

## 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 University Hospital Schleswig-Holstein, Campus Kiel, Germany

Microdialysis in clinical practice: monitoring intraoral free flaps.

Ann Plast Surg. 2006 Apr 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  
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.  
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  
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  
Birke-Sorensen et al, Department of Plastic Surgery, Aarhus University Hospital, Aarhus, Denmark.

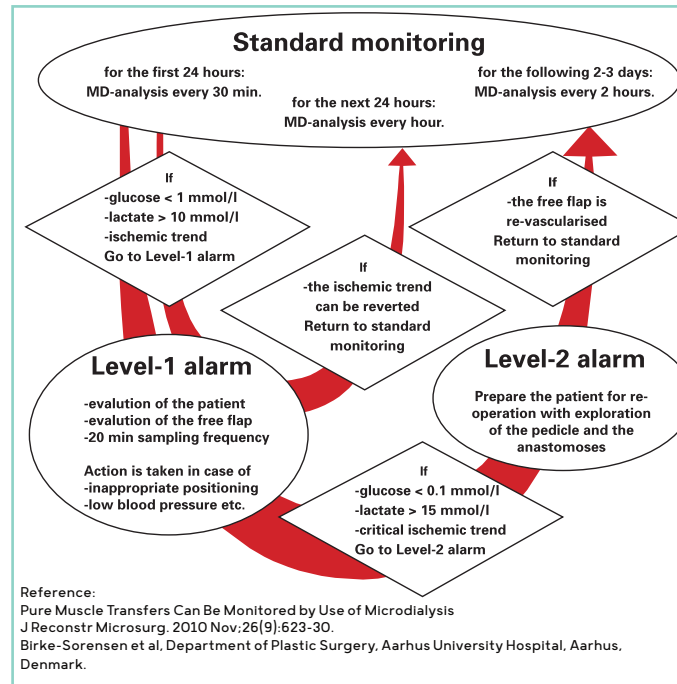
Glucose and lactate metabolism in well-perfused and compromised microvascular flaps.

J Reconstr Microsurg. 2013  
Setälä et al. Department of Plastic Surgery, Kuopio University Hospital, Finland

DIEP flap perfusion assessment using microdialysis versus Doppler ultrasonography: A comparative study.

Microsurgery Jan 2024  
Sorotos M, Firmani G, Tornambene R, Marrella D, Paolini G, Santanelli di Pompeo. Sant'Andrea Hospital, Rome, Italy.

## Flow chart



## M Dialysis AB

M Dialysis 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. M Dialysis has distributors across the globe, responsible for local sales, service and support.

μ dialysis

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## Distributor

801114ZF 2024-04-23

# Microdialysis

## Reconstructive Surgery



μ dialysis

## Microdialysis in Plastic Surgery

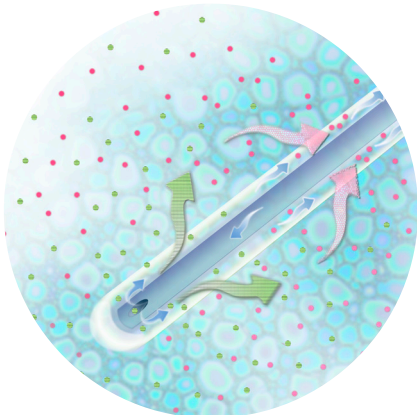
Microdialysis is a tool for in vivo sampling of soft tissues that utilizes the principal of diffusion through a semi-permeable membrane. The technology is minimally-invasive, easy to handle, and can be used for several days.

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<sup>flex</sup> 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.

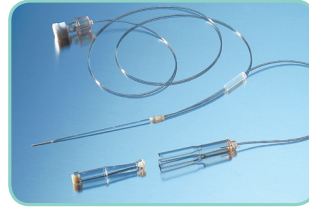
Despite recent advancements in micro vascular surgery clinical observation of free flaps is still difficult and time consuming. An early detection of ischemia is crucial for the salvage of the flap. Microdialysis allows monitoring of flap perfusion in a clinical setting without discomfort for the patient.



## Microdialysis sampling

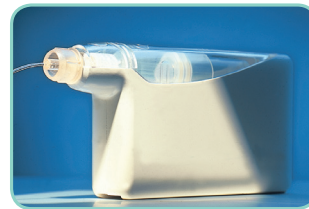
Microdialysis sampling is carried out by placing the sterile CE-certified 63 Microdialysis catheter in resting skeletal muscle or fat tissue:

### 63 Microdialysis Catheter



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

### 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<sup>flex</sup> Microdialysis Analyzer

The ISCUS<sup>flex</sup> 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, intensive care and normal ward.

Biochemical markers:

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



The ISCUS<sup>flex</sup> 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.