

Delayed Recurrent Umbilical Drainage Due to Postoperative Cutaneous Overgrowth Following Panniculectomy: A Case Report

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Abstract

Persistent umbilical drainage is an uncommon clinical presentation with a broad differential diagnosis, including congenital anomalies, infection, retained foreign material, and postoperative sinus or fistulous disease. Delayed drainage following panniculectomy may present a diagnostic challenge, particularly in patients with extensive prior abdominal surgery. We present the case of a 43-year-old woman with a history of morbid obesity (previous body mass index greater than 40 kg/m²) and multiple abdominal operations who developed intermittent umbilical drainage several months after undergoing panniculectomy approximately six years before her most recent presentation. The drainage was scant to moderate, yellowish to clear, and associated with mild periumbilical erythema without tenderness. Computed tomography demonstrated localized subcutaneous soft-tissue thickening extending toward the anterior abdominal wall fascia without an identifiable fluid collection, hernia, or intra-abdominal communication. Approximately 16 months before her most recent presentation, surgical exploration identified retained Ethibond suture material, believed to originate from the panniculectomy, which was removed. Despite initial improvement following suture removal and a seven-day course of oral trimethoprim-sulfamethoxazole, drainage subsequently recurred. Definitive surgical exploration revealed a superficial cutaneous pocket formed by overgrowth of the surrounding umbilical skin, without an identifiable deeper sinus tract. Excision of the abnormal tissue and umbilical reconstruction with fascial anchoring resulted in immediate resolution of drainage. Following three months of postoperative surgical follow-up and continued bariatric care, the patient remained free of recurrent drainage at approximately one year after reconstruction. This case illustrates how postoperative cutaneous overgrowth may create an acquired superficial umbilical pocket, descriptively termed a *pseudo-sinus*, that clinically mimics a sinus tract without a demonstrable deeper communication. Although retained suture material may have contributed to localized inflammation, persistent anatomical distortion may also have played a role in recurrent drainage. Recognition of postoperative umbilical anatomical abnormalities is important when evaluating delayed recurrent drainage following panniculectomy, as surgical correction may provide sustained symptom resolution when retained foreign material has been removed, but symptoms recur.

Categories: Plastic Surgery, General Surgery, Dermatology

Keywords: bariatric surgery, case report, cutaneous overgrowth, panniculectomy, postoperative complication, pseudo-sinus tract, retained suture, umbilical drainage, umbilical reconstruction, umbilical skin

Introduction

Umbilical discharge is an uncommon clinical finding that may arise from congenital, infectious, inflammatory, neoplastic, or postoperative conditions. Congenital abnormalities include urachal remnants and omphalomesenteric duct anomalies, whereas acquired causes include omphalitis, pilonidal disease, endometriosis, retained foreign material, and sinus or fistulous disease [1,2]. A sinus tract is an abnormal channel extending from the skin into underlying tissue, typically without communication between two epithelial surfaces, whereas a fistula represents an abnormal communication between two epithelialized surfaces, such as the bowel and skin. Distinguishing these conditions from superficial postoperative cutaneous abnormalities is particularly important in patients with previous abdominal surgery.

Panniculectomy, the surgical removal of redundant abdominal skin and subcutaneous tissue, is frequently performed following substantial weight loss after bariatric surgery. Although recognized complications include seroma, hematoma, wound dehiscence, infection, and delayed wound healing [3], postoperative cicatricial remodeling may also alter the native umbilical architecture. Scar contraction and overgrowth of surrounding skin can produce umbilical hooding or a recessed cutaneous pocket, potentially promoting moisture retention, accumulation of keratinous debris, and recurrent local inflammation. Unlike a suture granuloma, which represents an inflammatory response to retained foreign material, or uncomplicated omphalitis, which involves inflammation or infection of the umbilicus, a persistent anatomical pocket may continue to retain debris despite conservative wound care or removal of an initial inflammatory stimulus.

