

Umbilical Epithelial Cyst in Secondary Abdominoplasty: Case Report

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Abstract

Background A retained epidermal inclusion cyst (REIC) at the umbilicus after abdominoplasty is a rare phenomenon that has had limited description in the literature. This case report describes a woman who came for a secondary abdominoplasty and presented intraoperatively with an unexpected large epidermal inclusion cyst.

Case Report The woman was disappointed with the result of a previous abdominal surgery. She initially had severe postoperative wound infection followed by revision surgery and subsequent intermittent secretion in the umbilical region. Then seven years later, hip backplasty combined with liposuction was performed. After another six months, full abdominoplasty combined with exploration of the umbilical region was performed. The surgical exploration showed a large, 3 × 4.5 cm indurated structure highly suspected to be a REIC. The excision was effective without recurrence, and the healing was uneventful. The patient was very satisfied with the result.

Discussion As a typical epidermoid cyst, REIC consists of squamosed stratified epithelial cells that continue to the granular layer. In most cases, the cyst is filled with a keratin-like material. When this tumor is solid, a histologic evaluation may be necessary. When the cyst has been excised, the umbilicus gets reconstructed after the

abdominoplasty. A history of poor healing in the umbilicus area may arouse suspicion of an epidermoid cyst. Epidermoid cysts in the region of the umbilicus could easily be overlooked in preparation of the umbilicus.

Keywords Abdominoplasty · Epidermoid cyst · Retained epidermal inclusion cyst · Umbilical epithelial cyst

A retained epidermal inclusion cyst (REIC) at the umbilicus after abdominoplasty is a rare phenomenon that has had limited description in the literature [5]. However, common complications such as wound infection, dehiscence, seroma formation, hypertrophic scarring, residual deformities, and painful neuromas of the lateral cutaneous nerve are well described [6, 8].

This case report describes a woman who came for consultation seven years after an umbilical hernia repair combined with an extended abdominoplasty in another country. She presented intraoperatively with an unexpected large epidermal inclusion cyst. This case report describes the evaluation, management, and treatment of the postoperative epidermal cyst.

Etiologically, a REIC results from implantation of viable epithelial cells deep to the level of the dermis. Theoretically, any trauma or surgical procedure has the potential to create a REIC [1–3]. The pathophysiologic mechanism is postulated to be epidermal cells implanted by laparoscopic approaches, during which the surgical instruments can cause an invagination of the epidermis below the dermis [4].

The occurrence of a REIC has been described previously, but a REIC after abdominoplasty has not been extensively discussed [7]. In the reported case, a secondary hernia was suspected, but instead, a retracted umbilicus

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produced this mass in the subcutaneous tissue. The recent literature was reviewed to optimize the management of this rare complication.

Case Report

A 61-year-old woman presented with a request for several aesthetic procedures, namely, secondary circumferential abdominoplasty and liposuction of the inner thighs, the back, the abdomen, and the axilla on both sides. She was disappointed with the result of a previous aesthetic surgery by a general surgeon in Chile, who combined an umbilical hernia repair with an extended primary abdominoplasty (Fig. 1).

In Chile, during the initial postoperative period after the first intervention in 2001, the woman experienced severe wound infections and long-term antibiotic treatment (unknown type) followed by revisional surgical intervention with wound revision and a laparotomy 1/2 year after the first operation (2002). Not mentioned in the initial medical history was that during the 2 years after the initial surgery, the woman experienced intermittent secretion in the umbilical region, focal hardness without redness or remarkable swelling, and occasional pain in this region.

