

## Case Report

Marius Kryzauskas\*, Vytautas Lipnickas, Simonas Uselis, Donatas Danys, Kestutis Strupas

# Plastic treatment for giant pseudocyst after incisional hernia mesh repair: a case report and comprehensive literature review

<https://doi.org/10.1515/med-2018-0079>

received January 3, 2018; accepted September 17, 2018

**Abstract:** Giant pseudocyst is a very rare complication after incisional hernia repair with mesh. We present a case of 54-year-old male patient with a giant pseudocyst, which developed after incisional hernia repair with mesh. A patient was discussed during multidisciplinary team meeting and operative treatment was suggested to the patient. Extirpation of the cyst was accomplished. There was observed no defect in the abdominal wall. The patient was discharged on the 7th postoperative day. Ultrasonography two weeks after discharge again showed fluid collection. There were 6 aspirations every week starting from 400 ml serous fluid at the beginning and 60 ml at the end. There were no signs of fluid collection one month after the last aspiration. Surgical plastic treatment of giant pseudocyst after incisional hernia mesh repair is safe and feasible despite its low prevalence.

**Keywords:** Hernia repair; Giant pseudocyst; Plastic treatment

## 1 Introduction

Incisional hernia mesh repair is a common routine operation worldwide. One of the most commonly occurring complications is postoperative seroma, others such as hematoma or subcutaneous abscess are less common [1]. Formation of postoperative seroma varies widely

from 3 to 100% with a peak presentation at the 7<sup>th</sup> postoperative day. Moreover, guidelines did not distinguish between clinically significant and asymptomatic seromas [2]. Recent prospective study revealed 100% incidence of seroma after mesh repair, following with all and complete spontaneous resolution within 90 days after initial surgery [3]. Meanwhile, formation of chronic and greater in size subcutaneous cysts or pseudocysts are exceedingly rare after these operations. Only 35 cases have been presented worldwide in single cases or case series from the 1993 up to date (Table 1). Incidence of small case series varies from 0.45 % to 0.8 % suggesting its rare prevalence or lack of reports in scientific literature [4].

## 2 Case report

We present the case of a 54-year-old obese (body mass index 33.7 kg/m<sup>2</sup>), diabetic male patient presenting with a large palpable mass in the anterior abdominal wall (Figure 1). An anamnesis of the disease starts with a midline laparotomy incision which was performed due to descending colon tumour in August 2014. Final pathological diagnosis revealed well differentiated (G2) pT4bN0 mucinous adenocarcinoma without distant metastases. An adjuvant chemotherapy using FOLFOX4 regimen was admitted. There was no evidence of local recurrence or disease spread observed two years after primary operation. Nevertheless, an incisional hernia was confirmed during routine check-up. A patient underwent an onlay polypropylene mesh repair for an incisional hernia in September 2016. Later, the abdominal mass developed gradually over the several months before the presentation to the outpatient department of our hospital. All laboratory investigations were within normal parameters. A computed tomography (CT) scan of the abdomen was performed to establish the diagnosis and rule out tumour recurrence. CT indicated 170 x 153 x 217 mm well-defined cystic lesion (~15 HU) with thickened partitions and flat contact with muscles of the anterior abdominal wall (Figure 2). An aspiration

\*Corresponding author: Marius Kryzauskas, Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Lithuania, Email: marius.kryzauskas@santa.lt

Vytautas Lipnickas, Simonas Uselis, Donatas Danys, Kestutis Strupas, Clinic of Gastroenterology, Nephrourology and Surgery, Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Lithuania

of the 2500 ml dark coloured cystic content (serohemorrhagic fluid) was performed. Nevertheless, the decrease in volume was temporary and one month later cystic lesion was the same size like before aspiration. A multidisciplinary team decision was made and operative treatment was suggested to the patient. Extirpation of the cyst was accomplished and no defect in the abdominal wall was observed (Figure 3, 4). Two drains were placed in residual place, which were removed on the 2<sup>nd</sup> postoperative day. After removal of the excess of the skin, the subcutaneous layer and skin were sutured by individual stitches (Figure 5). The removed specimen was sent for pathological evaluation (Figure 6a, 6b), which revealed granulomatous inflammation in fibrotic wall of the pseudocyst. There was

