# Abdominal Hematoma After IPOM Repair of an Incisional Hernia Mimicking a Recurrence: A Case Report on the Role of Diagnostic Laparoscopy

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Vinicio Rizza[1], Arcangelo Barbonetti[2], Andrea Ciarrocchi[1], Renato Pietroletti[3]

[1]General Surgery Unit, Surgical Department, S.S. Maria Dello Splendore Hospital, 64021 Giulianova, Italy
[2]Andrology Unit, Department of Clinical Medicine, Life, Health and Environmental Sciences, University of L'Aquila, 64027 L'Aquila, Italy
[3]Department of Applied Clinical & Biotechnological Sciences, Surgical Coloproctology Hospital Val Vibrata, University of L'Aquila, 64027 Sant'Omero, Italy

AIM: Incisional hernia (IH) and especially postoperative recurrences of IH persist as a common and extremely costly problem to treat and manage. In case of suspected recurrence, radiological studies are frequently misleading and/or inconclusive. With our case report, we aim to define the diagnostic and therapeutic role of a diagnostic laparoscopic approach.
CASE PRESENTATION: We report a case of a pseudo-recurrence of a ventral IH in a patient who had undergone IH Intraperitoneal Onlay Mesh (IPOM) repair. Recurrent IH was suspected due to the occurrence of an abdominal bulge and the findings of the abdominal wall Computed Tomography (CT) scan. CT showed an abdominal wall mass over the fascia containing a fluid-air level at the site of the mesh, highly suggestive of recurrent IH with bowel loop entrapment. At diagnostic laparoscopy, the prosthesis was shown to be well-positioned and no recurrent IH was detected. Conversely, a subcutaneous encapsulated hematoma was identified at the abdominal incision over the bulge.
RESULTS: The patient experienced a fast and smooth postoperative recovery and was discharged symptom-free in good general conditions.
CONCLUSIONS: In cases of suspected recurrent IH and in the presence of inconclusive imaging studies, diagnostic laparoscopy can play an important role, ensuring a minimally invasive approach and avoiding overtreatment.

**Keywords:** case report; re-laparoscopy; incisional hernia; ventral hernia; recurrence

## Introduction

Incisional hernia (IH) is a common and extremely costly problem to treat and manage. Its incidence ranges from 3.8% to 15% and it has been estimated recently that at least 348,000 IH repairs occur annually [1]. Rios-Diaz *et al*. [2] showed that epidemiologic and cost analysis for the IH in the USA between 2008 and 2018 averaged $47.9 billion and $1.7 billion/year for all abdominal surgeries and incisional hernia repair, respectively. In a multicentre cost analysis evaluating the economic burden of incisional ventral hernia repair, Gillion *et al*. [3] reported that the mean cost for an incisional ventral hernia repair in France in 2011 was estimated at €6451, ranging from €4731 for unemployed patients to €10,107 for employed patients whose indirect costs (€5376) were slightly higher than direct costs. Furthermore, patients with IH experience a significant reduction in quality of life, affecting body image, mood, and social and physical ability [1].

Recurrence rates following laparoscopic IH repair range from 0% to 7.7% as reported in the literature [4]. Clinically, recurrence is typically suspected when a bulge reappears at the previous surgical site. Diagnostic challenges may arise due to other possible causes of abdominal wall masses such as abscess, hematoma and lipoma. While Ultrasound (US), Computed Tomography (CT), and MRI are standard diagnostic tools, ruling out IH recurrence remains the primary objective [5].

In this report, we discuss the diagnosis of a subcutaneous hematoma in a patient previously treated with laparoscopic IH repair. The correct diagnosis was established via laparoscopy after a "false positive" CT scan. An organized hematoma with an air-fluid level was identified, while the prosthesis remained intact and correctly positioned. This case has been reported in accordance with the Case Report (CARE) Guidelines to ensure the accuracy and completeness of the report (**Supplementary Material**).

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*Correspondence to: Renato Pietroletti, Department of Applied Clinical & Biotechnological Sciences, Surgical Coloproctology Hospital Val Vibrata, University of L'Aquila, 64027 Sant'Omero, Italy (e-mail: renato.pietroletti@univaq.it).*
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**Fig. 1. Computed Tomography (CT) scan showing the suspected, recurrent incisional hernia (IH) (arrow).**

**Fig. 2. Laparoscopic view showing the well-positioned prosthesis.** No defects of the abdominal wall are evident.

**Fig. 3. Encapsulated hematoma in the subcutaneous tissue of the peri-umbilical area.**

## Case Report

A 74-year-old overweight, body mass index (BMI) 28 kg/m$^2$, Caucasian male patient presented with periumbilical pain in the midline without associated vomiting, nausea, fever, or diarrhea. This raised suspicion of IH recurrence. His past medical history included abdominal aortic aneurysm and diabetes mellitus, arterial hypertension, chronic kidney failure and hypertensive cardiomyopathy. His past surgical history included abdominal aortic aneurysm prosthetic repair, IH surgery and hemorrhoidectomy. IH was treated with Intraperitoneal Onlay Mesh (IPOM) surgery. The IPOM had been performed approximately one month before our evaluation.

