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REVISION

Fascial dehiscence after Laparotomy: Risk factors and closure strategies

Deiscência fascial após Laparotomia: Fatores de risco e estratégias de fechamento

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Abstract

Fascial dehiscence after laparotomy is an early failure of abdominal wall closure that can progress to evisceration and require urgent reoperation. Prevention depends on tissue quality, systemic illness, infection, mechanical loading, and technique. This narrative review examines clinical risk factors, prediction models, primary fascial closure, reinforcement strategies, and management after disruption. Targeted searches of PubMed and relevant professional guidance available in November 2026 identified observational cohorts, risk-model studies, randomized trials, and recommendations concerning abdominal wall closure. Results were synthesized descriptively without a new meta-analysis. Established predictors include emergency surgery, infection, pulmonary disease and

coughing, ascites, anemia, and other markers of impaired healing, but the predictive value of individual factors varies across populations. Imaging studies suggest associations with sarcopenia and rectus diastasis without validated intervention thresholds. Continuous small-bites closure with slowly absorbable suture is supported principally by elective midline laparotomy evidence, particularly for prevention of incisional hernia. Emergency-laparotomy trials provide less certain comparisons, and absence of a significant difference between techniques should not be interpreted as equivalence. Prophylactic mesh reduced early fascial dehiscence in one high-risk emergency trial but increased selected wound complications, while a later under-recruited trial did not establish a benefit of retrorectus mesh over standardized small-stitch closure. Repair evidence remains predominantly observational. Evisceration, sepsis, and suspected intra-abdominal complications require prompt surgical assessment, with reconstruction adapted to fascial viability, contamination, tension, and physiological tolerance. Prevention should combine risk recognition, reliable closure technique, infection and nutritional care, and postoperative surveillance, while distinguishing early fascial failure from long-term incisional hernia.
Keywords: Laparotomy; Surgical Wound Dehiscence; Abdominal Wall; Surgical Mesh.

Resumo

A deiscência fascial após laparotomia pode evoluir para evisceração e reoperação urgente. Sua prevenção envolve qualidade tecidual, doença sistêmica, infecção, estresse mecânico e técnica operatória. Esta revisão narrativa examina fatores de risco, modelos preditivos, fechamento fascial primário, estratégias de reforço e tratamento após ruptura. Buscas no PubMed e diretrizes consultadas em novembro de 2026 identificaram coortes, modelos de risco e ensaios randomizados. Os resultados foram sintetizados descritivamente, sem nova metanálise. Preditores incluem cirurgia de emergência, infecção, doença pulmonar e tosse, ascite, anemia e outros marcadores de cicatrização comprometida, cuja relevância varia entre populações. Estudos com tomografia apontam associações adicionais com sarcopenia e diástase dos músculos retos, sem estabelecer limiares universais para intervenção. A sutura contínua com pequenas mordidas e fio lentamente absorvível possui evidências principalmente em laparotomias medianas eletivas, sobretudo para prevenção de hérnia incisional. Ensaios em cirurgias de emergência fornecem comparações menos precisas, e ausência de diferença estatisticamente significativa não demonstra equivalência. Um ensaio de emergência em pacientes de alto risco identificou redução da deiscência precoce com tela profilática, mas aumento de determinadas complicações da ferida. Outro ensaio, com recrutamento insuficiente, não estabeleceu benefício do reforço retro-retal sobre a sutura com pequenos pontos. As evidências para reparo de deiscência estabelecida permanecem predominantemente observacionais. Evisceração, sepse e suspeita de complicações intra-abdominais exigem avaliação cirúrgica imediata. A reconstrução deve considerar viabilidade fascial, contaminação, tensão e tolerância fisiológica. A prevenção requer identificação de riscos, fechamento consistente, controle da infecção, suporte nutricional e vigilância pós-operatória, distinguindo deiscência precoce de hérnia incisional tardia.
Palavras-chave: Laparotomia; Deiscência da Ferida Operatória; Parede Abdominal; Telas Cirúrgicas.

Introduction

Fascial dehiscence after laparotomy is separation of the musculoaponeurotic closure and must be distinguished from superficial skin breakdown or an intentionally maintained open abdomen. A patient may have a disrupted fascial layer beneath an apparently limited wound abnormality, whereas complete disruption can expose abdominal contents and create an immediate surgical emergency. The distinction determines the need for urgent assessment and defines why evidence about routine wound care cannot substitute for evidence about the integrity and reconstruction of the abdominal wall [1].

