

Literature:

Clinical studies listed below demonstrate that the concentration of glucose decreases in a flap during ischemia while the concentrations of lactate and glycerol rise. These metabolic changes indicate ischemia at an early stage, often hours before clinical signs become evident. When the blood perfusion in the flap is restituted e.g. by surgical intervention the Microdialysis values return to normal levels.

Microdialysis in postoperative monitoring of microvascular free flaps: Experiences with a decision algorithm.
Birkenfeld F, Naujokat H, Helmers AK, Purcz N, Möller B, Wiltfang J. J Craniomaxillofac Surg. 2019 Aug;47(8):1306-1309.

Microdialysis in clinical practice: monitoring intraoral free flaps.
Ann Plast Surg. 2006 Apr;56(4):387-93. Jyränki J. et al
Department of Plastic Surgery, Helsinki University Hospital, Helsinki, Finland.

Tracheostomy tape: more trouble than it's worth?
Int J Oral Maxillofac Surg. 2007 Jun;36(6):550-1.
Case report Burke GA et al, Maxillofacial Unit, University Hospital Birmingham, Birmingham, UK

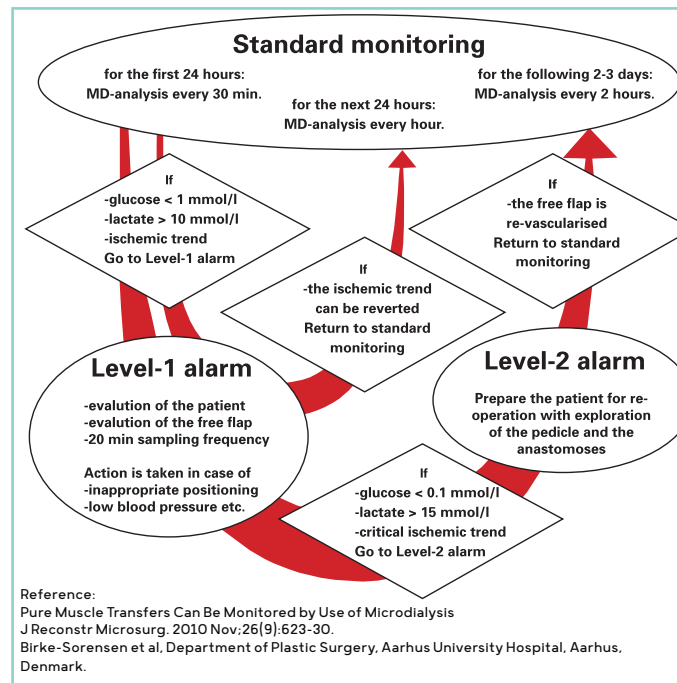
Microdialysis: use in the assessment of a buried bone-only fibular free flap.
Plast Reconstr Surg. 2007 Oct;120(5):1363-6.
Case report Mourouzis C et al, Department of Oral and Maxillofacial Surgery, Queen Alexandra Hospital, Portsmouth, UK

Cost Analysis of 109 Microsurgical Reconstructions and Flap Monitoring with Microdialysis
J Reconstr Microsurg. 2009 Nov;25(9):521-6.
Setälä L et al, Department of Plastic Surgery, Kuopio University Hospital, Finland.

Pure Muscle Transfers Can Be Monitored by Use of Microdialysis
J Reconstr Microsurg. 2010 Nov;26(9):623-30.
Birke-Sorensen et al, Department of Plastic Surgery, Aarhus University Hospital, Aarhus, Denmark.

Glucose and lactate metabolism in well-perfused and compromised microvascular flaps.
J Reconstr Microsurg. 2013 Oct;29(8):505-10. doi: 10.1055/s-0033-1348039. Setälä et al. Department of Plastic Surgery, Kuopio

Flow chart



MDialysis AB

MDialysis is the leading company devoted to the development, manufacturing and marketing of the Microdialysis technique.

The head office is located in Stockholm, Sweden, with a subsidiary in Boston MA, USA. MDialysis has distributors across the globe, responsible for local sales, service and support.