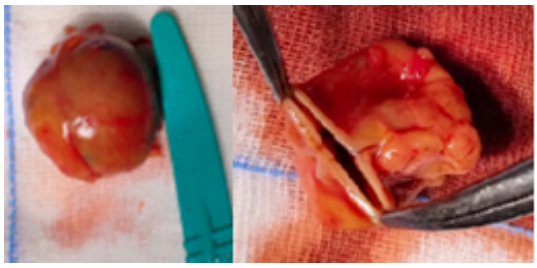

**Fig. 4. Encapsulated hematoma after emptying blood clots.**

Abdominal physical examination revealed a 20 cm surgical scar in the midline of the abdomen and a painful mass measuring approximately 5 cm in diameter, protruding from the left periumbilical region. The mass was detected by the patient 20 days after the elective operation performed for IH. The mass was elastic in consistency, fixed on the deep planes, mobile in the subcutaneous space, had well-defined margins and was irreducible in the abdominal cavity. The Valsalva maneuver was negative, and no other significant features were detected on clinical examination.

After an abdominal ultrasound detected a fluid collection over the abdominal fascia, an abdominal Computed Tomography (CT) scan was performed without contrast to study the abdominal wall. The CT scan suggested a recurrent ventral IH with a 2 cm abdominal wall defect and the involvement of an intestinal loop, as the content of the mass showed a fluid-air level inside (Fig. 1). Thus, given the suspicion of recurrent IH based on clinical and radiological findings, we opted for an immediate surgical approach without requiring further radiological examinations.

According to the literature, second-look laparoscopy is a minimally invasive, technically simple procedure performed for both diagnostic and therapeutic purposes; therefore, intending to check the site of the previous operation and treat the possible IH recurrence, we performed a laparoscopic approach using one 5 mm trocar in the right iliac fossa by means of the open laparoscopy technique and a 5 mm trocar in the hypogastric region [6–8]. Laparoscopic exploration showed adhesions between the abdominal wall and the bowel. After dissection of multiple adhesions, a well-positioned and fixed mesh from the previous IPOM operation was detected with no evidence of IH recurrence (Fig. 2).

Thus, the abdominal skin was incised over the bulge, and an encapsulated hematoma was identified. The lesion was removed intact with healthy tissue. This hematoma mim-

icked an intestinal loop, as gas leakage and blood clots were detected upon opening. The histological examination confirmed the diagnosis of hematoma (Figs. 3,4). The surgical specimen was described as an encapsulated collection with a fibrotic capsule containing clotted blood typical of a subcutaneous organized hematoma.

The postoperative outcome was excellent with early resolution of pain from the first postoperative day and an early resumption of physical activity with no signs of recurrence in the short and medium term. The suspected etiology of the hematoma was traced back to the insertion of the Reverdin needle used for the correct centering and positioning of the prosthesis previously used for the correction of the IH with IPOM.

## Discussion

Imaging studies are performed for the evaluation of palpable abdominal wall masses and mass-like lesions. Knowledge of common abdominal wall abnormalities and the patient's clinical history guides the radiologist in making an accurate diagnosis or differential diagnosis. The American College of Radiology (ACR) Appropriateness Criteria for palpable abdominal masses includes two variants: one set of criteria for palpable abdominal masses suspected to be intra-abdominal neoplasms, and a separate set of criteria for masses in the abdominal wall. In case of fluid collections after trauma or surgery, a CT scan should be considered. The Appropriateness Criteria suggest an initial radiographic evaluation, or US can be used for lesions that are difficult to evaluate with radiography [5,9].

CT scan of the abdominal wall offers surgeons the opportunity to identify, quantify, and integrate routine clinical and morphological features of ventral and incisional hernias into preoperative decision-making. In cases of suspected abdominal wall hernia, such as umbilical, ventral, incisional, lumbar, or spigelian, the American College of Radiology considers a CT scan of the abdomen and pelvis without intravenous contrast appropriate as the initial imaging study [10]. CT is also the imaging modality of choice for the assessment of complications of irreducible hernias when there is clinical suspicion of strangulation.