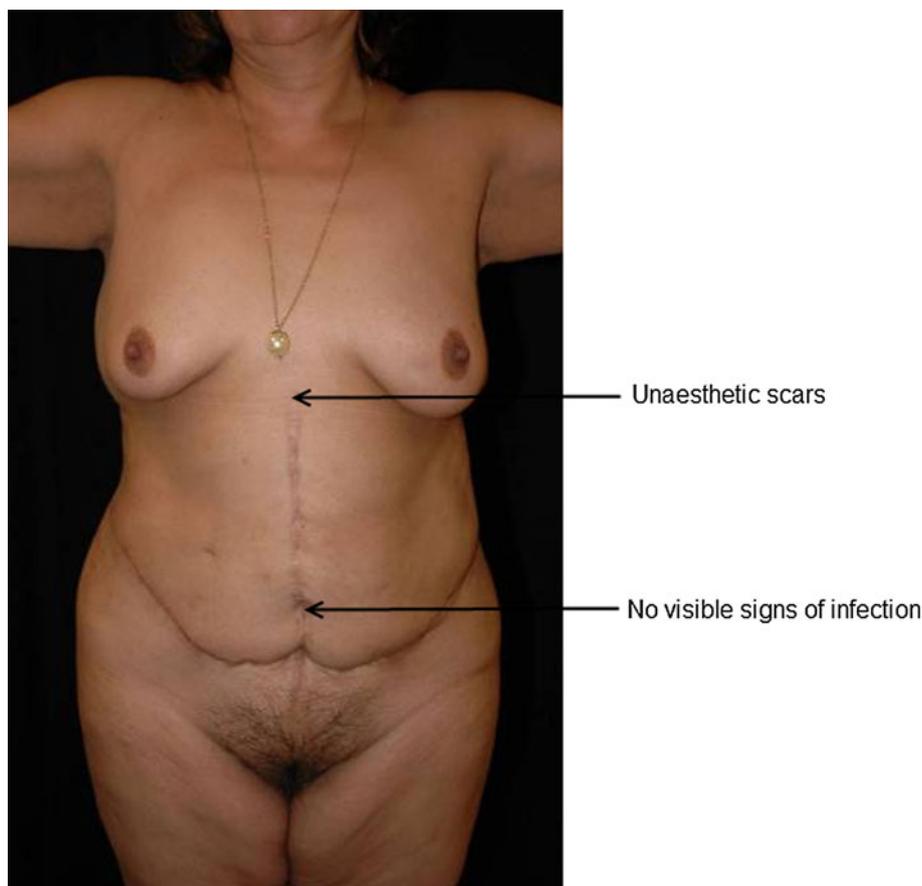
Fig. 1 Preoperative photo after primary abdominoplasty and reoperation. No swelling or redness in the umbilical region and no signs for infection in the upper and lower abdomen are seen. Unaesthetic scarring is visible. The patient regarded the result as unsatisfactory

Several sonographies and computed tomography (CT) scans had been performed in South America with unknown outcome.

At her first visit to our department in December 2001, the woman was overweight (body mass index [BMI], $>35 \text{ kg/m}^2$) and underwent both an inconspicuous abdominal exam (no secretion umbilically) and a physical exam with the desire for an aesthetic correction of the abdominal wall. The need for preliminary weight loss made us decline her wish for an aesthetic intervention at this time.

Subsequently, the woman's histology between 2002 and 2004 included intermittent secretion in the umbilical region, focal hardness without redness or remarkable swelling, and occasionally pain in this region, all of which were disturbing to the patient. This was followed by a long period of pulmonary and heart failure as well as several different medical treatments and slight weight loss. During this time, the woman was treated by the physicians in Chile. She consulted with us in November 2007, more than 5 years after the first procedure, again requesting aesthetic improvement.

The patient asked for a circumferential body-lift in pursuit of optimal aesthetic improvement, but due to her weight (BMI $>35 \text{ kg/m}^2$) and medical history, it was



recommended that this procedure be separated into two stages. The preoperative physical exam in November 2011 showed a soft abdominal wall, scars in the midline, an umbilical region with a deep induration, and clinical suspicions of an umbilical hernia. There were no signs of incarceration, but circumferential abdominal skin and fat excess were present.

The woman's personal history at this point included pharmacologically compensated heart failure but no symptoms of pulmonary diseases, and the risk situation was reduced from an American Society of Anesthesia (ASA) classification of 3 to an ASA of 2. Yet, due to the medical risk and the history of severe wound infection, it was decided to operate on the patient in two sessions.

The patient decided to start with the backplasty followed by a recovery period of 6 months before the abdominoplasty. Therefore, hip backplasty combined with liposuction was performed first. The patient's healing was uneventful, and the result was excellent without any complications. This initial procedure was followed 6 months later with the secondary full abdominoplasty combined with exploration of the umbilical region, 7 years after the first procedure.

In the clinical investigation before the secondary abdominoplasty, the abdominal incision for the initial surgery was clean, dry, and intact without any appearance of infection (Fig. 1). No imaging was performed because from the clinical examination, we suspected an umbilical hernia recurrence. The literature reports that an estimated 25% of all hernia recurrences present within a year of the hernia repair, with 50% occurring more than five years after the first surgical treatment. In such a case without intestinal disorder (no suspicion of acute incarceration), the clinical suspicion of a hernia is sufficient to justify the surgical intervention.

At the level of the umbilicus, however, there was a strong suspicion of umbilical hernia recurrences without signs of secretion since in the last 4 years. The skin overlying the mass was tenuous, but no erythema or discharge was found.

