



SEMMELWEIS UNIVERSITY

Faculty of Dentistry

Department of Restorative Dentistry and Endodontics

Head:

János Vág Dr. Prof.

Study Group name: Microcirculation Study Group

Topic: Study of gingival blood flow after periodontal plastic surgery

1. Members of the group:

- Leader: Molnár Eszter, Mikecs Barbara

2. Study title: **Study of gingival blood flow after periodontal plastic surgery**

3. Abstract: Nowadays, in periodontal plastic surgery, several flap types are routinely used in combination with different graft types (autograft, allograft or xenograft materials). In addition to the gold standard connective tissue graft, xenogenic materials are a good alternative for the treatment of gingiva recessions with fewer postoperative complications. Exposure of the graft during surgery may occur before the graft has a chance to vascularise due to wound healing disturbances and lack of per-primam healing. Impaired flap circulation may result in flap failure. Usually, before complete revascularisation, the graft is supplied with nutrients from the surrounding tissue. Therefore, blood supply to the tissues in the immediate vicinity of the graft may be even more important for successful wound healing. The aim of our working group is to follow up the wound healing of patients undergoing surgical gingival recession with xenograft application. Recently, an increasing number of studies have been using Laser Speckle Contrast Imaging (LSCI); a non-invasive, two-dimensional, real-time imaging method to assess tissue microcirculation. Our previous clinical studies suggest that this technique may be a useful tool to assess adequate circulation during surgical procedures and to evaluate wound healing. Our further aim is to optimize the application of LSCI for human oral mucosal usage.

4. Winning application: -

5. Congress participation on the subject: Semmelweis University TDK Conference 2024- II. prize

6. Publications:

Editor: Dr. Molnár Eszter Valid from: 13.03.2024 until revoked

- Molnár, E., Z. Lohinai, A. Demeter, B. Mikecs, Z. Tóth and J. Vág (2015). "Assessment of heat provocation tests on the human gingiva: the effect of periodontal disease and smoking." *Acta Physiol Hung* **102**(2): 176-188. <https://pubmed.ncbi.nlm.nih.gov/26100307/> DOI: 10.1556/036.102.2015.2.8.
- Molnár, E., B. Molnár, Z. Lohinai, Z. Tóth, Z. Benyó, L. Hricisák, P. Windisch and J. Vág (2017). "Evaluation of Laser Speckle Contrast Imaging for the Assessment of Oral Mucosal Blood Flow following Periodontal Plastic Surgery: An Exploratory Study." *Biomed Res Int* **2017**: 4042902. <https://pubmed.ncbi.nlm.nih.gov/28232940/> DOI: 10.1155/2017/4042902.
- Fazekas, R., E. Molnár, Z. Lohinai, E. Dinya, Z. Tóth, P. Windisch and J. Vág (2018). "Functional characterization of collaterals in the human gingiva by laser speckle contrast imaging." *Microcirculation* **25**(3): e12446. <https://pubmed.ncbi.nlm.nih.gov/29457306/> DOI: 10.1111/micc.12446.
- Fazekas, R., E. Molnár, P. Nagy, B. Mikecs, P. Windisch and J. Vág (2018). "A Proposed Method for Assessing the Appropriate Timing of Early Implant Placements: A Case Report." *J Oral Implantol* **44**(5): 378-383. <https://pubmed.ncbi.nlm.nih.gov/29870305/> DOI: 10.1563/aaid-joi-D-17-00295.
- Molnár, E., R. Fazekas, Z. Lohinai, Z. Tóth and J. Vág (2018). "Assessment of the test-retest reliability of human gingival blood flow measurements by Laser Speckle Contrast Imaging in a healthy cohort." *Microcirculation* **25**(2). <https://pubmed.ncbi.nlm.nih.gov/28976050/> DOI: 10.1111/micc.12420.
- Fazekas, R., B. Molnár, L. Kőhidai, O. Láng, E. Molnár, B. Gánti, G. Michailovits, P. Windisch and J. Vág (2019). "Blood flow kinetics of a xenogeneic collagen matrix following a vestibuloplasty procedure in the human gingiva-An explorative study." *Oral Dis* **25**(7): 1780-1788. <https://pubmed.ncbi.nlm.nih.gov/29457306/> DOI: 10.1111/odi.13163.
- Fazekas, R., E. Molnár, B. Mikecs, Z. Lohinai and J. Vág (2019). "A Novel Approach to Monitoring Graft Neovascularization in the Human Gingiva." *J Vis Exp*(143). <https://pubmed.ncbi.nlm.nih.gov/30688301/> DOI: 10.3791/58535.
- Gánti, B., E. Molnár, R. Fazekas, B. Mikecs, Z. Lohinai, S. Mikó and J. Vág (2019). "Evidence of spreading vasodilation in the human gingiva evoked by nitric oxide." *J Periodontal Res* **54**(5): 499-505. <https://pubmed.ncbi.nlm.nih.gov/30865289/> DOI: 10.1111/jre.12650.
- Molnár, B., E. Molnár, R. Fazekas, B. Gánti, B. Mikecs and J. Vág (2019). "Assessment of Palatal Mucosal Wound Healing Following Connective-Tissue Harvesting by Laser Speckle Contrast Imaging: An Observational Case Series Study." *Int J Periodontics Restorative Dent* **39**(2): e64-e70. <https://pubmed.ncbi.nlm.nih.gov/30794263/> DOI: 10.11607/prd.3878.
- Mikecs, B., E. Molnár, R. Fazekas and J. Vág (2021). "Microvascular Reactivity of Peri-implant Mucosa in Humans: Effect of Abutment Material." *Int J Periodontics Restorative Dent* **41**(5): 761-768. <https://pubmed.ncbi.nlm.nih.gov/34547080/> DOI: 10.11607/prd.5343.