

## How Can We Detect Patients with Coagulation Disorders in Reconstructive Microvascularsurgery?

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**Introduction.** Free flap transfer has become routine surgery to close tissue defects for the last decades because of standardisation of methods, techniques, and training. The incidence of microvascular thrombosis leading to flap failure and possible loss is relatively low; but it still remains a serious threat with very negative consequences for patients and surgeons. Although majority of flap anastomoses circulation problems is due to local and technical factors (intima damage, vessel kinking, technical errors), flap failure can occur due to intrinsic factors, such as the patient's coagulation disorders. Importance of identification of patients with such risk for possible hypercoagulability correction is apparent.

**Aim.** The aim of our study is to detect coagulation problems perioperatively in order to predict free flap thrombosis and to improve surgical outcomes.

**Material and methods.** This prospective study presents clinical observation of four patients, who underwent microvascular free flap surgery within the last two months in Latvian Center of Reconstructive and Microsurgery. Rotational thromboelastometry was performed to assess coagulation status in all patients perioperatively using the ROTEM device (Tem International GmbH, Munich, Germany). Also, routine coagulation tests (APTT, prothrombin ratio, fibrinogen levels, platelet count) were carried out. Patients' age, sex, serious comorbidities, history of trauma, previous surgery, and transfusions perioperatively were recorded.

**Results.** All patients were males, aged 19–49. All interventions were performed due to complications of severe traumatic injuries. In three cases, tissue defects were localised on lower extremities, and in one – on the wrist. Three patients had history of trauma more than 3 months long, and they had repeated surgeries before free flap transfer. Preoperatively none of the patients had received transfusion (blood or blood products), or anticoagulants / antiagregants; and all routine coagulation tests were in normal range. Re-explorations were necessary in three cases. Three microsurgical flaps survived, one of them had hypercoagulation identified pre and post surgery by RTE (which was the case of 2 weeks trauma history). The patient with a lost flap had normal thromboelastogram, but with a history of thromboembolic event (stroke, hemiparesis).

**Conclusions.** According to this first experience, rotational thromboelastometry is a suitable method to detect hypercoagulability perioperatively in patients undergoing microvascular surgery. Sample size should be increased to get more relevant results assessing the predictive value of RTE in regard to surgical re-explorations and flap salvage. History of thromboembolic events seems to be an important risk factor for flap circulation problems despite normal coagulation parameters.