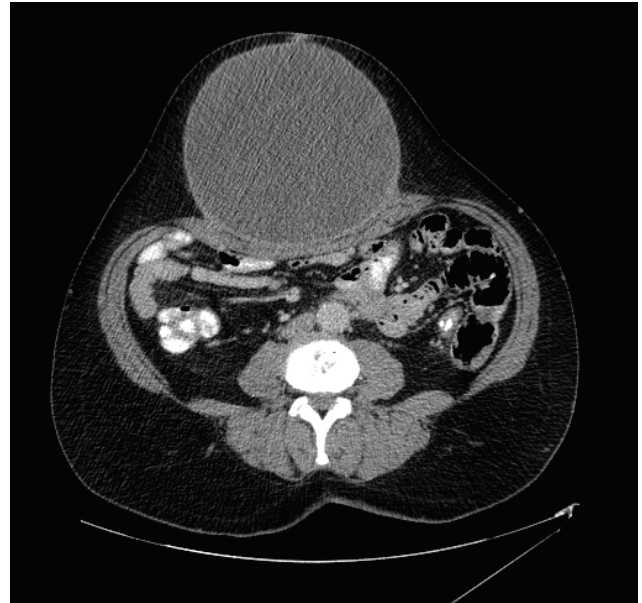
no growth of bacterial cultures in the fluid. The patient was discharged on the 7<sup>th</sup> postoperative day. Ultrasonography two weeks after discharge again showed fluid collection. There were 6 aspirations every week starting with 400 ml serous fluid at the beginning and 60 ml at the end.



**Figure 1:** Presentation of the abdomen before the operation



**Figure 3:** Excision of the encapsulated seroma in progress



**Figure 2:** Giant cystic lesion on the computed tomography scan



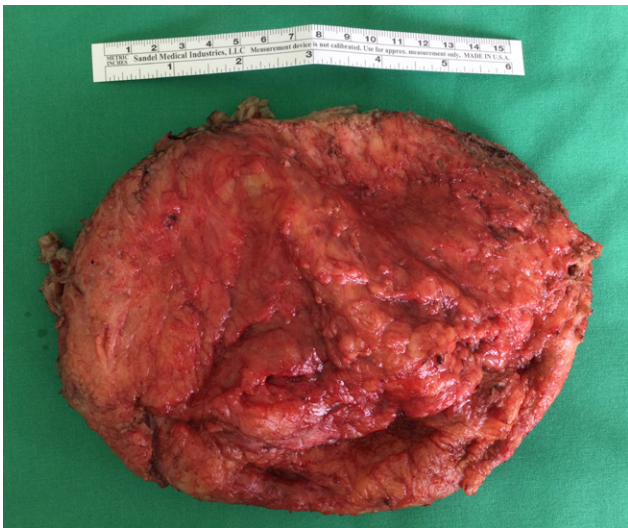
**Figure 4:** Anterior abdominal wall after encapsulated seroma excision



**Figure 5:** Anterior abdominal wall after wound closure

No hernia recurrence, seroma or other complication was observed one month after the last aspiration.

**Ethical approval:** The research related to human use has been complied with all the relevant national regulations, institutional policies and in accordance the tenets of the Helsinki Declaration, and has been approved by the authors' institutional review board or equivalent committee.



