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# Giant pseudocyst of the abdominal wall following incisional ventral hernia repair: an extremely rare clinical entity. Report of a case



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# Giant pseudocyst of the abdominal wall following incisional ventral hernia repair: an extremely rare clinical entity. Report of a case

BACKGROUND: The gold standard treatment for incisional ventral hernia (IVH) is a surgical repair with mesh employment, nevertheless this procedure is burdened by several post-operative complications; among these latter, giant pseudocyst of abdominal wall (GPAW) formation is one of the most rare and its etiopathogenesis remains unclear.

CASE REPORT: We describe the case report of a 36 years old, diabetic and obese woman, previously underwent to a csection and IVH repair with on-lay mesh placement, presented to our unit with an asymptomatic left iliac fossa swelling. At ultrasound (US) and CT scan examination it appears to be a subcutaneous cyst of the anterior abdominal wall associated with a recurrent IVH. Therefore, she underwent to a surgical procedure in order to accomplish a complete excision of the lesion along with a repair of the incisional IVH, with a sub-lay mesh positioning. The extensive dead space resulting from the procedure was managed with a quilting suture. No recurrence or complications have been detected at 2 years follow up.

CONCLUSION: GPAWs are a rare clinical entity following IVH repair, which occur commonly in female obese patients treated with on-lay mesh positioning. The only effective and definitive treatment is a complete surgical excision along with a correct management of the dead space resulting from the surgical procedure, in order to reduce the recurrence rate.

KEY WORDS: Abdominal wall, Incisional hernia, Mesh, Pseudocyst, Surgery

# Introduction

Incisional ventral hernia (IVH) is a common long-term complication of open abdominal surgery, it is considered as one of the most frequent complications in those patients, who underwent to laparotomy for elective or emergency surgery. The surgical repair involving the

# Case Report

A 36 years old woman, whose BMI was 52 kg/m<sup>2</sup> and past medical history remarkable for type II diabetes, came

employment of a mesh is the gold standard approach, as it allows to significantly reduce the recurrence rate <sup>1,2</sup>,

nevertheless, we count various potential post-operative

complications linked to the use of a mesh. Among these

latter, the formation of a giant pseudocyst of abdominal wall (GPAW) is extremely rare, this event has been

reported for the first time in 1993 following an IVH repair with a polypropylene mesh <sup>3</sup>; only other 25 cas-

es have been reported until 2011 <sup>4</sup>.

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Fig. 1: CT scan caption showing the localization and dimension of the GPAW: neoformation of around 25x18x23 cm, located to the anterior abdominal wall of the left iliac fossa, without any contrast enhancement and non-dissociable from the fascial lay, but associated with an IVH.

to our observation for the appearance of a recurrent IVH. She had a surgical history of c-section, 5 years earlier, and an IVH repair with on-lay mesh placement. After 1 year from the last surgical procedure, she remarked a left iliac fossa swelling, which was gradually increasing in its volume and not irreducible. The physical examination, due to the morbid obesity, did not allow a proper evaluation of the wall, so she underwent to an US and CT scan of the abdomen, which showed a subcutaneous oval formation, of around 25x18x23 cm, located to the anterior abdominal wall of the left iliac fossa, without any contrast enhancement and non-dissociable from the fascial lay, but associated with an IVH (Fig. 1). Moreover, the US examination highlighted a fluid content associated with the presence of multiple septae. At the surgical exploration this lesion appeared strongly attached to the abdominal wall and after a partial draining of the cystic fluid content we performed its excision along with a wide portion of the pre-placed prothesis. The associated IVH was repaired with the sublay placement of a large polypropylene mesh and subsequent positioning of a peri-prothesis suction drain.

The extensive dead space located between the subcutaneous and fascial layer, which resulted from the surgical procedure, was managed by performing a quilting suture.

The post-operative course was uneventful and the drain was removed on post-operative day 3.

The anatomopathological examination reported that the content of the lesion was a serum-hematic fluid, the thickness of its wall was around 2 mm without any epithelial layer on the internal side (Fig. 2); these latter



Fig. 2: Microscopic image (hematoxylin-eosin 200x) of a detail of the pseudo-cystic wall: the lumen of the pseudocyst is completely surrounded by mesenchymal fused cells (fibroblasts), in the absence of epithelial or endothelial cells, but with an underlying granulomatous inflammation layer.

findings argued in favour of an histological diagnosis of pseudocyst. The microbiological test was negative. The 2 years US follow up did not show any recurrence nor sequela in the site of the prior pseudocyst.

