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Research Article

Postoperative Seroma after Hernioplasty: What can we do? A Systematic Mini-Review of Treatment Options

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Abstract

Background: Postoperative seroma formation after hernia surgery is a common complication that can lead to extended medical care, including radiological tests and therapies. Despite in most of today's bibliographic references seroma management is often mentioned in breast and abdominoplasty surgeries; it is an important complication after hernioplasty. When seroma becomes symptomatic, the patient's quality of life is often altered. In persistent and chronic seromas aspiration and drain placement use to fail, so a new seroma management technique is needed, in order to indentify the best treatment options. Thus, the aim of this paper is to review the scientific literature on postoperative seroma management after hernioplasty.

Methodology: This article presents a systematic review of the literature on the management of seroma after hernia surgery. The PubMed database was searched using the terms "postoperative seroma management AND hernia," "postoperative seroma management AND hernioplasty," and "postoperative seroma management."

Outcome: Seven case reports were identified in which the most recommended surgical approaches to evacuate fluids or scarify/excise the seroma capsule. Some reports have noted the surgical performance of sclerosant or sealant substances, such as talc, doxycycline, or fibrin.

Conclusions: Owing to the low quality of the studies examined, most approaches reported high rates of success. However, further randomized trials are needed to defend any of them.

Keywords: Postoperative seroma management; post-hernioplasty seroma; chronic seroma

Introduction

Postoperative seroma management is an important and enduring research topic among plastic and general surgeons, especially for breast surgery and abdominoplasty [1-3]. Notably, the reason for seroma development remains unknown [4], but it is apparent that large dissection spaces with damaged vascular and lymphatic structures facilitate their appearance. In abdominal wall reconstruction surgery, the inflammatory environment within which the seroma forms correlates with the use of meshes, as at least 20% of seromas are reported after ventral hernia repair [5].

Several treatment options reported by plastic surgeons have been recommended and used by general surgeons for post-hernioplasty seroma management. While most of seromas are asymptomatic or resolve with a conservative management, when they become persistent the patient´s life quality could be influenced. In most cases, fluid aspiration or drain placement is recommended. Nevertheless, when seromas become persistent, or complications arise, those treatments tend to fail. In addition, when repeated aspirations are needed, some complications as seroma or/and mesh infection could appear. Therefore, the aim of this review is to ascertain and clarify the optimal treatment options for postoperative seroma management after hernia surgery.

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Materials and Methods

Bibliographic sources were obtained from PubMed, followed by snowball citation searches. The search terms included "postoperative seroma management AND hernia," "postoperative seroma management AND hernioplasty," and "postoperative seroma management". The search strategy is illustrated in Figure 1 [6]. All citations, titles, and abstracts were comprehensively examined by all authors taking part in this study. The inclusion and exclusion criteria are explained in the following two subsections.

Inclusion criteria

All studies included in the analysis detailed postoperative seroma management after hernia surgery. Both emergency and elective surgery hernia repairs were included, and postoperative seroma treatment was reflected. The surgical approaches and sclerant agents were not discriminated against for exclusion purposes.

Exclusion criteria

All reports in which hernia surgery was not performed were excluded, as were studies in which seroma management was not reflected, or the surgical area was not abdominal.

Data synthesis and quality assessment

The studies were organized by authors, year of publication, journal name, number of patients, and treatment option, as shown in Table 1.

Results

From the PubMed database, 1,278 reports were identified. Their

Table 1: Reports summary.

Author	Year	Journal	Number of patients	Treatment option
Lehr et al. [7]	2001	Journal of the Society of Laparoendoscopic Surgeons	3	Minimal invasive seroma drainage and fibrinous debris remove + scarification of seroma capsule+talc powder administration
Tsereteli et al. [8]	2007	Hernia	7	Minimal invasive seroma cavity exploration+ drainaige into peritoneal cavity
Martel G et al. [9]	2013	Gut	1	Percutaneous injection of a fibrin sealant
Vasilakis et al. [10]	2014	American Journal of Case Report	1	Incision up to seroma, seroma drainage + excision and scarification of seroma capsule
Al Daoud et al. [11]	2018	International Journal of Surgery Case Reports	1	Doxycycline sclerotherapy using the Negative Pressure Wound Therapy System KCI V.A.C.Ulta™
Lopez-Monclus et al. [12]	2021	Scandinavian Journal of Surgery	6	Minimal invasive seroma drainage and fibrinous debris remove+talc powder administration
Ghazal T et al. [13]	2022	BMJ Case Reports	1	Capsulectomy +scarification