**Figure 6:** Removed specimen

**Informed consent:** Informed consent has been obtained from the individual included in this study.

### 3 Discussion

There are either no, or non-specific, symptoms in early stages of the disease. Usually, patients are admitted to hospital due to abdominal mass, which had increased in the course of a few months [1,5,6]. A medical history of previous incisional hernia repair using polypropylene mesh is presented the majority of these cases [4,7,8], less commonly after inguinal hernioplasty [9,10]. A tense cystic palpable mass with fluctuation is presented during clinical examination. Additionally an ultrasonography reveals fluid cyst with thick external wall and internal septations with or without debris inside [4,6,11]. Abdominal CT confirms pseudocystic appearance and clarifies extraperitoneal location ruling out recurrent incarcerated incisional hernia from differential diagnosis [4,7-9,12]. While prevalence of giant pseudocyst is low, etiology also remains unclear. Other authors suggest manifestation of simple seroma or complication of postoperative hematoma. Formation of seroma is associated with disrupted lymphatic drainage due to intraoperative dissection of subcutaneous space. Meanwhile, postoperative hematomas sometimes tend to organize and clinically appear as gigantic pseudocyst [4,5,9]. Onlay technique was used in most cases as it reported. Thus, prosthetic mesh may support inflammatory process in postoperative course [12].

Worthy of mention is that onset time from initial hernioplasty to diagnosis of pseudocyst varies extremely, from

**Table 1:** Case reports of pseudocysts after hernia repair with mesh

| Year | First author       | Case no. | Age | M/F | Hernia type                 | Size/volume (cm/ml) | Mesh    | Treatment                 | Onset time |
|------|--------------------|----------|-----|-----|-----------------------------|---------------------|---------|---------------------------|------------|
| 1993 | Waldrep [1]        | 1        | 62  | F   | Incisional                  | 20 x 15             | Marlex  | Excision                  | NM         |
|      |                    | 2        | 78  | F   | Incisional                  | 13 x 7              | Marlex  | Excision                  | 12         |
| 1998 | Arya [5]           | 3        | 74  | F   | Incisional                  | 17 x 12             | Prolene | Excision                  | 2          |
| 2004 | Ogunbiyi [6]       | 4        | 37  | F   | Incisional                  | 25 x 18             | Prolene | Excision                  | 24         |
|      |                    | 5        | 68  | F   | Spiegel                     | NM                  | Prolene | Excision                  | 12         |
|      |                    | 6        | 66  | F   | Incisional                  | NM                  | Prolene | Excision                  | 4          |
|      |                    | 7        | 46  | F   | Incisional                  | NM                  | Prolene | Excision                  | 3          |
|      |                    | 8        | 83  | M   | Incisional                  | NM                  | Prolene | Excision                  | 3          |
| 2006 | Mayagoitia [19]    | 9        | 60  | F   | Incisional                  | 20 x 25             | Prolene | Excision                  | 2          |
|      |                    | 10       | 77  | F   | Incisional                  | 25 x 30             | Prolene | Excision                  | 4          |
| 2006 | Mehrotra [13]      | 11       | 56  | F   | Incisional                  | 32 x 25             | Prolene | Laparoscopic excision     | 1          |
| 2007 | Sahin-To'rh [11]   | 12       | 31  | F   | Incisional                  | NM                  | Prolene | Excision                  | 4          |