The clinical burden extends beyond another operation because disruption often occurs in patients already recovering from major physiological stress. A prospective emergency-laparotomy cohort identified burst abdomen in 24 of 543 patients, with higher overall morbidity, more complications, and a more complex admission than in patients without disruption. Its 4.4% incidence reflects a particular emergency population and should not be presented as the expected rate after every elective or emergency laparotomy [2].

Early fascial disruption and later incisional hernia share determinants but are different endpoints, with different ascertainment methods and clinical consequences. Much of the strongest closure evidence addresses hernia prevention rather than a sufficiently powered comparison of acute burst abdomen. This review critically compares risk assessment and closure evidence from elective and emergency laparotomy to clarify the context-specific applicability of European and American Hernia Societies recommendations, while distinguishing primary prevention from treatment of established dehiscence [3].

Methods

Review design and evidence selection

This narrative review used targeted PubMed searches and professional guidance consulted in November 2026. Search concepts included laparotomy, fascial dehiscence, abdominal wound dehiscence, burst abdomen, small bites, continuous suture, interrupted suture, retention sutures, prophylactic mesh, emergency surgery, incisional hernia, and open abdomen. Original risk-factor studies and randomized trials were prioritized for numerical findings, while society guidance informed the interpretation of operative context and management options.

For this revision, PubMed searches were last verified on 14 November 2026 using “laparotomy AND (“fascial dehiscence” OR “abdominal wound dehiscence” OR “burst abdomen”)”; “laparotomy AND (“small bites” OR “continuous suture” OR “interrupted suture” OR “retention sutures” OR “prophylactic mesh”)”; “(“open abdomen” OR “burst abdomen” OR “abdominal wall closure”) AND guideline [Publication Type]”. No publication-date or language filters were applied to these verification searches. Professional guidance was identified through PubMed and issuing organizations and selected for relevance to adult abdominal wall closure, open or burst abdomen, perioperative nutrition, and surgical-site infection prevention. When reports addressed the same intervention or divergent findings, priority was given to endpoint relevance, correspondence between population and surgical

context, comparator adequacy, and the principal methodological limitations.

Eligibility was based on relevance to adult laparotomy, early fascial failure, closure technique, reinforcement, or repair after disruption. Incisional-hernia prevention studies were retained when they informed closure decisions, but their results were identified as indirect evidence for acute dehiscence, and studies from overlapping institutional cohorts were not treated as independent populations. This was a clinically directed review without an exhaustive systematic screening process, registered protocol, duplicate independent extraction, or formal certainty assessment.

Evidence synthesis and interpretation

The statistical approach was descriptive, preserving the original denominators, treatment allocation, follow-up intervals, endpoint definitions, and adjusted effect measures. Absolute event rates, confidence intervals, and reported associations were considered in relation to baseline risk, trial precision, missing follow-up, competing mortality, and whether the analysis concerned primary closure, reinforcement, or salvage repair. No pooled incidence, new comparative effect, heterogeneity measure, publication-bias analysis, or inferential test was calculated, and observational associations were not interpreted as causal effects of modifying a risk factor.

Results

Tissue failure and the interaction of risks

An older case-control investigation of complete abdominal wound disruption associated dehiscence with emergency surgery, wound infection, intra-abdominal sepsis, hemodynamic instability, hypoalbuminemia, ascites, obesity, and steroid exposure. Its findings support a multifactorial explanation in which tissue purchase and healing capacity are challenged by infection and mechanical stress, rather than a single technical error accounting for every case. The age of the cohort and differences in contemporary perioperative care limit direct numerical application, but the study remains useful for distinguishing a risk-factor association from proof that one preventive intervention will remove that risk [4].

The Rotterdam model was developed from 363 dehiscence cases and 1,089 controls and identified age, sex, chronic pulmonary disease, ascites, jaundice, anemia, emergency surgery, procedure type, postoperative coughing, and wound infection as independent predictors. Its subsequent validation supported risk discrimination, but several inputs become known only after the operation. A score incorporating postoperative infection or coughing therefore cannot be assumed to provide the same information as a wholly preoperative instrument used to decide whether to reinforce the initial closure [5].