The surgical exploration of the umbilical region showed a large 3 × 4.5-cm indurated structure with a smooth surface, which was highly suspected to be a REIC (Fig. 2). With meticulous dissection around the cyst, the base could be exposed, in which the retained and retracted umbilicus was found (Fig. 3). The umbilicus was intact. The underlying fascia also was dissected, and no dehiscence or suspicion for hernia was noted. Therefore we could dispense with an extensive hernia repair with a polypropylene mesh graft in a "sublay technique" as would be necessary in a case of a hernia recurrence. The postoperative management did not much differ from that for a normal abdominoplasty with a diastasis recti repair.



Preparation of the tumour in the region of the umbilicus.

An accidental incision excreted a brown-reddish scentless mass

Fig. 2 Unclear tumor in the umbilicus and careful preparation around the induration



Fascia closed

Totally excised cyst



Fig. 3 a, b No signs of an umbilical hernia

The subsequent histologic investigation proved the clinical diagnosis of epidermoid retention cyst (REIC) without suspicion of malignity. The excision was effective without recurrence. Once again, the healing was



Fig. 4 **a** Postoperative result after 9 days (*lateral view*). **b** Postoperative result after 2½ years (*ventral view*). **c** Postoperative result after 2½ years (*oblique view*). **d** Postoperative result after 2½ years (*dorsal view*). **e** The neoumbilicus 2½ years after suturing of the skin to the dermis

uneventful, and the patient was very satisfied with the result (Fig. 4).

Discussion

For the REIC, several synonyms were used including “epidermoid inclusion cyst,” “epidermoid cyst,” and “epithelial cyst.” However, all these terms denote an origin from the infundibular portion of the hair follicle, whereas the term “epidermoid cyst” often is used to describe only the origin of a cyst from buried epidermal cells [4].

The typical epidermoid cyst has an inside coverage with squamosed stratified epithelial cells that continues to the granular layer. In most cases, the cyst is filled out with

keratin-like material [4]. Hybrid cysts contain a coverage combined with squamose cells and cells having a feature of apocrine glands. The older cysts contain calcifications, and in some cases, foreign bodies are found. Most cysts are simple lesions. Some cysts can be associated with basal cell and squamous cell carcinoma, and some authors advocate histologic evaluation of the wall of all removed cysts. The rarity of associated cancer makes routine histologic evaluation necessary only when solid tumors or unusual findings are present [3].

In general, however, the epithelial cyst is by definition a dome-shaped lesion that often arises from a ruptured follicle. Other causes include a developmental defect of the sebaceous duct or traumatic implantation of surface epithelium beneath the skin as in the reported case [3].

The umbilicus usually is located at the level of the superior iliac crest, with an approximate diameter of 1.5–2 cm [9]. Usually, the umbilicus gets reconstructed after the abdominoplasty for restoration of its shape and position. The formation and the pathophysiology of epidermoid cysts after abdominoplasty have not been described frequently [7]. Normally, the diagnosis of retained epidermoid cyst is based on clinical investigation and suspicious data obtained due to physical investigation and radiographic results. It seems that the sonogram and the CT are the tools of choice [5].

The above-mentioned patient presented with an unsatisfactory result after a primary abdominoplasty. Furthermore, the bulging in the umbilical area gave clinical suggestion of a newly developed umbilical hernia. Generally, umbilical hernias occur in women after pregnancies, in overweight persons with a weak fascia, and after previous surgery (especially after umbilical incisions for laparoscopic procedures). It involves a palpable defect in the midline near to the navel. There is always a risk of trapping a loop of bowel in the fascia hole, resulting in a small area of ischemic bowel. Therefore, every symptomatic hernia (mostly a prolapsed piece of preperitoneal fat), every nonreducible hernia, and any hernia larger than 1.5 cm should be subjected to surgery.

The differential diagnosis distinguishing the umbilical or paraumbilical hernia from every other type of midline tumor (cyst, urachal cyst, metastatic tumor deposit) is a typical bulging in the navel palpated with the patient in a sitting position or by letting the patient cough. Sometimes the patient describes some discomfort or pain during exercise.

Because of the relatively thick subcutaneous fat layer, the scarring, and the induration in the navel region, it is not easy to define preoperatively if the bulging is reducible and a fascia hole palpable. Therefore, the umbilical hernia was

not excluded in this study. However a history of poor healing and poor appearance of the umbilicus in combination with a subcutaneous mass could indicate the diagnosis of an epidermoid cyst. Therefore, questions relating to the healing phase after previous surgery and careful abdominal palpation during the initial examination are important.

It is well known that abdominoplasty is mostly a safe and effective operation with several different possible complications [6]. However epidermoid cysts in the region of the umbilicus could easily be overlooked because these are rare conditions.

Conflict of interest None.

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