|      |                    | 13       | 44  | M   | Incisional                  | NM                  | Prolene | Excision                  | 8          |
|      |                    | 14       | 57  | F   | Incisional                  | NM                  | Prolene | Excision                  | 25         |
|      |                    | 15       | 78  | F   | Incisional                  | NM                  | Prolene | Excision                  | 15         |
|      |                    | 16       | 70  | M   | Incisional                  | NM                  | Prolene | Excision                  | 5          |
| 2008 | Narayanan [14]     | 17       | 42  | F   | Incisional + abdominoplasty | 2000 ml             | Prolene | Excision                  | 6          |
| 2008 | Hoefkens [15]      | 18       | 79  | F   | Incisional                  | 20 x 24             | Prolene | Excision                  | NM         |
| 2008 | Omundsen [16]      | 19       | 49  | F   | Incisional                  | 4 x 3               | Prolene | Debridment                | 4          |
| 2011 | Ielpo [4]          | 20       | 46  | F   | Incisional                  | 16 x 10             | Prolene | Excision                  | 7          |
|      |                    | 21       | 58  | M   | Incisional                  | 21 x 18             | Prolene | Excision                  | 11         |
|      |                    | 22       | 79  | F   | Incisional                  | 12 x 9              | Prolene | Excision                  | 19         |
|      |                    | 23       | 55  | F   | Incisional                  | 25 x 28             | Prolene | Excision                  | 15         |
|      |                    | 24       | 74  | F   | Incisional                  | 13 x 10             | Prolene | Refused surgery           | 21         |
|      |                    | 25       | 83  | F   | Incisional                  | 17 x 12             | Prolene | Refused surgery           | 5          |
|      |                    | 26       | 63  | F   | Incisional                  | 11 x 13             | Prolene | Aspirations only          | 4          |
| 2012 | Ielpo [9]          | 27       | 63  | M   | Inguinal                    | 10 x 6              | Prolene | Excision (partial)        | 5          |
|      |                    | 28       | 61  | M   | Inguinal                    | 11 x 5              | Prolene | Excision (partial)        | 7          |
| 2013 | Salgaonkar [7]     | 29       | 71  | F   | Incisional                  | 25 x 20             | NM      | Excision                  | 3          |
|      |                    | 30       | 56  | F   | Incisional                  | 1300 ml             | Prolene | Excision                  | 10         |
| 2014 | Saavedra-Perez [8] | 31       | 79  | F   | Incisional                  | 31 x 19             | PTFE*   | Excision                  | NM         |
| 2014 | Mantelou [12]      | 32       | 78  | F   | Incisional                  | 18 x 13             | Prolene | Excision                  | NM         |
| 2014 | Vasilakis [17]     | 33       | 52  | M   | Incisional                  | 10 x 17             | NM      | Excision (partial)        | NM         |
| 2015 | Narkhede [18]      | 34       | 36  | F   | Incisional                  | 24 x 15             | Prolene | Excision                  | 18         |
| 2016 | van Loon [10]      | 35       | 63  | M   | Inguinal                    | 16                  | NM      | Laparoscopic fenestration | 6          |
| 2017 | Current report     | 36       | 54  | M   | Incisional                  | 17 x 15             | Prolene | Excision                  | 6          |