#### Discussion

The incidence of GPAWs ranges between 0.45%, in a series of 1100 hernioplasty <sup>5</sup>, and 0,88% in one of 790<sup>4</sup>. GPAWs occur more frequently in obese female patients<sup>4,5</sup>, even if its etiopathogenesis remains unclear. Most authors support the hypothesis, according to which the post-operative seroma formation might be the first step for the appearance of GPAWs; in fact, the lymphatics disruption and the inflammatory response to the mesh lead to the accumulation of subcutaneous fluid, which leads in its turn over the time to the formation of a thick capsule.

Moreover, as we already know, the inflammatory response to the polypropylene mesh is linked to the size <sup>6,7</sup> density <sup>8</sup> and texture <sup>9</sup> of this latter; in all of the reported cases the mesh was a polypropylene one without any density labelling. Only in two cases the mesh was placed according to Rives technique <sup>10</sup>, in all the others the was an on-lay positioning. However, we must highlight that there have been GPAW cases following abdominoplasty and liposuction <sup>11,12</sup>.

A different etiopathogenetic hypothesis imputes a postoperative haematoma formation and its gradually organisation into a pseudocyst as the underlying event for the GPAW appearance  $^{13\text{-}15}\!$  .

As for the clinical presentation, the patients are often asymptomatic or presenting a slight oppressive pain, as in the above presented case.

The US and CT-scan examination allow a precise diagnosis of the GPAWs; the US might point out the presence of trabeculation and septae, while the CT may exclude any communication between the lesion and the intraperitoneal structures, such as the presence of a fistula tract or hernia recurrence <sup>13</sup>.

The only effective and definitive treatment for GPAWs is its complete surgical excision, nonetheless the portion of the lesion that is often attached to the mesh results difficult to excise, so in this cases it might be necessary to perform a partial excision of the pseudocyst <sup>16,17</sup>. A conservative approach based on the aspiration of the pseudocyst fluid, is only palliative due to the presence of septae and trabeculations.

The excision of a GPAW leaves a wide dead space, for which the employment of suction drains alone might be ineffective, so we think that in order to avoid the postoperative seroma formation, it would be useful to perform a quilting suture, to facilitate the adhesion between the subcutaneous space and the fascial layer.

We think that close US follow up must be undertaken, especially for obese female patients, after an IVH repair with on-lay mesh placement, in order to prevent subcutaneous fluid accumulation, which may evolve in a pseudocyst formation.

### Conclusion

GPAWs represent an extremely rare complication of IVH repair with on-lay mesh placement. The only effective treatment for these lesions is a complete excision. In order to reduce the rate of recurrence a quilting suture might be taken into account as a successful procedure.

#### Riassunto

Il "gold standard" per il trattamento dei laparoceli è l'intervento chirurgico con impiego di protesi, nonostante questo approccio sia gravato da numerose complicanze post-operatorie; tra queste possiamo annoverare le pseudocisti giganti della parete addominale, tale evenienza risulta ancora molto rara e la sua eziopatogenesi riamane non chiara.

In questo lavoro descriviamo il caso clinico di una paziente di 36 anni, diabetica ed obesa, precedentemente sottoposta a taglio cesareo e riparazione di laparocele con posizionamento di protesi in sede soprafasciale. La paziente si è presentata presso i nostri ambulatori per la comparsa di un gonfiore asintomatico a livello della fossa iliaca sinistra. Gli approfondimenti CT e ecografico

hanno mostrato una cisti sottocutanea localizzata a livello della parete addominale anteriore associata ad un laparocele recidivo.

Abbiamo quindi, sottoposto la paziente ad un intervento chirurgico al fine di procedere ad una competa resezione della lesione e alla riparazione del laparocele con posizionamento di protesi retromuscolare. L'ampio spazio morto risultante da questa procedura è stato gestito mediante l'esecuzione di una sutura tra il piano sottocutaneo e la fascia muscolare dell'obliquo esterno.

Non abbiamo rilevato alcuna recidiva o complicanza post-operatoria al follow-up a due anni.

Le pseudocisti giganti della parete addominale sono una rara entità clinica associata alla riparazione chirurgica dei laparoceli che compaiono prevalentemente in donne obese trattate con posizionamento di protesi soprafasciale.

L'unico trattamento efficace e risolutivo è l'intervento chirurgico di resezione completa della lesione e adeguata gestione dello spazio morto risultante dalla dissezione in modo da ridurre il tasso di recidiva.

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