

# Support literature LVST<sup>TM</sup>, LVS NG<sup>TM</sup> and HVST<sup>TM</sup>

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**MEDINORM LVS NG<sup>®</sup> LOW VACUUM SYSTEM**

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**MEDINORM LVS<sup>®</sup> LOW VACUUM SYSTEM**

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**Medinorm wound drainage for optimal wound drainage**

- A constant production quality
- More than 25 years of experience in production of wound drainage systems
- Clinically tested and extensively researched
- Constantly renewed in order to reduce the need for changing patients and to provide a further wound healing
- Optimal quality control according to ISO 9001 and CE marks
- The most varied product portfolio incl. high and low vacuum drainage systems with constant suction
- Unique in the world with low vacuum systems utilizing a constant suction
- Low Vacuum Medical continues to invest and develop new wound drainage systems
- Delivery from stock for domestic and lead times
- Full qualified personnel support hospital staff on every department (OR, Recovery and Ward)
- Van Straten Medical only Medinorm wound drainage systems in more than 35 countries
- All products are CE approved
- CDONOR is FDA approved

**Medinorm highlighted: the importance of high quality wound drainage systems utilizing a constant suction.**

A constant suction provides a better wound healing. The wound edges are constantly kept together during the drainage process. The pre-vascularized system will provide a continuous negative pressure inside the wound area.

The Medinorm high- and low vacuum wound drainage systems with constant suction are being produced in the production facility of Van Straten Medical, named Medinorm, which is located in Germany (founded in 1984 by J. van Straten).

Germany has always been the production country of choice, because the country is renowned for high precision and excellent production quality of medical products.

More than 25 million Medinorm wound drainage systems have been used clinically since 1984.

## LVST<sup>TM</sup> and LVS NG<sup>TM</sup> low vacuum wound drainage systems literature reviews and brochures

VAN STRATEN MEDICAL

**SCIENTIFIC REVIEW: POSTOPERATIVE WOUND DRAINAGE METHODS**

© Van Straten Medical (Netherlands, The Netherlands) | B. Klein, MD, University of Twente, Biomedical Engineering

**HOW TO CHOOSE THE APPROPRIATE WOUND DRAINAGE SYSTEM**

**INTRODUCTION TO POSTOPERATIVE WOUND DRAINAGE**

In most cases, surgeons have made attempts to prevent accumulation of serum fluid beneath wound flaps and to improve approximation of the underlying tissues by applying bulky pressure dressings [1]. However, when these dressings are removed, edema and serous drainage develop at the underlying tissues, which increases the morbidity. In 1957 Charles Chesser developed the passive closed suction drainage system. The so-called 'vacuum-seal' drainage system allowed drain drainage over pressure drainage [2]. In 1968, Professor Rubin developed a pre-vascularized and reusable wound drainage system. It was considered to be the most appropriate in orthopedic surgery in order to prevent infection and maintain [3]. Later, several other solutions, such as infusion and spring-loaded drains, were developed to reach negative suction pressure. Since then, the use of wound drainage has grown significantly and has been used extensively in many types of surgery. Table 1 is a summary of the literature in that the most appropriate wound drainage system for each specific individual situation.

VAN STRATEN MEDICAL

**SCIENTIFIC REVIEW: SURGICAL RECOMMENDATIONS FOR THE USE OF POSTOPERATIVE WOUND DRAINAGE SYSTEMS**

© Van Straten Medical (Netherlands, The Netherlands) | B. Klein, MD, University of Twente, Biomedical Engineering

**OBJECTIVES**

The objective of this clinical opinion is to summarize the literature about the application of drainage systems to various orthopedic wounds. The results of this literature review can be used as a recommendation for surgeons and users to determine which closed suction drainage (CSD) should be used. Furthermore, the clinical opinion also recommends if CSD should be either a high or low vacuum system.

**INTRODUCTION**

Despite the fact that the use of wound drainage systems with negative suction is pre-surgical procedure, there are still no guidelines and clinical studies on this subject.

**DISCUSSION (low and high vacuum)**

High and low vacuum are the two most commonly used types of wound drainage methods [3]. Table 1, non-orthopedic conditions use CSD (mainly after joint arthroplasty). Fisher et al. reviewed a number of studies to determine the advantages and disadvantages of closed suction drainage [4]. The main goal of the review was to determine if high or low vacuum was more effective in blood evacuation and tissue retraction [5-8]. On the other hand, the results of Cook et al. showed that the use of drainage systems with low vacuum was more effective in blood evacuation and tissue retraction [9].

**CONCLUSIONS**

Based on the literature, the use of CSD after primary hip arthroplasty demonstrated the reduced number of draining complications. Therefore CSD was recommended to reduce the amount of blood leaking through the wound. In addition the literature of draining, serous, and the postoperative wound healing after hip arthroplasty [10]. The results of Cook et al. CSD showed no statistical difference in the height levels and in the number of blood transfusions required to have a follow-up orthopedic surgery. However, the use of low vacuum was found to be more effective in blood evacuation [9]. This was confirmed by the results of van der Wal et al. who found that the use of CSD after primary hip arthroplasty demonstrated the reduced number of draining complications. Therefore CSD was recommended to reduce the amount of blood leaking through the wound. In addition the literature of draining, serous, and the postoperative wound healing after hip arthroplasty [10].

VAN STRATEN MEDICAL

**SCIENTIFIC REVIEW: COMPARISON BETWEEN INTERMITTENT (SPRING-LOADED) AND CONTINUOUS CLOSED SUCTION DRAINAGE OF ORTHOPEDIC WOUNDS: A CONTROLLED CLINICAL TRIAL**

© Van Straten Medical (Netherlands, The Netherlands) | Arnold T. Berman, MD, Daniel F. Berman, MD, Stephen J. Bosman, MD, Albert A. Weiss, MD

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