

# A free osteocutaneous fibula flap monitored by clinical observations and Microdialysis.

## Microdialysis monitoring in Plastic Surgery

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## Introduction

Microdialysis has been the method of monitoring free flaps in the Department of Plastic Surgery, Århus University Hospital since September 1998. In the beginning free flaps were monitored both with microdialysis and clinically. From 2000 microdialysis has been the routine method of monitoring, and based on clinical experience, it has been possible to identify normal as well as critical values for the different free flaps.

## Case story

A twenty year old man with a sarcoma in the right mandible was referred for surgical treatment.

## Operation

The operation was performed with two surgical teams working in parallel. The ablative team removed the cancer including almost half of the mandible. The reconstructive team was operating on the left leg, preparing an osteo-cutaneous fibula flap. In the neck the right facial artery and vein were selected as recipient vessels, and they were prepared to anastomose.

The free flap was taken to the neck. The fibula was fractured to form a new left side of the mandible. The vessels were anastomosed end-to-end using double vessel clamps and nylon 9-0 interrupted sutures. After removing the clamps perfusion of the free flap was seen with palpable pulse peripheral in the free flap and bleeding from bone as well as the skin island. The skin island was sutured in place intra-orally, and the incisions in the face and neck were closed.

## Microdialysis

To monitor the free flap a 60 Microdialysis Catheter was placed in the subcutaneous tissue of the skin island. Before the patient left the operating room analysis were made of the first dialysates.

## Postoperative observation plan

The free flap was observed every 30 minutes by both the clinical control of the free flap and analysis of microdialysis values. Two hours postoperatively the micro-dialysis values were pathological, but clinically there were no signs of ischemia or venous obstruction.

The flap was pink with a normal capillary refill. the face and neck were closed.

## Re-operation decided

During the next hours the microdialysis values deteriorated with a high lactate and low glucose. However, no clinical signs of flap ischemia.

A decision was taken to re-operate and explore the anastomosing vessels and the anastomoses, fig.1 (see next page).

## Re-operation

At the re-operation the anastomoses was found to be all right, but the recipient vein was bent in such a way, that no blood could leave the flap. The vein was opened, and large amounts of thrombus material was withdrawn from the lumen. The vein was shortened and a new anastomosis was performed. After half an hour the vein still had a good function, and the re-operation was completed. Before the patient left the operating room, microdialysis values were normalized with a decrease in lactate and an increase in glucose, fig 2 (see next page). The venous obstruction was never detected by clinical signs or observations in the flap.

## After surgery

The young man did well and could go home after 10 days. The free osteocutaneous fibula flap survived and healing was found at control after 4 months.