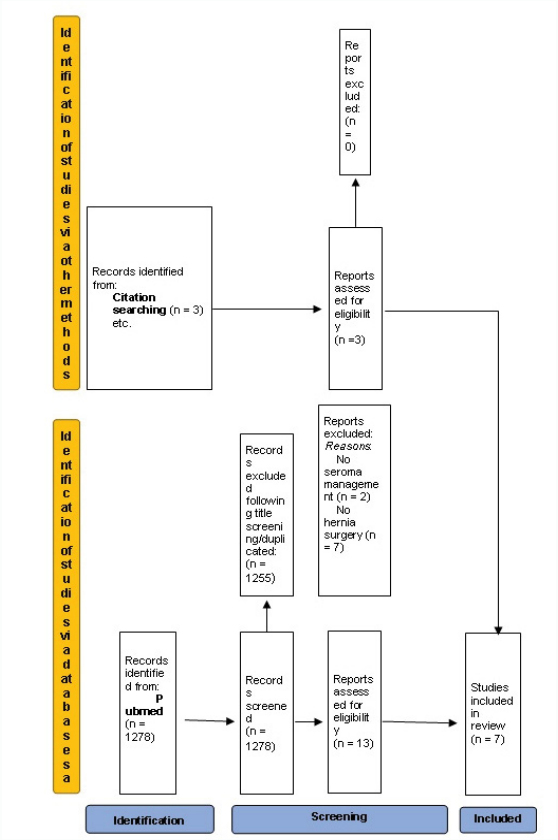

Figure 1: PRISMA 2020 flow diagram.

comprehensive review led to 13 eligible reports. All the reports where no seroma management in hernia surgery was described were excluded. From the analysis of the bibliographies of the mentioned articles and citation searches, three new reports were added.

Among the 16 reports mentioned, seven were excluded as no hernia surgery was performed. In two of the remaining nine reports, only seroma prevention was described; thus, they were excluded. The PRISMA flow diagram [6] of the search process is presented in Figure 1.

Pertinent findings of the bibliographic review are listed in Table 1. Most of the papers have been published before 2018 [7-10] and in case report journals [10-13]. Treatment options vary from minimal invasive percutaneous chemical agent introduction in seroma cavity to big laparotomic incisions and more aggressive approaches.

All articles were case-reports, and data from a total of 20 patients were reported. The most common treatment options and approaches are discussed in the following subsections.

Surgical approaches

All but three studies mentioned their surgical approaches. In three reports, a minimally invasive approach was made using laparoscopic trocars [7,8,12]. In one study, a surgical laparotomic incision was described [10]. In all studies, seroma drainage was carried out. However, only two mentioned debris removal [7,12].

Capsule management

The seven reports were sorted according to the type of seroma management: adding or not adding supplementary sclerosant sealant substances. When no other chemical agents were used, scarification or excision of the seroma capsule was performed. When scarification was described, an argon beam coagulator was often used [7,10]. In other cases, seroma capsule excision was described, as in Vasilakis et al. [10] and Ghazal et al. [13]. In Vasilakis et al. [10], both scarification and excision were carried out while avoiding the scarification of the posterior aspect of the seroma's pseudocapsule to avoid damage to the mesh and intra-abdominal contents. Notably, in Tsereteli et al. [8], a partial endoscopic excision of the posterior side of the seroma capsule was performed while draining the seroma to the abdominal cavity without resecting the remaining capsule.

Sclerosant-sealant substances

Several sclerant or sealant substances have been described in the reports. In two studies, talc powder was administrated inside the seroma cavity with contradictory outcomes obtained [7,12]. In Lopez-Monclus et al. [12], an 83% seroma recurrence rate after talc seromadesis was reported, whereas in Lehr and Schuricht [7], 33% recurrence was described. Despite administering the same doses of talc, Lehr and Schuricht [7] scarified the seroma capsule prior to talc administration.

In one report, a percutaneous fibrin sealant was injected with successful outcomes [9]. In Al Daoud et al. [11], doxycycline infusion was performed using the Negative Pressure Wound Therapy System (KCI V.A.C.Ulta™) for deferred skin closure.

Discussions

The aim of this review was to clarify the best management option for chronic seroma after hernia surgery. Despite the low number of report found and their low quality, the relevance of investigating postoperative seroma management in this manner is high, as it may encourage other researchers to carry out progressive studies of higher quality. It is important to notice that most of the reports have been

published before 2018, so that new and well-designed reports are needed.

From the data obtained, single-patient reports dominated the results, making it difficult to reach sound conclusions about the best treatments for chronic seroma. Generally, the seven reports suggest treating the seroma capsule after the fluid is drained, where treatment includes either or both excision and scarification. Furthermore, in all but one study [12], good outcomes were reported when a sclerosant agent was added, so that chemical agent should be use.

Conclusion

Despite the small amount of evidence obtained, it seems that seroma capsule excision or scarification with the treatment of a sclerosant agent inside the seroma cavity is a promising option for chronic seroma treatment. Pending higher quality reports, the decisions made to manage chronic seroma remain within the purview of applicable surgeons.

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