μdialysis

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Distributor

Microdialysis

Reconstructive Surgery

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Microdialysis in Plastic Surgery

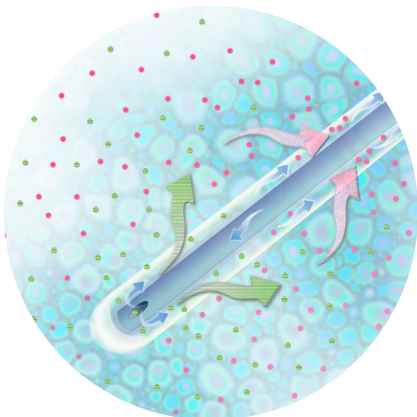
Microdialysis is a tool for in vivo sampling of soft tissues that utilizes the principal of diffusion through a semi-permeable membrane. The technology is minimally-invasive, easy to handle, and can be used for several days.

The method is performed by inserting a Microdialysis catheter into the tissue being studied. The Microdialysis membrane of the catheter is in direct contact with the tissue.

The catheter is perfused with a sterile isotonic solution. In the tissue, substances from the interstitial fluid diffuse through the Microdialysis membrane into the perfusion fluid. This fluid, now known as dialysate, moves through the outlet lumen and into a collection microvial or directly in to a biosensor if connected to the MD System for real-time data of Glucose, Lactate and Pyruvate. If the dialysate is collected in microvials, analysis can be made in the ISCUS^{flex} Microdialysis Analyzer or in the laboratory.

The Microdialysis values provide a picture of the local tissue metabolism and Microdialysis is a safe and reliable monitoring for surveillance of surgical flaps.

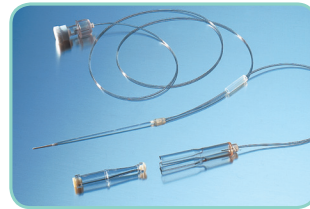
Despite recent advancements in micro vascular surgery clinical observation of free flaps is still difficult and time consuming. An early detection of ischemia is crucial for the salvage of the flap. Microdialysis allows monitoring of flap perfusion in a clinical setting without discomfort for the patient.



Microdialysis Catheters & Continuous monitoring

Microdialysis sampling is carried out by placing the sterile CE-certified 63 Microdialysis catheter in resting skeletal muscle or fat tissue:

63 Microdialysis Catheter



- For subcutaneous and resting skeletal muscle tissue
- Ideal for small and intraoral flaps
- Sterile, single use
- Introducer included

MD System, LOKE for continuous monitoring

The unique continuous MD System Loke is developed for routine microdialysis monitoring of free flaps. Microdialysis values of Glucose and Lactate are displayed both numerically and graphically as trends for easy interpretation.

The MD system offers:

- Glucose & Lactate continuously (Pyruvate is under development)
- Automated plug and play system
- Easy to use for several days

The MD System is connected to the outlet of the Microdialysis Catheter and provides Microdialysis data in real-time, continuously, it is completely automated and can run for several days.

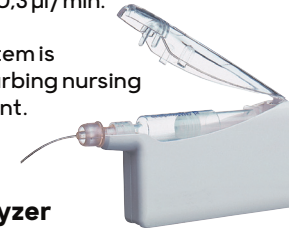


Microdialysis sampling & ISCUS^{flex} Microdialysis Analyzer

106 Microdialysis Pump

The 106 Microdialysis Pump is dedicated for the perfusion of Microdialysis catheters with sterile isotonic Perfusion fluid when collecting Microdialysis samples in Microvials. It is handy and battery driven. The operating status is indicated by LED's and it operates at a fix flow rate of 0,3 µl/min.

The Microdialysis monitoring system is light and portable and is not disturbing nursing actions or movement of the patient.



ISCUS^{flex} Microdialysis Analyzer

The ISCUS^{flex} Microdialysis Analyzer is specially designed to handle collected Microdialysis samples with low sample volumes. It is a point of care analyzer for monitoring of metabolic changes in tissues and organs during surgery, in intensive care and normal ward.

Biochemical markers:

- Glucose
- Lactate
- Pyruvate
- Glycerol
- Glutamate
- Urea



The ISCUS^{flex} Microdialysis Analyzer is easily operated by medical professionals and clinical researchers. It provides unique opportunities for early detection of metabolic crisis, ischemia and to guide post-operative interventions. Data is displayed as trends for simple and fast interpretation.