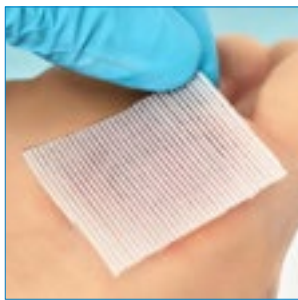


Keynote Forum

April 15, 2022 | Day 01

Wound Care 2022



5th International Conference on
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5th International Conference on
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Non-invasive methods for monitoring the state of tissues in the wound area

Monitoring the state of tissues in the wound area allows to evaluate the dynamics of the wound process, the effectiveness of the methods of treatment used and, on this basis, take timely measures to adjust the treatment. The importance of an in-depth knowledge of wound physiology is highlighted in Wound Care Clinical Guideline V1.1, developed and published by The Royal Cornwall Hospital in 2021.

For non-invasive assessment of the state of tissues in the wound area, various methods are used: measurement of saturation, temperature, plethysmography, impedancemetry, and others. At present, the level of technology makes it possible to set and solve the problems of continuous monitoring of the state of tissues in the area of wounds using miniature wearable sensors attached with a patch to the skin with telemetric transmission of information.

The purpose of this review is to draw the attention of specialists to the possibilities of various non-invasive methods for assessing the state of tissues. At present, methods for measuring tissue saturation and temperature have received the greatest development. The accuracy of determining the saturation of tissues with oxygen in modern high-resolution devices reaches 0.1%. However, saturation measurement devices are mainly based on finger-through techniques, which are of little use for assessing tissue oxygen saturation near most wounds. Therefore, the limited experience of using reflected light technologies to assess saturation should be carefully evaluated.

The measurement of temperature in most cases is based on the determination of skin temperature, while the temperature of deep tissues - wearable deep body thermometers is of the

greatest value. Such methods based on infrared and ultrasonic sensors exist, but they are poorly validated in medicine, as disclosed in Improvement of zero-heat-flux type deep body thermometer intended for use in hot environments.

Plethysmography in the variant of photoplethysmography has found very wide application in the form of finger blood flow sensors. However, their application is difficult for other localizations, except for fingers. Therefore, electrical high-frequency impedancemetry of tissues is recognized as promising for assessing the dynamics of both the plethysmogram and blood flow pulsations, as presented in potential of impedance spectroscopy as a manifold non-invasive method for medical applications. D. Bouchaala, Hanen Nouri, O. Kanoun. Published 2021 Materials Science Smart Sensors, Measurement and Instrumentation. Thus, the literature data indicate the great potential of non-invasive methods for assessing the state of tissues for monitoring the wound process.

Recent Publications

1. Parshikova S A, Parshikov V V. Non-invasive methods of monitoring the wound process (review of the literature). Perspectives of their application in maxillofacial surgery in children. Modern problems of science and education. 2012. - No. 2.
2. Brailovskaya T V. Comprehensive morphofunctional characteristics of the results of surgical treatment of patients with facial soft tissue injuries. Dentistry. -2008. - T. 87, No. 5. - S. 35-40.
3. Milyukov V E, Polunin S V. Modern methods for determining the viability of muscle tissue when choosing the volume of surgery. Surgery. Journal them. N.I. Pirogov. 2011;(4):73-77.

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Speaker Biography

Vladimir Emelyanenko was born in 1953. The main areas of clinical work: cardiology, internal medicine, psychotherapy. He took part in the examination of sailors who suffered as a result of the accident of the nuclear reactor of the nuclear submarine K-19. Based on these materials, in collaboration with Professor E.E. Gogin, he wrote a monograph "Combined Radiation Injuries". In 1988, he provided assistance to the victims of the earthquake in Armenia. The results of treatment were published in

several papers, where he outlined the features of wounds and lesions of internal organs that occur with prolonged compression syndrome. He revealed a phenomenon that causes Korotkov sounds, which determine systolic and diastolic blood pressure. Author of more than 100 scientific papers, Professor. From 2015 to the present the chief physician, then the scientific director of the private organization First Clinical Medical Center.

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**The role of PRP therapy in tissue repair after micro-focused
ultrasound therapy**

Aesthetic medicine currently uses a wide arsenal of hardware methods, including high-intensity technologies. However, the clinical effect of the procedures performed is not equally obtained in different patients. Most likely, the result of exposure to high-intensity technologies with controlled tissue damage has a certain dependence on the regenerative potential of tissues. To improve the regenerative ability of tissues PRP therapy is widely used. In our study, we studied the usage of a combined method of microfocused high-intensity ultrasound in combination with PRP therapy for the treatment of various morphotypes of involutive skin changes.

The study involved 220 patients with involutive skin changes. 2 main equal groups for the therapy were formed depending on the therapy. In each main group patients were divided into 3 subgroups according to the predominant morphotype of aging. Diagnostic manipulations were performed before procedure as well as after 1, 3, 6 and 12 months.