Risk prediction and external validity

A large Veterans Affairs investigation developed a dehiscence risk index using 17,044 laparotomies and validated it in another 17,763 operations. Pulmonary disease, pneumonia, emergency procedures, prolonged operation, infection, ventilatory difficulty, and other perioperative features contributed to prediction, illustrating how postoperative events can materially change estimated risk. The historical setting and population composition require caution when applying the index to a different case mix, and a prediction model should not be treated as a randomized demonstration that an intervention benefits every patient above a particular score [6].

An external assessment of the Rotterdam approach in 176 patients found better discrimination for the full score than for a version restricted to preoperative information. The reported areas under the receiver-operating-characteristic curve were 0.79 and 0.64, respectively, demonstrating the loss of information when postoperative variables were removed. These results favor transparent discussion of what a model can predict at the moment of decision rather than using its overall performance to justify a universal preoperative mesh threshold [7].

Body composition and abdominal wall anatomy

A matched emergency-laparotomy study compared 95 burst-abdomen cases with 380 controls and did not find a significant association with its computed-tomography definition of abdominal subcutaneous obesity. Smoking and liver cirrhosis remained associated with disruption in the multivariable analysis, whereas the imaging-based fat category did not. This does not establish that obesity is clinically irrelevant, but it shows that body mass index, regional fat thickness, metabolic health, and abdominal wall mechanics are different exposures that should not be substituted for one another when interpreting risk [8].

In another matched study, sarcopenia defined by a low sex-specific psoas cross-sectional area was associated with burst abdomen after emergency midline laparotomy. The adjusted odds ratio was 2.3, with smoking and cirrhosis also showing associations, despite a standardized small-bites closure technique. The finding identifies a possible marker of vulnerability rather than proving that a particular exercise or nutritional intervention prevents disruption, and the study's imaging threshold should not be assumed to define sarcopenia identically across all surgical populations [9].

A related matched analysis found rectus diastasis associated with disruption, with an adjusted odds ratio of 3.06 and a 95% confidence interval of 1.71–5.47. Diastasis was defined by the investigators using computed-tomography measurements, and the study population underwent a standardized small-bites closure with a minimum 4:1 suture-to-wound ratio. Because these imaging studies originated from related institutional populations and periods, their results should be interpreted as complementary observations rather than three fully independent confirmations that imaging-guided reinforcement improves outcomes [10].

Nutrition and systemic optimization

Nutritional assessment should identify patients whose recent intake, weight loss, disease burden, or prolonged catabolic course warrants intervention before or after surgery. The European Society for Clinical Nutrition and Metabolism guidance favors avoiding unnecessary fasting, restoring oral or enteral nutrition when appropriate, and integrating metabolic management and mobilization into surgical care. These recommendations address broader postoperative risk and should not be represented as a specific randomized proof that albumin replacement, supplementation alone, or a brief delay in emergency surgery will prevent fascial dehiscence [11].

Infection prevention and source control

Surgical-site infection is an important target because it is repeatedly associated with fascial failure and can impair the tissue surrounding sutures. The Centers for Disease Control and Prevention guideline supports evidence-based infection prevention, including appropriate antimicrobial prophylaxis and attention to perioperative physiological measures, while the treatment of an established abdominal

infection requires a separate clinical assessment. Infection prevention is therefore part of a coherent closure strategy, but a reduction in superficial infection should not automatically be presented as an equal reduction in burst abdomen unless that endpoint was directly measured [12].

Principles of primary midline closure

The 2022 European and American Hernia Societies guideline suggests a continuous small--bites technique with a slowly absorbable suture for elective midline laparotomy. The intended approach uses closely spaced fascial bites, typically about 5–9 mm from the edge and approximately 5 mm apart, with a suture-to-wound length ratio of at least 4:1 and without excessive tension. These principles require adaptation to the actual tissue and clinical setting, particularly because severely friable fascia, marked visceral edema, and an abdomen requiring planned re-exploration differ from the elective primary-closure population [3].

The suture-to-wound ratio describes the amount of suture distributed along the incision and cannot guarantee a sound closure if the bites miss viable fascia or strangulate tissue. A randomized study of 737 patients compared short and long stitch lengths while maintaining a ratio of at least 4:1 and found lower infection and incisional-hernia rates with shorter stitches. Only one dehiscence occurred in that trial, so its results support careful technique and longer-term wound integrity without providing a precise estimate of the effect on acute fascial disruption [13].

