while reoperation for recurrence keeps increasing over 15 years (Hoffmann *et al.*, 2021; Kokotovic; Bisgaard; Helgstrand, 2016; Henriksen; Helgstrand, 2024). These findings support the need for studies using standardized definitions and sufficiently long follow-up to capture late complications.

Despite the advances observed, important gaps remain. Much of the evidence specifically focused on recurrent incisional hernias derives from retrospective studies, series from specialized centres, and registry analyses, whereas investigations on IPOM-plus and more recent minimally invasive techniques frequently include primary ventral and incisional hernias together (Köckerling, 2019; Zhuang, 2026). There are also substantial variations in defect size, number of previous recurrences, type and position of the mesh, fixation method, fascial closure, and duration of follow-up. Prospective multicentre studies, with standardized anatomical characterization and assessment of patient-centred outcomes, are needed to determine which subgroups actually benefit from each strategy and to establish the role of new minimally invasive reconstructions in the treatment of recurrent incisional hernia.

## **5- CONCLUSIONS**

The evidence synthesized in this review shows that the laparoscopic approach is a relevant alternative in the treatment of recurrent incisional hernia, especially in appropriately selected patients and when performed by teams experienced in abdominal wall surgery. The possibility of approaching the defect through a route different from the previously dissected planes, combined with the reduction of certain wound complications and a potentially more favourable postoperative recovery, is an important basis for its use. However, recurrence rates do not show consistent



superiority over open techniques, and the risks associated with adhesiolysis, particularly bowel injury, must be taken into account.

The evolution from conventional IPOM to strategies incorporating fascial closure represents an important change in the principles of laparoscopic repair. Recent evidence suggests that IPOM-plus may reduce recurrence, seroma, and bulging in populations with ventral and incisional hernias, reinforcing the importance of anatomical restoration of the abdominal wall. At the same time, the development of minimally invasive extraperitoneal and retromuscular approaches shows a trend toward integrating the benefits of reduced access with the principles of fascial reconstruction and prosthetic positioning outside the peritoneal cavity.

Long-term results reinforce that surgical success should be assessed in a multidimensional manner. In addition to the absence of new recurrence, chronic pain, mesh-related complications, need for reoperation, abdominal wall function, and quality of life should be considered. In this sense, factors related to the patient, the anatomy of the defect, previous operations, and the experience of the surgeon are probably as important as the isolated choice between open and laparoscopic access.

It is concluded that the laparoscopic approach remains an important tool in the treatment of recurrent incisional hernia, but its use should be part of an individualized plan for abdominal wall reconstruction. Advances in fascial closure techniques and in minimally invasive extraperitoneal access broaden the therapeutic possibilities, although prospective multicentre studies, direct comparisons between contemporary techniques, and prolonged follow-up are needed to establish standardized strategies and identify the patients who benefit most from each repair modality.

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