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Persistent drainage associated with retained suture material has been described following abdominal operations [4,5]. However, recurrent umbilical drainage associated with superficial cutaneous overgrowth and remodeling of the native umbilicus following panniculectomy is less well characterized. We describe this finding as an acquired postoperative pseudo-sinus, a descriptive clinical term referring to a superficial cutaneous pocket that mimics a sinus tract without an identifiable deeper tract, rather than a histopathologically established diagnosis.

The objective of this report is to describe a case of delayed recurrent umbilical drainage following panniculectomy in which retained suture material and persistent postoperative anatomical distortion complicated the clinical course. By distinguishing superficial cutaneous overgrowth from true sinus or fistulous disease, this case highlights a potential mechanism of recurrent drainage that may persist despite initial treatment and emphasizes the importance of direct anatomical assessment and surgical correction when conservative management fails.

Case Presentation

A 43-year-old woman with a history of morbid obesity, previously characterized by a body mass index (BMI) greater than 40 kg/m², presented with recurrent umbilical drainage following multiple abdominal surgical procedures. She was 42 years old at the time of her most recent surgical presentation. Her surgical history included Roux-en-Y gastric bypass approximately 14 years before presentation, followed by laparoscopic adjustable gastric band placement over the bypass approximately nine years before presentation. She subsequently underwent panniculectomy following substantial weight loss, approximately six years before her most recent presentation. Her BMI at the time of panniculectomy was 32 kg/m². Additional surgical history included laparoscopic cholecystectomy and subsequent gastric band removal with extensive adhesiolysis for small bowel obstruction. No additional chronic comorbidities were reported.

Several months following panniculectomy, the patient developed intermittent umbilical drainage that persisted and recurred over subsequent years. The drainage was described as scant to moderate in quantity and yellowish to clear in appearance. Physical examination demonstrated mild erythema surrounding the umbilicus without associated tenderness. Swab specimens of the umbilical drainage were obtained for wound cultures, which were negative.

Given the patient's extensive abdominal surgical history and persistent symptoms, computed tomography (CT) of the abdomen and pelvis with intravenous and oral contrast was obtained before the initial retained-suture removal. Imaging demonstrated localized subcutaneous soft-tissue density at the umbilicus extending toward the anterior abdominal wall fascia. No peripherally enhancing fluid collection, soft-tissue gas, umbilical hernia, or identifiable communication with intra-abdominal structures was demonstrated. There was no extraluminal contrast or contrast within the umbilical subcutaneous tissues, and no acute intra-abdominal abnormality was identified (Figure 1).

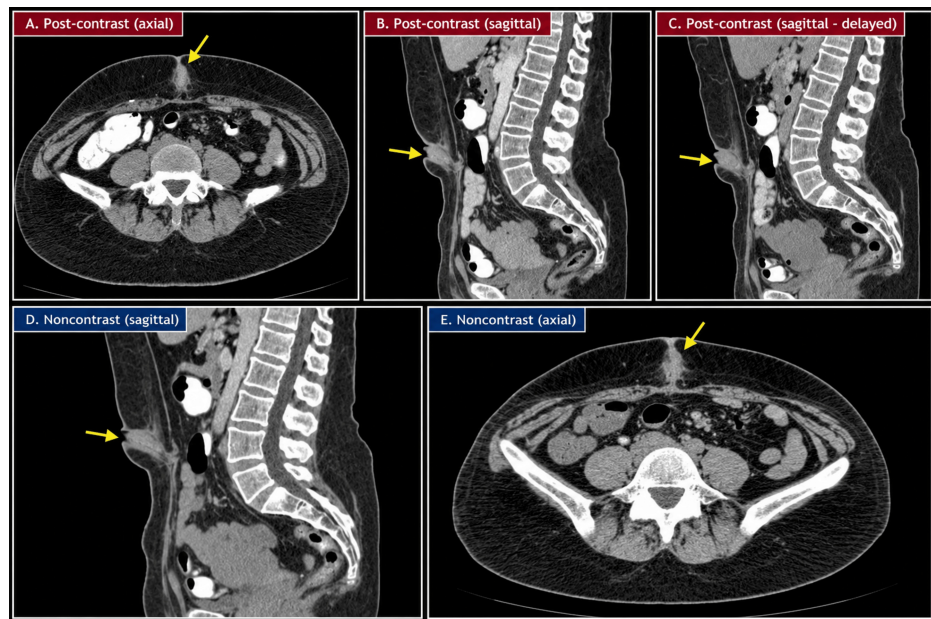


FIGURE 1: Computed tomography (CT) of the abdomen and pelvis demonstrating umbilical soft-tissue thickening.