Evidence from elective small-bites trials

The STITCH trial randomized 560 elective midline-laparotomy patients to 5-mm bites placed every 5 mm or conventional 1-cm bites placed every 1 cm. Among patients assessed at one year, incisional hernia occurred in 35 of 268 patients in the small-bites group and 57 of 277 in the large-bites group, corresponding to approximately 13% and 21%. The benefit is clinically relevant for hernia prevention, but applying the same relative effect to early dehiscence would confuse a later outcome with a rarer acute event for which the trial was not designed to provide comparable precision [14].

Small-bites closure in STITCH involved more stitches and a longer closure time, making implementation a matter of consistent technique rather than simply choosing a different suture package. Training and documentation should therefore address bite placement, spacing, fascial identification, tension, and sufficient suture length, because those components determine whether a nominal small--bites closure resembles the tested intervention. The trial provides a useful operative standard for its population while leaving uncertainty about effect size in contaminated emergency surgery or markedly abnormal fascia [14].

The ESTOIH trial randomized 425 patients to short- or long-stitch elective closure using a particular ultra-long-term absorbable material. At one year, incisional hernia occurred in seven of 210 assessed short-stitch patients and 13 of 204 long-stitch patients, a difference that was not statistically significant. This result should be interpreted alongside the lower event rates, the material and technique studied, and the confidence interval, rather than as proof of equivalence or as evidence that all small-bites trials demonstrate an identical magnitude of benefit [15].

Continuous and interrupted closure in emergencies

The CONTINT emergency-laparotomy trial randomized 124 patients and analyzed 119 who underwent surgery, comparing continuous slowly absorbable closure with an interrupted strategy

using a different absorption profile. The composite endpoint of early burst abdomen or later incisional hernia occurred in 27.1% and 30.0%, without a significant difference, and the trial was stopped after an interim assessment for futility. Because allocation compared operative packages rather than stitch continuity alone and the study was exploratory with limited precision, the findings do not establish universal equivalence between continuous and interrupted sutures in every emergency setting [16].

The individual CONTINT outcomes and the composite must also be distinguished, because a result combining early disruption with later hernia can obscure differences in timing and clinical consequence. Interrupted closure required more operative time, while no clear advantage was demonstrated for the primary endpoint or its individual components. A practical choice should consequently consider tissue condition, the need for reproducible placement, and the evidence for the complete closure strategy rather than assuming that interrupted stitches intrinsically prevent every instance of postoperative failure [16].

Retention sutures

A randomized high-risk study allocated 300 patients to routine fascial closure with or without additional retention sutures traversing several abdominal wall layers. After accounting for early mortality, the investigators reported six dehiscences in the retention group and 20 in the control group, but the comparator used a running nylon closure and other outcomes were less definitive. The finding supports possible selective benefit in that setting while remaining insufficient to establish retention sutures as a routine replacement for contemporary standardized closure, especially when patient discomfort and local tissue effects must also be considered [17].

Prophylactic mesh in elective surgery

The PRIMA trial studied high-risk elective midline laparotomy in patients with an abdominal aortic aneurysm or a body mass index of at least 27 kg/m². At two years, incisional hernia was reported in approximately 30% after suture alone, 13% after onlay mesh, and 18% after sublay mesh, with more seroma in the onlay group. These findings support consideration of reinforcement for selected patients at risk of later hernia, but their population, treatment planes, and endpoint do not directly establish the benefit–harm balance of prophylactic mesh for acute dehiscence in a septic emergency laparotomy [18].

Prophylactic mesh in emergency surgery

A Brazilian randomized trial directly addressed early fascial dehiscence in high-risk emergency laparotomy, with 115 analyzed patients receiving standardized running closure alone or the same closure reinforced with onlay polypropylene mesh. Dehiscence occurred in seven of 52 suture-only patients and none of 63 mesh recipients within 30 days, while seroma, nonhealing wounds, and selected infection outcomes were more frequent with mesh. This is direct evidence for the desired early endpoint, but the single-center setting, sample size, risk selection, and wound morbidity argue for selective implementation rather than a claim that every emergency laparotomy should receive mesh [19].