In the study by Shaish *et al*. [11], false-negatives (faculty, 13% to 19%; residents, 15% to 27%) and false-positives (faculty, 10% to 21%; residents, 8% to 19%) were commonly reported in unenhanced CT scans among radiologists. These results may be due to the low accuracy of CT scan imaging without contrast enhancement. Rosenkrantz AB and Bansal NK [12] indicated that 8.3% of diagnostic errors were consequent to erroneous abdominal wall CT imaging.

In our case, the suspected recurrent IH detected on CT scan, with bowel loop entrapment, was not sustained by the relatively silent clinical picture since the patient complained only of mild somatic abdominal pain with no sign of visceral involvement. However, in view of the radiologic and clinical features, and considering the complex medical picture of the patient, we decided on an early surgical approach. Laparotomy has been the standard approach in cases of reoperations in patients affected by postoperative surgical complications, but nowadays the adoption of minimally invasive surgery has increased significantly, even for emergencies. It has been reported that in about 60–80% of all diagnostic laparoscopies, a switch to laparotomy is not required, and thus the treatment can be accomplished by means of the same minimally invasive technique [8]. It has been proven for some time that the variable and total costs and length of stay were significantly lower in the population of patients who underwent diagnostic laparoscopy as compared to diagnostic laparotomy. The rate of negative or non-therapeutic laparotomy was also significantly reduced when compared to the rate identified during the pre-laparoscopic era. Laparoscopy resulted in an overall savings of $1059 per laparoscopy performed when compared to laparotomy [13].

According to the literature, second-look laparoscopy is a minimally invasive, technically simple procedure that is performed for diagnostic as well as therapeutic purposes [6]. Diagnostic laparoscopy can still be recommended in patients with uncertain diagnoses and abdominal pain because it allows direct visualization of the affected area, unlike ultrasound and CT [7,8,14]. Re-laparoscopic surgical management of surgical complications is not to be disregarded, as suggested by the present case. A laparoscopic "second look" can represent an effective tool after either open or laparoscopic surgery for the management of postoperative complications, as it may avoid diagnostic delay and further laparotomy with related morbidity due to the worsening of the clinical picture [10,14].

In our case, the presence of a painful abdominal bulge after IH repair and the strong suspicion of IH recurrence suggested by the clinical picture and CT scan (the latter showing involvement of a bowel loop) did not warrant further radiological examinations and imposed an urgent surgical approach. Laparoscopic "second look" allowed the correct diagnosis to be carried out safely, with full control of the anatomical situation. Conversely, a laparotomy could have damaged the correctly positioned mesh, probably causing complications such as infection of the prosthesis and exposing the patient to further recurrence. Our surgical strategy shows that in case of doubtful imaging studies of recurrent IH, a laparoscopic approach is safe and feasible, regardless of whether the previous operation was open or minimally invasive.

## Conclusions

Imaging studies maintain their extreme validity for the study of the abdominal wall, but in case of doubtful results, problems in-treatment and medico-legal issues may arise. Therefore, diagnostic laparoscopy can play an important role in establishing the correct diagnosis, ensuring a

minimally invasive approach, and avoiding overtreatment. Several recent radiological technical innovations have improved the diagnosis of abdominal wall diseases, but in doubtful cases, a second-look laparoscopy remains a feasible and safe approach. It allows direct visualization of the defect and the position of the abdominal wall prostheses. As shown in this clinical case, our approach was successful, highlighting its safety and feasibility. Our case report shows the efficacy of laparoscopic surgery for the correct diagnosis when imaging studies are doubtful, providing a minimally invasive approach.

## Availability of Data and Materials

The data used and analyzed during the current study are available from the corresponding author on reasonable request.

## Author Contributions

VR, AC and RP contributed to the clinical work. VR, RP and AC performed the surgery and follow-up. AB and AC analysed the data from patients' charts and screened the literature. VR and AC drafted the manuscript. All authors contributed to the critical revision of the manuscript for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

## Ethics Approval and Consent to Participate

The study was conducted on data collected in routine clinical practice and was fully anonymised for the analysis. Therefore, ASL-Teramo has waived the requirement for ethical review of case reports. All procedures performed on patients were in accordance with the ethical standards of the 2024 Declaration of Helsinki. Informed consent was obtained from the patient undergoing treatments, including explicit written agreement for the use of anonymised clinical material for scientific and teaching purposes.

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## Conflict of Interest

The authors declare no conflict of interest.

