

# Strategies for the Prevention and Management of Seroma Formation After Groin Procedures: A Comprehensive Review

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## Objective:

Groin exploration surgery is commonly performed for various indications, such as hernia repair, lymph node dissection, and vascular intervention. Seromas, collections of serous fluid that accumulate in the surgical site due to disruption of lymphatic vessels, remain a frequent complication despite advancements in surgical techniques. Prevention of seromas still remains difficult to address. This paper aims to fill this gap through a comprehensive literature review addressing seroma prevention and management.

## Methods:

Using the keywords seroma formation and groin surgery and seroma prevention, a total of 42 papers were selected based on the relevance. Our data was subsequently categorized into preventative measures and post-operative management, then further broken down by type of intervention.

## Results:

Findings were separated into three main categories: seroma prevention, seroma management, and indications for a take back to the operating room (OR). Physical agents (incisional negative wound pressure therapy (iNWPT), porcine dermal collagen, and fibrin tissue sealant adhesives), sclerosing agents (talc and doxycycline), and surgical techniques (lymphatic ligation and quilting sutures) all showed varying levels of success in reducing the formation of seromas. The percent reduction in seroma formation of these methods are summarized in Table 1. Conservative management includes elevation, compression, bed rest, and prophylactic antibiotics, while larger seromas are managed with aspirations. Seroma evacuation or surgical drainage, injection of sclerosing agents, and surgically creating a muscle flap with adjacent tissue to cover the cavity showed success in cases requiring OR takeback.

Table 1. Reduction in seroma formation using various techniques as outlined in the literature. See attached.

## Conclusion:

Seroma formation is a frequent complication following groin exploration surgery. While most existing literature on this topic is from the plastic surgery field, the frequent use of groin access in vascular surgery highlights the need for evidence-based guidelines for both preventing and treating seromas. Additional studies are necessary to refine and establish standardized practices in this area.

Reduction in seroma formation using various techniques as outlined in the literature.

Table 1. Reduction in seroma formation using various techniques as outlined in the literature.

<b>Technique</b>	<b>Reduction in Seroma Formation</b>	<b>Type of Study</b>	<b>Sample Size (total;treatment)</b>
Incisional Negative Wound Pressure Therapy (iNWPT)	6.3%-44.4%	Ex Vivo Experimental	N = 1
		Retrospective	N=151;73
		Case Report	N= 2 case reports
Porcine Dermal Collagen	46.17%-86.88%	RCT Animal	N=18;6
Fibrin Tissue Sealant Adhesives	0.17%-37.5%	RCT	N=32;16
		Systematic Review	N=6 RCT studies
Talc Sclerodesis	18.1-33.0%	Clinical Trial	N=180;74
		Comparative Animal	N=6
		Case Report	N=2 case reports
Doxycycline	87.94%	Retrospective	N=38
		Case Report	N=1 case report
Lymphatic Ligation	12.0%	RCT	N=201;101
Quilting Sutures	13.0%-56.0%	RCT	N=108;54
		Prospective	N=27;11
		Observational	N=82;41