A later multicenter trial compared prophylactic retrorectus mesh with standardized 4:1 small-stitch closure after emergency laparotomy, but recruitment difficulties led to premature termination. Although 109 patients were randomized, only 72 received the allocated intervention, and the two-year study did not establish a reduction in incisional hernia, while mesh-related complications included

an event requiring removal. The low event count and incomplete recruitment prevent a definitive effectiveness conclusion, and the different mesh plane, comparator quality, and long-term endpoint mean that this trial neither reproduces nor directly refutes the earlier onlay dehiscence trial [20].

Discussion

Choosing a reinforcement strategy

Mesh reinforcement adds an implant, a dissection plane, and possible wound or device-specific complications, so the decision must account for baseline risk and the conditions in which the device will remain. PRIMA's differing seroma rates between planes show that reinforcement cannot be assessed as a single uniform intervention, even when the intended benefit is similar. The relevant question is whether a particular material and position add a worthwhile benefit to a well-executed closure for that patient's risk and contamination profile, rather than whether mesh is categorically beneficial or categorically unsafe [18].

Recognition and initial assessment of established disruption

An established burst abdomen requires prompt surgical assessment to determine fascial integrity, the presence of evisceration, associated infection, and whether an intra-abdominal complication contributed to failure. Resuscitation and protection of exposed viscera take priority when disruption is complete, while imaging may help define an uncertain diagnosis in a stable patient but should not delay intervention for obvious evisceration or uncontrolled sepsis. This is a different clinical problem from prophylaxis, and the limited evidence recognized in the European Hernia Society guidance supports decisions based on physiology, tissue viability, contamination, and the feasibility of safe reconstruction [1].

Repair after fascial dehiscence

A single-center study compared a standardized repair strategy with a historical approach in 186 patients with burst abdomen. Redehiscence decreased from 12 of 92 historical patients to four of 94 patients treated after standardization, using a slowly absorbable running repair with large tissue purchases placed in closely spaced steps. This observational comparison suggests value in a consistent salvage technique but does not establish that its larger bites should replace elective small-bites closure, because a disrupted postoperative abdominal wall and an initially intact fascial incision are different mechanical and biological settings [21].

Another retrospective investigation found an association between interrupted repair and less recurrent disruption, among 108 patients eligible for recurrence analysis after operative revision. Its treatment choices were not randomized, the number of recurrences was small, and some estimates were imprecise, making confounding by the condition of the fascia and the surgeon's selection difficult to exclude. Considered with the standardized-running-repair study, it demonstrates the limits of the salvage literature rather than a reliable basis for declaring either interrupted or continuous reclosure universally superior [22].

A prospective single-center case series compared suture-only repair in 38 patients with mesh-augmented repair in 29 patients after burst abdomen. One mesh-treated patient required explantation, and the overall 90-day mortality was substantial and comparable between the treatment groups,

while selection for reinforcement followed a clinical protocol. The results provide useful short-term feasibility information in selected patients, but they cannot establish a causal mortality benefit or determine whether mesh prevents long-term incisional hernia after salvage repair [23].

When immediate fascial closure is unsafe

Marked visceral edema, unresolved source control, physiological instability, or a need for planned reassessment may make immediate tight fascial approximation inappropriate. The World Society of Emergency Surgery guidance describes an open-abdomen strategy as a selective intervention with important complications, rather than a routine response to every difficult closure. If used, temporary management should support eventual fascia-to-fascia closure as soon as physiology permits, while avoiding the assumption that achieving immediate skin coverage is equivalent to restoring a functional abdominal wall [24].

Open-abdomen management and planned delayed closure also require explicit protection against ongoing fluid and protein losses, bowel exposure, and complications associated with prolonged inability to close the fascia. The decision to defer definitive closure should therefore include a strategy for re-evaluation and progression toward closure, rather than an indefinite temporary dressing without a reconstructive objective. These principles address patients whose condition prevents safe primary approximation and should not be confused with evidence supporting routine prophylactic separation or an unnecessarily tensioned repair [24].

Surveillance and research priorities

A postoperative patient with persistent infection, coughing, distension, or an unexpectedly complicated course warrants reassessment of the wound and the wider abdominal problem. The prospective emergency-laparotomy cohort shows that burst abdomen occurs within a broader burden of morbidity, making early recognition and coordinated treatment more relevant than treating the wound as an isolated mechanical defect. Future trials should distinguish acute fascial failure from later hernia, use contemporary standardized comparators, report contamination and mesh plane, and account for competing mortality and loss to follow-up [2].

