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**VACUUM ASPIRATION AND NPWT IN CHEST WOUND INFECTIONS AND PLEURAL EMPYEMA**H. Hosseini<sup>1</sup>, I. A. Tarasova<sup>1,2</sup><sup>1</sup>*I. M. Sechenov First Moscow State Medical University*<sup>2</sup>*Petrovsky National Research Centre of Surgery, Moscow*

✉ amirhosseini148@yahoo.com

**Abstract**

Negative pressure wound therapy (NPWT) and vacuum aspiration significantly improve outcomes in chest wound infections and pleural empyema. NPWT promotes rapid wound healing, reduced mortality, and shorter hospital stays compared to traditional methods.

Chest wound infections and empyema present serious therapeutic challenges. NPWT, involving sealed vacuum dressings, actively removes exudate, promotes perfusion, and accelerates healing. Clinical evidence demonstrates NPWT significantly reduces mortality (~ 54 %), reinfection (~ 57 %), hospital stay (4.5 days), and ICU duration (1.1 days) in deep sternal wound infections compared to traditional care [1, 2]. Similarly, thoracic wound infections treated with NPWT experience faster wound closure, reduced complications, and shorter hospitalization [3–6]. In chronic empyema cases, NPWT dramatically reduces cavity closure time, facilitating earlier definitive surgical intervention. Safety considerations include protection of vital structures and management of potential complications such as bleeding or air leaks [7, 8]. Overall, NPWT has become an essential part of managing complex thoracic infections, significantly improving patient recovery and clinical outcomes.

**Materials and methods**

This study reviewed clinical data on negative pressure wound therapy (NPWT) and vacuum aspiration in chest wound infections and pleural empyema. NPWT involved sealed dressings connected to a vacuum pump for continuous exudate removal, perfusion improvement, and granulation tissue stimulation. Literature data were analyzed for mortality, reinfection, hospital stay, ICU stay, wound closure time, and complication rates compared with traditional care.

**Results**

NPWT significantly reduced mortality (~ 54 %) and reinfection (~ 57 %) rates in deep sternal wound infections compared with conventional therapy. Average hospital stay decreased by approximately 4.5 days, and ICU stay by 1.1 days. Patients with thoracic wound infections achieved faster wound closure and fewer complications. In chronic empyema, NPWT shortened cavity closure time, enabling earlier definitive surgical treatment.

**Conclusion**

NPWT and vacuum aspiration represent effective adjunctive treatments for complex thoracic infections and pleural empyema. They promote rapid wound healing, reduce complications, and shorten hospitalization. Clinical protocols should incorporate NPWT in suitable cases, with careful attention to safety measures such as protecting vital structures and managing risks like bleeding or air leaks.

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