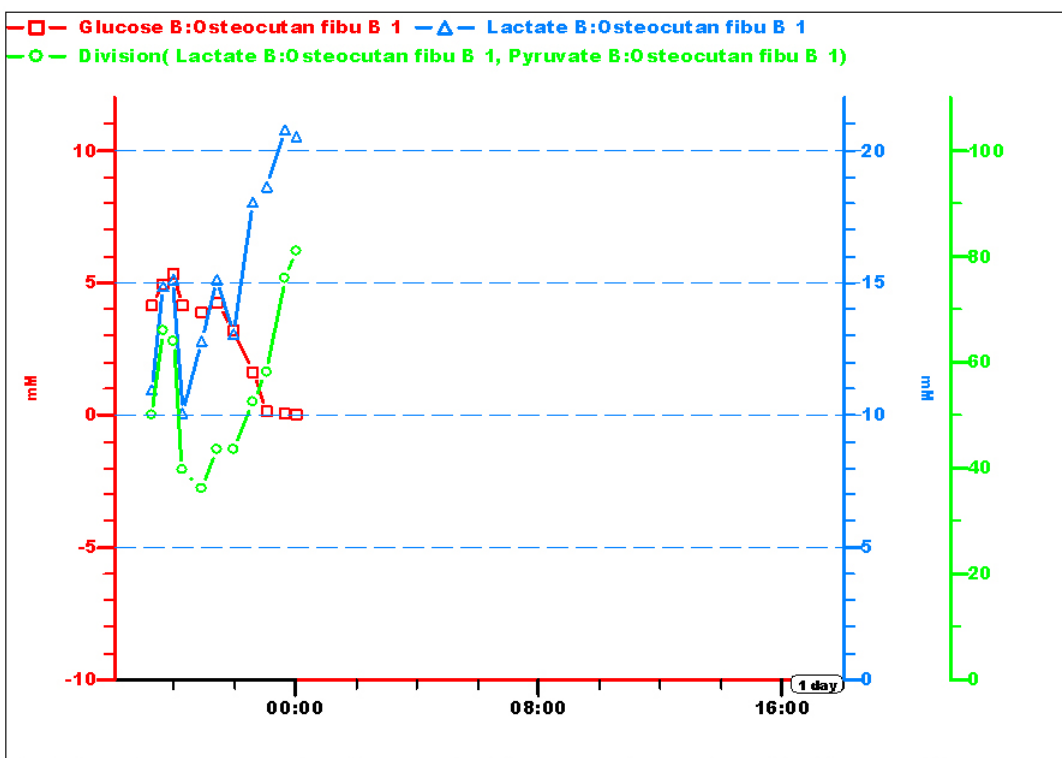


Fig 1:Microdialysis values when it was decided to re-operate despite a clinically normal flap.

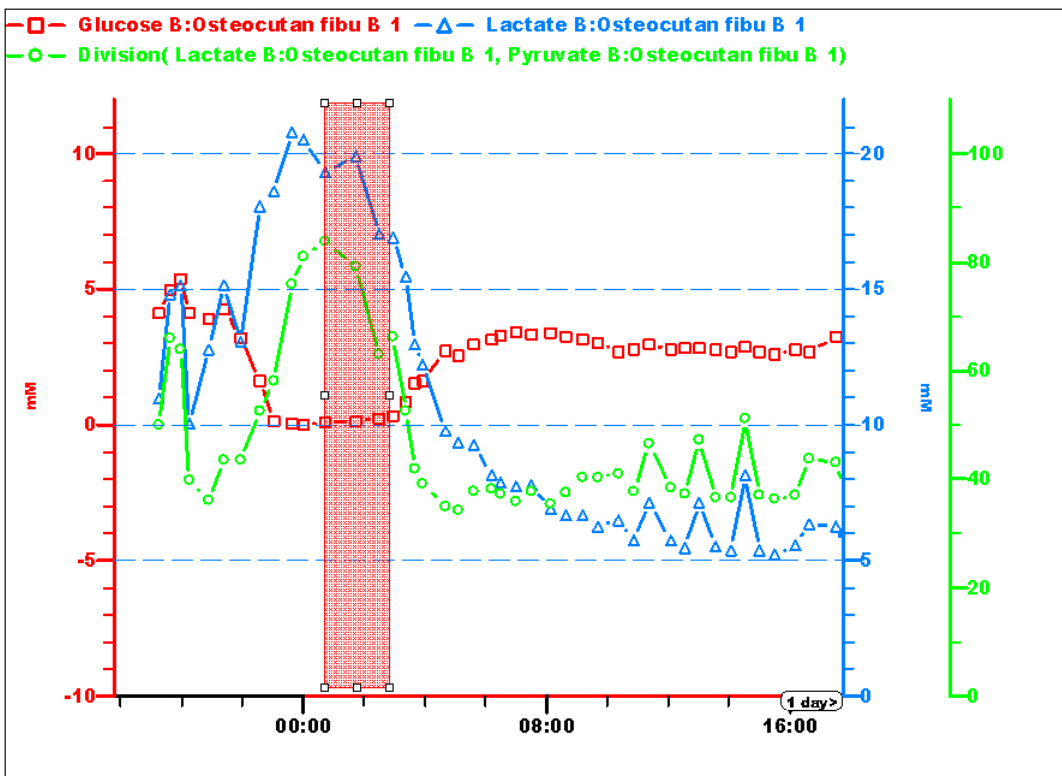


Fig 2: Microdialysis values after re-operation, which is marked with a red solid square