This review is limited by its targeted PubMed search and nonexhaustive publication selection. No formal assessment of the certainty of the evidence was performed. These features may restrict coverage and the strength and generalizability of the narrative conclusions.

Table 1 - *Original studies informing the review Primary study reports are listed; guidance is cited in the text. Shared-cohort reports are separate analyses, not independent populations.*

Reference	Population / Intervention / Comparison	Outcomes	Main conclusions
Predictors and risk stratification			
Kvist et al (2024).[2]	Prospective emergency-laparotomy cohort; 543 patients.	Burst abdomen in 24 patients; greater morbidity.	Incidence is population-specific.
Pavlidis et al (2001).[4]	Historical case-control investigation of complete abdominal wound disruption.	Infection, systemic illness, and operative risk associations.	Associations do not establish preventive treatment effects.
van Ramshorst et al (2010).[5]	Rotterdam model; 363 cases and 1,089 controls, followed by validation.	Multiple patient and perioperative predictors.	Several predictors are postoperative.
Webster et al (2003).[6]	Veterans Affairs cohorts; 17,044 development and 17,763 validation laparotomies.	Perioperative dehiscence prediction index.	Transportability requires assessment.
Gómez Díaz et al (2014).[7]	External model assessment; 176 midline-laparotomy patients.	Preoperative-only discrimination was weaker than the complete score.	Decision timing affects predictive usefulness.
Kvist et al (2022).[8]	Matched study; 95 cases and 380 controls.	Subcutaneous obesity category was not significantly associated.	Different obesity measures are not interchangeable.
Jensen et al (2022).[9]	Matched study; 67 cases and 268 controls.	Imaging-defined sarcopenia associated with disruption.	Does not prove an intervention prevents failure.
Kvist et al (2023).[10]	Matched study; 93 cases and 372 controls.	Rectus diastasis associated with disruption.	Related institutional populations may overlap.

Reference	Population / Intervention / Comparison	Outcomes	Main conclusions
Primary prevention			
Millbourn et al (2009).[13]	Randomized short- versus long-stitch trial; 737 patients.	Less infection and hernia with short stitches; one dehiscence overall.	Acute-failure estimate is imprecise.
Deerenberg et al (2015).[14]	STITCH; 560 elective patients randomized.	One-year hernia approximately 13% versus 21%.	Primary evidence concerns hernia prevention.
Fortelny et al (2022).[15]	ESTOIH; 425 elective patients randomized.	Hernia seven of 210 versus 13 of 204 assessed patients.	Nonsignificance does not establish equivalence.
Polychronidis et al (2023).[16]	CONTINT; 124 randomized, 119 operated and analyzed.	Composite outcome 27.1% versus 30.0%.	Limited precision; strategies used different materials.
Khorgami et al (2013).[17]	Retention-suture trial; 300 high-risk patients randomized.	Six versus 20 dehiscences after early-mortality exclusions.	Comparator differs from modern standardized closure.
Jairam et al (2017).[18]	PRIMA; 480 high-risk elective patients analyzed.	Lower two-year hernia with reinforcement; more onlay seroma.	Not a direct early-dehiscence trial.
Lima et al (2020).[19]	High-risk emergency trial; 52 suture-only and 63 onlay-mesh patients.	Seven versus zero early dehiscences; more selected wound events.	Direct but limited early-failure evidence.
Mäkäräinen et al (2025).[20]	Emergency retrorectus-mesh trial; 109 randomized, 72 received allocation.	Benefit over small-stitch closure not established.	Under-recruitment and device complications matter.

Reference	Population / Intervention / Comparison	Outcomes	Main conclusions
Treatment of established fascial dehiscence			
Jensen et al (2021).[21]	Historical comparison; 92 previous and 94 standardized salvage repairs.	Redehiscence 12 versus four patients.	Salvage findings do not define elective bite size.
Mehdorn et al (2021).[22]	Retrospective repair study; 108 patients eligible for recurrence analysis.	Interrupted repair associated with fewer recurrences.	Selection and small event counts limit causal inference.
Jensen et al (2025).[23]	Prospective salvage series; 38 suture-only and 29 mesh repairs.	One mesh explantation; comparable short-term mortality.	Long-term preventive effectiveness remains unknown.

Legend: CONTINT, trial comparing continuous and interrupted abdominal wall closure; ESTOIH, trial comparing short- and long-stitch abdominal closure; PRIMA, trial evaluating prophylactic mesh reinforcement; STITCH, trial comparing small-bites and large-bites fascial closure.