When using monotherapy with microfocused ultrasound in order to correct involutive skin changes, with all morphotypes of aging, a post-procedural compensatory reaction develops within 6 months in the form of an increase in the thickness and acoustic density of the epidermis. This factor indirectly indicates the recovery period of tissues, in which it is impractical to carry out other stimulating procedures to improve the quality of the skin. After 12 months, the indicators of dehydration are leveled out with a complete restoration of dermo-epidermal structures.

In therapy with combined microfocused ultrasound and plasma enriched with growth factors, a faster and more physiological result of dermal remodeling was obtained in patients with different morphotypes of skin involution.

According to the results of the study, more effective result of dermal remodeling was proved in patients with various morphotypes of skin involution with combined therapy with microfocused ultrasound and plasma enriched with growth factors.

Recent Publications

1. Zhanna Yu Yusova, Tatiana V Stepanova, Elena L Baranova, Diana V Demidion. Correction of involuntional skin changes using microfocused ultrasound combined with PRP-therapy. Electronic Journal of General Medicine. vol.16, Issue 6, 2019, em. 175.
2. Yusova Zh Yu., Stepanova T V., Belyakov P A. Combined use of micro-focused ultrasound and autologous plasma with cells in the correction of involutive skin changes. Medical Alphabet. Dermatology Series. 2019, Vol. 2, No. 26 (401), pp. 105-109.
3. Yusova Zh.Yu., Stepanova T.V. Micro-focused ultrasound in combination with PRP therapy in the correction of involutive skin changes. PlasticSurgeryandAestheticMedicine.2020;No.4,pp.34-40.

Speaker Biography

Zhanna Yu Yusova holds a Doctor of Medicine, professor of department of dermatology and cosmetology FGBU DPO "CGMA" of The Office of the President of The Russian Federation, Russia. A member of EADV, a member of various Russian Associations of aesthetic medicine specialists. Certified trainer of the companies MERZ, Hyalual, Martinex. Chief medical officer of the clinic of aesthetic medicine in Moscow, Russia. The author of patents own medical, therapeutic and preventive protocols, the creator of the unique author's techniques for injection contour plastics of the face and BTA. Medical practice in dermatology and aesthetic medicine is over 22 years. A participant and speaker of national and international congresses and workshops on aesthetic medicine.

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**Vacuum sealing drainage with instillation in treatment of necrotizing soft-tissue
infection: A retrospective analysis**

Necrotising soft-tissue infection is a rare but life-threatening infectious disease with high morbidity and mortality. It is typically caused by toxin-producing bacteria and characterized clinically by a very rapid progression of the disease with significant local tissue destruction. In this study, we intend to explore effective wound management to control the invasive infection and to decrease the high mortality. This retrospective analysis explored the wound management and mortality in patients with necrotising soft-tissue infection. Extensive debridement, vacuum sealing drainage (VSD) with normal saline instillation combined with broad-spectrum or sensitive antibiotics, and supportive therapies were used. All 17 patients included in the analysis survived. The microbiology of 11 patients was found to be polymicrobial. Of the patients, 14 were discharged with completely healed wounds and three were transferred to a local hospital after the systemic and invasive wound infection was controlled. Our experiences revealed the outstanding effect of VSD with instillation in removing the debris of necrotising tissue on the wound bed, in the continual and complete drainage of wound exudates, and in prompting wound healing.

Recent Publications

1. Duan H, He Y, Zhang H, Wang F, Chen S, Wang J. Vacuum sealing drainage with instillation in the treatment of necrotising soft-tissue infection: a retrospective analysis. *J Wound Care*, 2020, 29(9):510-517.
2. Duan H, Bai H. Is Mitochondrial Oxidative Stress the Key Contributor to Diaphragm Atrophy and Dysfunction in Critically Ill Patients? *Crit Care Res Pract.* 2020, 2020:8672939.
3. Bai HL, Duan HJ, Chen C, Liu LY, Wu YS, Han SF, Wang XT. Effects of Janus kinase/signal transduction and activator of transcription 3 pathway inhibitor in skeletal muscle function in severely burned rats and its mechanism. *Zhonghua Shao Shang Za Zhi.* 2021, 37(3):271-278.

Speaker Biography

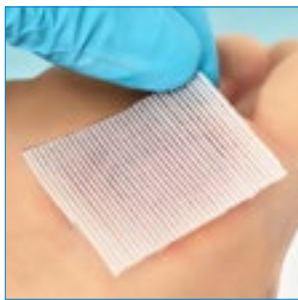
Hongjie Duan has completed his MD at the age of 25 years from the Fourth Military Medical University and PhD at the age of 39 years from PLA Medical College, China. He is the director of Burn Institute, The Fourth Medical Center of PLA General Hospital. Currently, working as physician and researcher in the Fourth Medical Center. He has over 40 publications that have been cited over 100 times, and he has been serving as an editorial board member of Chinese Journal of Burns.