NM – not mentioned, \*PTFE – polytetrafluoroethylene

1 to 25 months. The diameter of the pseudocysts varies from 13 x 7 cm to 32 x 25 cm in reviewed cases, respectively. Predominantly giant pseudocysts occur in females (27) in comparison with males (9) (Table 1).

Conservative treatment was fruitless or even not considered due to thick wall, internal septations and dense content of the cyst in presented cases. Surgical treatment appears to be simple and effective for giant pseudocysts. No recurrence was reported during postoperative follow-up period in all cases.

## 4 Conclusion

Surgical treatment of giant pseudocyst after incisional hernia mesh repair is safe and feasible despite its low prevalence.

**Disclosure statement:** No potential conflict of interest was reported by the authors.

## References

- [1] Waldrep, D. J., Shabot, M. M., Hiatt, J. R. Mature fibrous cyst formation after Marlex mesh ventral herniorrhaphy: a newly described pathologic entity. *Am Surg*, 1993, 59, 716-718
- [2] Bittner, R., Bingener-Casey, J., Dietz, U., Fabian, M., Ferzli, G. S., Fortelny, R. H., Köckerling, F., Kukleta, J., LeBlanc K., Lomanto, D., et al.. Guidelines for laparoscopic treatment of ventral and incisional abdominal wall hernias (International Endohernia Society [IEHS])-Part 2. *Surg Endosc*, 2014, 28, 353-379
- [3] Susmallian, S., Gewurtz, G., Ezri, T., Charuzi, I. Seroma after laparoscopic repair of hernia with PTFE patch: is it really a complication? *Hernia*, 2001, 5, 139-141
- [4] Ielpo, B., Cabeza, J., Jimenez, D., Delgado, I., Torres, A. J. Abdominal pseudocyst complicating incisional hernia repair: our experience and literature review. *Hernia*, 2011, 15, 233-237
- [5] Arya, N., Batey, N. R. Pseudocyst formation after mesh repair of incisional hernia. *J R Soc Med*, 1998, 9, 647-649
- [6] Ogunbiyi, S. O., Morris-Stiff, G., Sheridan, W. G. Giant mature cyst formation following mesh repair of hernias: an underreported complication? *Hernia*, 2004, 8, 166-168
- [7] Salgaonkar, H. P., Gouda, B., Behera, R. R., Katara, A., Bhandarkar, D. Encapsulated seroma following incisional hernia repair. *AWR*, 2013, 1, 13-16
- [8] Saavedra-Perez, D., Benarroch, G., Vidal, O., Garcia-Valdecasas, J. C. Giant Abdominal Pseudocyst: A Rare Complication of Incisional Hernia Repair With Mesh. *CIR ESP*, 2014, 92, 283
- [9] Ielpo, B., Lapuente, F., Martin, P., Acedo, F., San Roman, J., Corripio, R., Vazquez, R., Fernandez-Nespral, V. First cases of giant pseudocyst complicating inguinal hernia repair. *Hernia*, 2012, 16, 589-591
- [10] van Loon, Y. T., Ibelings, M. S. Laparoscopic Fenestration of a Giant Pseudocyst after Totally Extra Peritoneal Inguinal Hernia Repair. *Case Rep Surg*, 2016, Article ID 9867645
- [11] Sahin-To'rh, G., Hala'sz, T., Viczia'n, C., Ola'h, T. Late complication after mesh repair of incisional hernias: pseudocyst formation. *Magy Seb*, 2007, 60, 293-296
- [12] Mantelou, A. G., Georgiou, G. K., Harissis, H. V. Giant pseudocyst of the anterior abdominal wall after incisional hernia mesh repair: a rare case report. *Hernia*, 2014, 18, 141-144
- [13] Mehrotra, P. K., Ramachandran, C. S., Goel, D., Arora, V. Giant pseudocyst of the anterior abdominal wall following mesh repair of incisional hernia: a rare complication managed laparoscopically. *Hernia*, 2006, 10, 192-194
- [14] Narayanan, C. D., Dinesh, N. Abdominal wall pseudocyst following abdominoplasty after postmastectomy radiation therapy. *Hernia*, 2008, 12, 545-547
- [15] Hoefkens, M. F., Vles, W. J. A giant pseudocyst following repair of an incisional hernia by a propylene mesh. *Ned Tijdschr Geneesk*, 2008, 152, 216-220
- [16] Omundsen, M., Zargar, H., Purchas, S. Giant cyst: an underreported complication of hernia mesh repairs? *ANZ J Surg*, 2008, 78, 822-823
- [17] Vasilakis, V., Cook, K., Wilson, D. Surgical resection and scarification for chronic seroma post-ventral hernia mesh repair. *Am J Case Rep*, 2014, 15, 526-529
- [18] Narkhede, A., Marda, S. S., Balani, A., Alwala, S., Shah, M., Zanke, R., Sarjare, S., Kumar, A. Giant Abdominal Wall Pseudocyst with Recurrent Incisional Hernia Following Mesh Repair Hernioplasty. *J Gastrointest Dig Syst*, 2015, 5, 349
- [19] Mayagoitia, J.C., Almaraz, A., Di'az, C. Two cases of cystic seroma following mesh incisional hernia repair. *Hernia*, 2006, 10, 83-86