Conclusion

Prevention of fascial dehiscence after laparotomy requires recognition of systemic vulnerability together with consistent approximation of viable fascia, infection prevention, and appropriate perioperative support. Small-bites continuous closure has its strongest evidence in elective midline surgery and incisional-hernia prevention, while emergency reinforcement and salvage repair require more selective interpretation of smaller and heterogeneous studies. An established disruption demands prompt surgical assessment and a reconstruction strategy based on tissue viability, contamination, tension, and physiological tolerance, with early dehiscence and long-term hernia maintained as separate outcomes throughout decision-making.

Declaration of Artificial Intelligence Use

OpenEvidence was used to support literature searches, the organization of scientific evidence, and the preparation and revision of the manuscript. The tool was not credited with authorship and was not used to fabricate data, results, or references. All scientific content, references, and interpretations were critically reviewed and validated by the authors, who approved the final submitted version and assume full responsibility for the integrity and accuracy of the work.

Conflicts of Interest

The authors declare no conflicts of interest.

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Author Contributions

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References

1. López-Cano M, García-Alamino JM, Antoniou SA, Bennet D, Dietz UA, Ferreira F, et al. EHS clinical guidelines on the management of the abdominal wall in the context of the open or burst abdomen. Hernia. 2018;22(6):921-939. doi: 10.1007/s10029-018-1818-9.
2. Kvist M, Jensen TK, Snitkjær C, Burcharth J. The clinical consequences of burst abdomen after emergency midline laparotomy: a prospective, observational cohort study. Hernia. 2024;28(5):1861-1870. doi: 10.1007/s10029-024-03104-x.
3. Deerenberg EB, Henriksen NA, Antoniou GA, Antoniou SA, Bramer WM, Fischer JP, et al. Updated guideline for closure of abdominal wall incisions from the European and American Hernia Societies. Br J Surg. 2022;109(12):1239-1250. doi: 10.1093/bjs/znac302.
4. Pavlidis TE, Galatianos IN, Papaziogas BT, Lazaridis CN, Atmatzidis KS, Makris JG, et al. Complete dehiscence of the abdominal wound and incriminating factors. Eur J Surg. 2001;167(5):351-4; discussion 355. doi: 10.1080/110241501750215221.
5. van Ramshorst GH, Nieuwenhuizen J, Hop WC, Arends P, Boom J, Jeekel J, et al. Abdominal wound dehiscence in adults: development and validation of a risk model. World J Surg. 2010;34(1):20-7. doi: 10.1007/s00268-009-0277-y.
6. Webster C, Neumayer L, Smout R, Horn S, Daley J, Henderson W, et al. Prognostic models of abdominal wound dehiscence after laparotomy. J Surg Res. 2003;109(2):130-7. doi: 10.1016/s0022-4804(02)00097-5.
7. Gómez Díaz CJ, Rebasa Cladera P, Navarro Soto S, Hidalgo Rosas JM, Luna Aufroy A, Montmany Vioque S, et al. [Validation of abdominal wound dehiscence's risk model]. Cir Esp. 2014;92(2):114-9. doi: 10.1016/j.ciresp.2012.12.008.
8. Kvist M, Burcharth J, Nielsen YW, Jensen TK. Abdominal subcutaneous obesity and the risk of burst abdomen: a matched case-control study. Langenbecks Arch Surg. 2022;407(8):3719-3726. doi: 10.1007/s00423-022-02682-7.
9. Jensen TK, Nielsen YW, Gögenur I, Tolstrup MB. "Sarcopenia is associated with increased risk of burst abdomen after emergency midline laparotomy: a matched case-control study". Eur J Trauma Emerg Surg. 2022;48(5):4189-4196. doi: 10.1007/s00068-022-01958-3.
10. Kvist M, Henriksen NA, Burcharth J, Nielsen YW, Jensen TK. Rectus diastasis increases risk of burst abdomen in emergency midline laparotomies: a matched case-control study. Hernia. 2023;27(2):353-361. doi: 10.1007/s10029-022-02719-2.
11. Weimann A, Braga M, Carli F, Higashiguchi T, Hübner M, Klek S, et al. ESPEN practical guideline: Clinical nutrition in surgery. Clin Nutr. 2021;40(7):4745-4761. doi: 10.1016/j.clnu.2021.07.012.
12. Berríos-Torres SI, Umscheid CA, Bratzler DW, Leas B, Stone EC, Kelz RR, et al. Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection, 2017. JAMA Surg. 2017;152(8):784-791. doi: 10.1001/jamasurg.2017.0904.
13. Millbourn D, Cengiz Y, Israelsson LA. Effect of stitch length on wound complications after closure of midline incisions: a randomized controlled trial. Arch Surg. 2009;144(11):1056-9. doi: 10.1001/archsurg.2009.189.