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Keynote Forum

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Sally Ng
Henry Li, Pelicia Lim, Edward Stanley,
Geoffrey Lee, Sana Lin, Derek Neoh and
Julian Liew

Austin Health, Australia

Experience with nobvosorb biodegradable temporising matrix in reconstruction of complex wound

Background: The NovoSorb biodegradable temporising matrix (BTM) is a synthetic polyurethane dermal matrix used to reconstruct complex wounds including deep dermal and full-thickness burns, necrotising fasciitis and free flap donor site. We hope to further explore its potential applications in this series.

Methods: Patients who received BTM application across four centres over an 18-month period were included. Patients were followed up to assess BTM and graft take, the aesthetic, the return of sensation and complications.

Results: A total of 27 patients with 35 wounds were identified with a range of aetiologies. Thirty-three wounds had 100% integration of BTM at the time of sealing membrane removal. Seven wounds had partial graft loss that later healed by secondary intention. In two cases, re-epithelialisation occurred with BTM alone without split-skin graft.

Conclusion: BTM offers a safe and reliable reconstructive option in challenging wounds that would otherwise require more complex operations.

Recent Publications

1. Tay YT, Tang N, Ng SK-H. Management of Folliculitis in Burn Patients. *Trichol Cosmetol Open J.* 2022; 5(1): 1-3. D
2. Sally Kiu-Huen NG et al. Health-related Quality of Life Measurement Tools for Lymphedema: A Review of the Literature. *Plast Reconstr Surg Glob Open* (2022). 10:e4276
3. Wentian Xiao, Ke Li, Sally Kiu-Huen NG et al. A prospective comparative study of color doppler ultrasound and infrared thermography in the detection of perforators for anterolateral thigh flaps. *Annals of Plastic Surgery.* (2020). 84:3.

Speaker Biography

Sally Ng is a Melbourne trained plastic and reconstructive surgeon with a subspeciality interest in cancer reconstructive surgery and complex scar reconstruction in burns. She has extensive experience in the use of the Novosorb biodegradable temporising matrix in burns and complex wound reconstruction with excellent result.

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 Notes:

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Remote monitoring of the effectiveness of treatment of chronic wounds during the Covid-19 pandemic with the help of digital technologies

Patients with trophic ulcers need regular medical observation. Due to the coronavirus infection, regular visits for this group of patients have become impossible. The purpose of the study was to determine the key criteria for evaluating the effectiveness of treatment of trophic ulcers using digital technologies. Remote monitoring of patients was carried out through public messengers. The patients received detailed instructions how to perform photofixation of the wounds. Depending on the stage of the wound process, photofixation was performed at intervals from 1 day to 1 week. Control of qualitative signs of changes of the wound (the severity of edema and hyperemia; exudation; etc.) was carried out with visual analysis of the photos. Quantitative assessment of the area of ulcers with high accuracy was performed at intervals of 1-2 weeks using computer programs. If needed, the effectiveness of compression therapy was also monitored quantitatively. During the first 3-7 days, bandages were performed daily with water-soluble ointments containing povidone iodine. Then the autolytic debridement of the wound was stimulated for 7-10 days using bandages with a superabsorbent (Hydrocline). Subsequently, after completely clearing of the wound, either hydrogel or hydrocolloid dressings (Hydrocoll, Granuflex) were used till complete healing. In the first phase of treatment, the main criterion for the effectiveness

of the chosen treatment tactics was the results of the analysis of qualitative signs, and in the second and third phases - the positive dynamics of the quantitative indicator, i.e. a constant decrease in the area of the wound from visit to visit.

Recent Publications

1. Bogomolov M S Stupin V A, Silina E V, Gorskiy V A, et al. Efficacy and safety of collagen biomaterial local application in complex treatment of the diabetic foot syndrome (final results of the multicenter randomised study. *Khirurgiia (Mosk)*. 2018;(6):91-100.
2. Bogomolov M.S et al. Comparative analysis of the efficacy of current dressings in the treatment of venous trophic ulcers. *Wounds and wound infections the prof. B.M. Kostyuchenok journal*. 2016. Vol 2, N. 4. P. 33-39.
3. Bogomolov M S, Slobodyanyuk V V. Treatment of trophic ulcers of different etiology. *Vestnik Khirurgii named after I.I. Grekov*. 2013. Vol. 172. № 5. P. 34-40

Speaker Biography

Mikhail Bogomolov has completed his PhD during 1998 at the age of 31 years from Pavlov's First Saint-Petersburg State Medical University, Russia. Currently (since 1996), he is working as the professor of Pavlov's First Saint-Petersburg State Medical University, Russia. He has over 30 publications that have been cited over 140 times, and his/her publication H-index is 5.

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