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# WOUND CARE, TISSUE REPAIR AND REGENERATIVE MEDICINE

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## Interactive wound dressings in the treatment of venous ulcers

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**Objective:** To evaluate the efficacy and safety of interactive wound dressings in the treatment of venous ulcers.

**Material and methods:** An open non-randomized prospective study included 40 outpatients over 18 years old with venous trophic ulcers area was up to 25 cm<sup>2</sup>. Exclusion criteria: severe comorbidities, diabetes mellitus or lower extremity artery disease, impaired movements in lower limb joints, hypersensitivity to silver. Wound dressing or combination of dressings was chosen depending on symptoms and wound healing stage. At the 1st stage, ulcer debridement and dressing were performed daily. We used a hydrogel, alginate, carboxymethyl cellulose coatings, coating of hydrophilic polyurethane foam, and dressing comprising laminated viscose material soaked in povidone-iodine ointment. At the 2nd or 3rd stage, we applied different mesh coatings. Dressing was carried out every 2-3 day at the stage of granulation and epithelialization.

Treatment lasted 8 weeks; follow-up examinations were carried out weekly. We analyzed symptoms of venous disease, state of the ulcer and surrounding tissues, as well as ulcer area. Adverse side effects of treatment were considered.

**Results:** Overall sample enrolled 40 participants including 13 (32.5%) men and 27 (67.5%) women aged 32 - 81 years (median 61.5, interquartile range 48.5 - 70.5). Thirty-eight were completely followed-up. One patient left for family reasons. Another patient required hospitalization in the department of purulent surgery.

Treatment resulted ulcer healing in 19 (50%) out of 38 patients. In 14 cases, complete epithelialization occurred within the first month. By the end of treatment, ulcers area decreased by 2 times (from 298.4 to 145.4 cm<sup>2</sup>,  $p < 0.0001$ ). Complete cleansing of ulcer from necrotic tissues and fibrin was observed in 10 (26%) patients. Single areas of fibrinous tissue persisted on the wound surface in 9 (24%) patients. No

epithelialization was observed only in 1 (3%) case.

Dressings caused no technical difficulties for patients. There were no major adverse events.

**Conclusion:** Interactive wound dressings combined with compression hosiery is ease, effective and safe approach for venous ulcers. This method contributes to fast cleansing of ulcers and stimulates regeneration processes in most patients.

### Recent Publications

1. Bogdanets L I, Yumin S M, Golovanov O V, A N Kuznetsov. Experience in the use of interactive wound dressings in the treatment of venous ulcers. *Phlebologia*. 2021, Vol. 15 Issue 4, p268-276. 9p.
2. S M Yumin, V V Andriyashkin, S G Leontiev, I A Zolotukhin. Partial occlusion of the inferior vena cava in prevention thromboembolism of the pulmonary arteries. *Phlebology*, 1, 2010.
3. Bogdanets L I, Yumin S M, Golovanova O V, Kuznetsov A N. Experience in the use of interactive wound dressings in treatment venous ulcers. *Phlebology*. 2021;15(4):268–276

### Biography

S M Yumin, born in 1979, currently working as an assistant at the Department of Faculty Surgery No. 1 of the medical faculty of the Russian National Research Medical University named after N.I. Pirogov and a surgeon at the MEDSI clinic. In 2002, I graduated from the Medical Faculty of the N.I. Pirogov Medical University. From 2002 to 2004 I was trained in full-time clinical residency, and from 2004 to 2007 I studied in full-time clinical postgraduate studies at the Department of Faculty Surgery of the Medical Faculty of the University. In 2011 I defended my PhD thesis on the topic: "Long-term results of treatment of ilio caval thrombosis." From 2007 to the present, I have been working as an assistant at the Department of Faculty Surgery. Certificate in the specialty "surgery", confirmed in 2019. Since 2004 and to this day I work part-time as a surgeon, I have modern methods of diagnosis and treatment of surgical diseases, I have experience in inpatient and outpatient surgical care. The main areas of surgical activity: phlebology, general surgery, purulent surgery.

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**TREATMENT OF VENOUS ULCERS USING INTERACTIVE WOUND COVERINGS**