14. Deerenberg EB, Harlaar JJ, Steyerberg EW, Lont HE, van Doorn HC, Heisterkamp J, et al. Small bites versus large bites for closure of abdominal midline incisions (STITCH): a double-blind, multicentre, randomised controlled trial. Lancet. 2015;386(10000):1254-1260. doi: 10.1016/S0140-6736(15)60459-7.

15. Fortelny RH, Andrade D, Schirren M, Baumann P, Riedl S, Reisensohn C, et al. Effects of the short stitch technique for midline abdominal closure on incisional hernia (ESTOIH): randomized clinical trial. Br J Surg. 2022;109(9):839-845. doi: 10.1093/bjs/znac194.

16. Polychronidis G, Rahbari NN, Bruckner T, Sander A, Sommer F, Usta S, et al. Continuous versus interrupted abdominal wall closure after emergency midline laparotomy: CONTINT: a randomized controlled trial [NCT00544583]. World J Emerg Surg. 2023;18(1):51. doi: 10.1186/s13017-023-00517-4.

17. Khorgami Z, Shoar S, Laghaie B, Aminian A, Hosseini Araghi N, Soroush A. Prophylactic retention sutures in midline laparotomy in high-risk patients for wound dehiscence: a randomized controlled trial. J Surg Res. 2013;180(2):238-43. doi: 10.1016/j.jss.2012.05.012.

18. Jairam AP, Timmermans L, Eker HH, Pierik REGJM, van Klaveren D, Steyerberg EW, et al. Prevention of incisional hernia with prophylactic onlay and sublay mesh reinforcement versus primary suture only in midline laparotomies (PRIMA): 2-year follow-up of a multicentre, double-blind, randomised controlled trial. Lancet. 2017;390(10094):567-576. doi: 10.1016/S0140-6736(17)31332-6.

19. Lima HVG, Rasslan R, Novo FCF, Lima TMA, Damous SHB, Bernini CO, et al. Prevention of Fascial Dehiscence with Onlay Prophylactic Mesh in Emergency Laparotomy: A Randomized Clinical Trial. J Am Coll Surg. 2020;230(1):76-87. doi: 10.1016/j.jamcollsurg.2019.09.010.

20. Mäkäräinen E, Tolonen M, Sallinen V, Mentula P, Leppäniemi A, Ahonen M, et al. Prophylactic Retrorectus Mesh Versus Small-Stitch Closure After Emergency Midline Laparotomy: 2-Year Results of a Randomized Controlled Trial. J Abdom Wall Surg. 2025;4:15500. doi: 10.3389/jaws.2025.15500.

21. Jensen TK, Gögenur I, Tolstrup MB. Standardized Surgical Primary Repair for Burst Abdomen Reduces the Risk of Fascial Redehiscence. Ann Surg. 2021;274(6):e1115-e1118. doi: 10.1097/SLA.0000000000003766.

22. Mehdorn M, Groos L, Kassahun W, Jansen-Winkeln B, Gockel I, Moulla Y. Interrupted sutures prevent recurrent abdominal fascial dehiscence: a comparative retrospective single center cohort analysis of risk factors of burst abdomen and its recurrence as well as surgical repair techniques. BMC Surg. 2021;21(1):208. doi: 10.1186/s12893-021-01219-x.

23. Jensen TK, Kvist M, Damkjær MB, Burcharth J. Short-term outcomes in mesh versus suture-only treatment of burst abdomen: a case-series from a university hospital. Hernia. 2025;29(1):100. doi: 10.1007/s10029-025-03279-x.

24. Coccolini F, Roberts D, Ansaloni L, Ivatury R, Gamberini E, Kluger Y, et al. The open abdomen in trauma and non-trauma patients: WSES guidelines. World J Emerg Surg. 2018;13:7. doi: 10.1186/s13017-018-0167-4.

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