(A–C) Post-contrast axial (A), sagittal (B), and delayed sagittal (C) images show subcutaneous soft-tissue density at the umbilicus (arrows) extending to the anterior abdominal wall fascia without a peripherally enhancing fluid collection or soft-tissue gas. (D, E) Noncontrast sagittal (D) and axial (E) images demonstrate the same umbilical soft-tissue thickening (arrows). There is no umbilical hernia or obvious connection to intra-abdominal structures. The intra-abdominal solid organs and hollow viscera are otherwise unremarkable, with no CT signs of acute pathology in the abdomen or pelvis.

Approximately 16 months before her most recent presentation, surgical exploration identified retained Ethibond suture material within the umbilical region, believed to originate from the previous panniculectomy. The retained suture was removed, and the patient received a seven-day course of oral trimethoprim-sulfamethoxazole (Bactrim DS, 160 mg/800 mg) twice daily for suspected localized soft-tissue infection. Although symptoms initially improved following suture removal and antibiotic therapy, umbilical drainage subsequently recurred.

At her most recent presentation, the patient's BMI was 28.7 kg/m². She reported an interval increase in weight preceding symptom recurrence, although her BMI remained lower than at the time of panniculectomy. The recurrent drainage and persistent abnormal umbilical anatomy prompted definitive surgical intervention.

Excisional exploration revealed a superficial cutaneous pocket formed by overgrowth of the surrounding umbilical skin, without an identifiable deeper sinus tract. The abnormal tissue was excised, and the umbilicus was reconstructed using absorbable sutures to anchor the umbilical tissue to the underlying abdominal wall fascia. Histopathological examination was not performed.

Umbilical drainage resolved immediately following surgical reconstruction. The patient completed three months of postoperative surgical follow-up and continued receiving care through the bariatric service. At approximately one year following reconstruction, she remained free of recurrent umbilical drainage. Table 1 presents the chronology of the clinical events of this case.

Approximate interval	Clinical event
14 years before presentation	Roux-en-Y gastric bypass
9 years before presentation	Adjustable gastric band placement over bypass
6 years before presentation	Panniculectomy following weight loss; BMI: 32 kg/m²
Several months after panniculectomy	Onset of intermittent umbilical drainage
During subsequent years	Additional abdominal procedures, including cholecystectomy and later gastric band removal with adhesiolysis
During evaluation of drainage	Swab cultures of umbilical drainage were negative
Before retained-suture removal	CT demonstrating umbilical soft-tissue thickening without identifiable intra-abdominal communication
Approximately 16 months before most recent presentation	Surgical exploration and removal of retained Ethibond suture, followed by seven days of oral trimethoprim-sulfamethoxazole
Most recent surgical presentation	Recurrent drainage; age 42 years; BMI: 28.7 kg/m²
Definitive intervention	Excisional exploration and umbilical reconstruction using absorbable sutures with fascial anchoring
Immediately after reconstruction	Resolution of umbilical drainage
Approximately one year after reconstruction	No recurrent drainage during continued clinical follow-up

TABLE 1: Relative chronology of clinical events.

BMI = body mass index; CT = computed tomography

Discussion

Umbilical discharge is an uncommon presentation with a broad differential diagnosis that includes congenital abnormalities, infection, inflammatory disease, retained foreign material, and postoperative complications [1,2]. Congenital causes include urachal remnants and omphalomesenteric duct anomalies, whereas acquired etiologies include omphalitis, pilonidal sinus disease, endometriosis, abscess formation, foreign-body reactions, and enterocutaneous fistulas. Umbilical malignancy, including metastatic disease, is an additional consideration when suspicious lesions or masses are present [1]. In patients with previous abdominal surgery, diagnostic evaluation must distinguish superficial cutaneous abnormalities from deeper sinus or fistulous communication.