## Supplementary Material

Supplementary material associated with this article can be found, in the online version, at https://doi.org/10.62713/aic.4049.

## References

[1] Elfanagely O, Mellia JA, Othman S, Basta MN, Mauch JT, Fischer JP. Computed Tomography Image Analysis in Abdominal Wall Reconstruction: A Systematic Review. Plastic and Reconstructive Surgery. Global Open. 2020; 8: e3307. https://doi.org/10.1097/GOX.0000000000003307.

[2] Rios-Diaz AJ, Morris MP, Christopher AN, Patel V, Broach RB, Heniford BT, *et al*. National epidemiologic trends (2008-2018) in the United States for the incidence and expenditures associated with incisional hernia in relation to abdominal surgery. Hernia. 2022; 26: 1355–1368. https://doi.org/10.1007/s10029-022-02644-4.

[3] Gillion JF, Sanders D, Miserez M, Muysoms F. The economic burden of incisional ventral hernia repair: a multicentric cost analysis. Hernia. 2016; 20: 819–830. https://doi.org/10.1007/s10029-016-1480-z.

[4] Nardi M, Jr, Millo P, Brachet Contul R, Lorusso R, Usai A, Grivon M, *et al*. Laparoscopic ventral hernia repair with composite mesh: Analysis of risk factors for recurrence in 185 patients with 5 years follow-up. International Journal of Surgery. 2017; 40: 38–44. https://doi.org/10.1016/j.ijsu.2017.02.016.

[5] Ballard DH, Mazaheri P, Oppenheimer DC, Lubner MG, Menias CO, Pickhardt PJ, *et al*. Imaging of Abdominal Wall Masses, Masslike Lesions, and Diffuse Processes. Radiographics. 2020; 40: 684–706. https://doi.org/10.1148/rg.2020190170.

[6] Yanar H, Taviloglu K, Ertekin C, Ozcinar B, Yanar F, Guloglu R, *et al*. Planned second-look laparoscopy in the management of acute mesenteric ischemia. World Journal of Gastroenterology. 2007; 13: 3350–3353. https://doi.org/10.3748/wjg.v13.i24.3350.

[7] Sözüer EM, Bedirli A, Ulusal M, Kayhan E, Yilmaz Z. Laparoscopy for diagnosis and treatment of acute abdominal pain. Journal of Laparoendoscopic & Advanced Surgical Techniques. Part A. 2000; 10: 203–207. https://doi.org/10.1089/109264200421586.

[8] Firat N, Mantoglu B, Akin E, Altintoprak F, Bas E. Why diagnostic laparoscopy? Polish Journal of Surgery. 2021; 93: 22–26.

[9] Fowler KJ, Garcia EM, Kim DH, Cash BD, Chang KJ, Feig BW, *et al*. ACR Appropriateness Criteria® Palpable Abdominal Mass-Suspected Neoplasm. Journal of the American College of Radiology. 2019; 16: S384–S391. https://doi.org/10.1016/j.jacr.2019.05.014.

[10] Expert Panel on Gastrointestinal Imaging, Garcia EM, Pietryga JA, Kim DH, Fowler KJ, Chang KJ, *et al*. ACR Appropriateness Criteria® Hernia. Journal of the American College of Radiology: JACR. 2022; 19: S329–S340. https://doi.org/10.1016/j.jacr.2022.09.016.

[11] Shaish H, Ream J, Huang C, Troost J, Gaur S, Chung R, *et al*. Diagnostic Accuracy of Unenhanced Computed Tomography for Evaluation of Acute Abdominal Pain in the Emergency Department. JAMA Surgery. 2023; 158: e231112. https://doi.org/10.1001/jamasurg.2023.1112.

[12] Rosenkrantz AB, Bansal NK. Diagnostic errors in abdominopelvic CT interpretation: characterization based on report addenda. Abdominal Radiology. 2016; 41: 1793–1799. https://doi.org/10.1007/s00261-016-0741-8.

[13] Marks JM, Youngelman DF, Berk T. Cost analysis of diagnostic laparoscopy vs laparotomy in the evaluation of penetrating abdominal trauma. Surgical Endoscopy. 1997; 11: 272–276. https://doi.org/10.1007/s004649900342.

[14] Agrusa A, Frazzetta G, Chianetta D, Di Giovanni S, Gulotta L, Di Buno G, *et al*. "Relaparoscopic" management of surgical complications: The experience of an Emergency Center. Surgical Endoscopy. 2016; 30: 2804–2810. https://doi.org/10.1007/s00464-015-4558-2.