This case is notable for the delayed onset and recurrent nature of the patient’s symptoms following panniculectomy. Wound complications after post-bariatric panniculectomy commonly include surgical-site infection, seroma formation, wound dehiscence, and impaired healing [3]. In contrast, this patient developed intermittent umbilical drainage several months after panniculectomy, with symptoms recurring over subsequent years. Her extensive surgical history, including Roux-en-Y gastric bypass, adjustable gastric band placement and removal, and multiple abdominal operations requiring adhesiolysis, complicated the differential diagnosis and raised concern for an occult intra-abdominal source.

Cross-sectional imaging demonstrated localized subcutaneous soft-tissue thickening extending from the umbilicus toward the anterior abdominal wall fascia without an identifiable abscess, hernia, or communication with intra-abdominal structures. Although these findings reduced suspicion for a major intra-abdominal process, the superficial cutaneous pocket identified during subsequent exploration was not clearly delineated on CT. Its non-distended configuration and closely apposed skin surfaces may have limited visualization on conventional axial images. Consequently, the absence of a demonstrable tract on CT did not exclude a clinically significant superficial anatomical abnormality. Persistent drainage despite prior suture removal and medical management therefore warranted direct surgical exploration, which established the underlying anatomical findings.

The most distinctive feature of this case was the postoperative alteration of the native umbilical architecture following panniculectomy. Operative exploration revealed a superficial cutaneous pocket formed by overgrowth of the surrounding skin, without an identifiable deeper sinus tract. We describe this anatomical finding as an acquired postoperative pseudo-sinus, a descriptive clinical term referring to a superficial

cutaneous pocket that mimics a sinus tract in appearance and presentation rather than a histopathologically established entity. No deeper fistulous communication was identified during exploration or on preoperative imaging. Although histopathological examination was not performed, the operative findings support the presence of an acquired superficial anatomical abnormality associated with the patient's recurrent drainage. This distinction is important because cicatricial changes and cutaneous overgrowth may produce symptoms resembling those of a true sinus or fistula without a demonstrable deeper tract.

The altered umbilical architecture may have contributed to chronic inflammation through several mechanisms. Cutaneous overgrowth and postoperative scar remodeling can create a recessed or partially occluded space that facilitates moisture retention, accumulation of keratinous debris, and local maceration. These conditions may promote bacterial colonization and recurrent superficial inflammation. Sarma and Teruya described chronic omphalitis caused by impacted lint and keratinous material within a deep umbilicus, demonstrating how local anatomical characteristics can contribute to persistent inflammation and discharge [2]. Although the mechanism in our patient differed, both cases emphasize the importance of examining umbilical architecture rather than relying exclusively on imaging.

Retained foreign material represented another potential contributor to the patient's symptoms. Initial surgical exploration identified Ethibond suture material, a permanent braided polyester suture, believed to have originated from the previous panniculectomy. Foreign-body reactions to retained suture material may produce localized inflammation, fibrosis, mass formation, persistent drainage, or sinus tract formation months to years after surgery [4]. Eladawi et al. described a postoperative suture granuloma extending into the abdominal cavity following appendectomy, illustrating the diagnostic challenges associated with retained suture material [4]. In the present case, the initial improvement following suture removal and antibiotic therapy suggests that retained material may have contributed to the inflammatory process. However, because histopathological examination was not performed, a granulomatous foreign-body reaction cannot be confirmed.

Several published cases provide additional context for postoperative umbilical and abdominal wall drainage. Cevik described a pediatric case of an acquired umbilico-inguinal fistula associated with a delayed silk-suture reaction following inguinal hernia repair [5]. Kabba et al. reported a retained surgical sponge presenting with umbilical perforation and mimicking a complicated urachal cyst [6]. Araujo Sabino et al. described recurrent abdominal wall sinus formation and abscess associated with retained foreign material following surgery [7]. These cases demonstrate that retained surgical material can cause delayed inflammatory complications, including true fistulous or sinus tract formation. In contrast, the present case involved a superficial cutaneous pocket created by postoperative skin overgrowth, without an identifiable deeper sinus tract at definitive exploration. This anatomical distinction, together with recurrent symptoms despite prior suture removal, represents the principal educational contribution of this report.

The patient's report of weight gain preceding symptom recurrence may also be clinically relevant. Although increased abdominal wall tension was initially considered a potential contributing factor, a direct mechanical relationship cannot be established. Increased central adiposity may deepen the periumbilical cleft, promote skin-on-skin contact, impair local aeration, and increase susceptibility to moisture retention and intertriginous maceration. Such changes could exacerbate inflammation within an already altered umbilical pocket. However, the patient's BMI remained lower at her most recent presentation than at the time of panniculectomy, and the relationship between interval weight changes and recurrent drainage remains speculative.

Management of chronic postoperative umbilical drainage should be directed toward the underlying cause. Antibiotic therapy may be appropriate when bacterial infection is suspected, but antimicrobial treatment alone does not correct retained foreign material or persistent anatomical abnormalities. In this case, initial removal of retained Ethibond suture material and a seven-day course of oral trimethoprim-sulfamethoxazole were followed by temporary symptomatic improvement. Subsequent recurrence prompted excisional exploration and reconstruction of the umbilicus with fascial anchoring. In contrast to the previously retained non-absorbable Ethibond suture, absorbable sutures were utilized during definitive umbilical reconstruction to minimize the potential for persistent foreign-body reactions and reduce the risk of recurrent suture-associated inflammation. The immediate resolution of drainage following anatomical correction, together with the absence of recurrence at approximately one year, supports the effectiveness of the surgical intervention in this patient. This clinical course suggests that addressing persistent postoperative anatomical distortion may be important when drainage recurs despite removal of an initial inflammatory stimulus.

This report has several limitations. Histopathological examination was not performed, limiting definitive characterization of the excised tissue and preventing confirmation of granulomatous inflammation or microscopic tissue architecture. Although surgical exploration demonstrated a superficial pocket without an identifiable deeper sinus tract, an occult microscopic tract cannot be excluded with absolute certainty. Although swab cultures of the umbilical drainage were negative, superficial swab specimens may not accurately reflect deeper tissue microbiology, and negative culture results do not definitively exclude a localized infectious process. Additionally, the proposed relationship between panniculectomy-related skin overgrowth, retained suture material, and recurrent inflammation remains inferential. The term pseudo-

sinus is therefore used descriptively rather than as a formally established pathological diagnosis. As a single-patient observation, this case cannot establish causation or determine the general effectiveness of reconstruction. Nevertheless, the intraoperative anatomical findings and sustained absence of recurrent drainage at approximately one year provide clinically meaningful evidence supporting the proposed mechanism and treatment approach.

This case emphasizes the importance of careful local examination in patients presenting with delayed recurrent umbilical drainage after abdominal surgery. When imaging does not identify a deeper source, clinicians should consider retained foreign material and acquired abnormalities of the umbilical architecture. Recognition of a superficial postoperative cutaneous pocket that clinically mimics a sinus tract may help guide surgical evaluation and appropriate anatomical correction.

Conclusions

Delayed recurrent umbilical drainage following panniculectomy may be associated with acquired postoperative anatomical changes, particularly cutaneous overgrowth and distortion of the native umbilicus. In this case, retained Ethibond suture material may have contributed to local inflammation, but subsequent recurrence suggested that persistent superficial anatomical abnormalities also played a role. Definitive excision and umbilical reconstruction resulted in immediate resolution of drainage, with no recurrence at approximately one year. This report introduces the descriptive concept of an acquired postoperative umbilical pseudo-sinus, emphasizing that superficial cutaneous pockets may clinically mimic deeper sinus or fistulous disease. Careful examination, appropriate imaging, and direct operative assessment when indicated are important for distinguishing these conditions and guiding management.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Drafting of the manuscript: Trevor Williams

Critical review of the manuscript for important intellectual content: Trevor Williams, Victoria Akintunde, Saba Bolbolan, Keaton Hayataka, Mary G. Palmer, Frederick Tiesenga

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Disclosures

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