

Preoperative Risk Factors of Microvascular Free Flap Failure: Review of Literature

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Introduction. Vascular thrombosis is one of the major postoperative complications of free flap microvascular operations. It is associated with higher morbidity, higher cost, increased length of hospital stay, and potential flap loss. There are numerous factors which contribute to microvascular free flap failure. Despite appropriate surgical technique and follow-up, flap failures can be found without evident technical reason. Current literature focuses on patient dependent and clinical thrombotic risk factors as potential reasons for unpredictable flap failures.

Aim. The aim of the study was to review literature focusing on the preoperative risk factors of microvascular free flap failure.

Material and Methods. PubMed database selected articles published between 2005–2015 were used with the following key words included: preoperative assessment, free flap failure risk, flap thrombosis risk, flap re-exploration risk. Following preoperative risk factors were evaluated: age, gender, body mass index, malnutrition, co-morbidities such as diabetes, smoking, alcohol abuse, peripheral vascular disease, anemia, history of chemo radiotherapy and/or hypercoagulability, ASA class, type and localisation of reconstruction.

Results. A total of 49 articles were selected and analysed. Positive evidence was identified regarding advanced age, peripheral vascular disease, diabetes complications, COPD, preoperative anemia, malnutrition, type and localisation of reconstruction, chemo radiotherapy, hypercoagulation. The results of the research include following findings:

1. Prognosis is worse in case of preoperatively identified hypercoagulation (patient history, coagulation tests, thromboelastometry), including congenital thrombophilias, essential thrombocytosis, post traumatic hyperfibrinogenemia as well as preoperative anemia in all types of free flap surgery.
2. Peripheral vascular disease can lead to higher rate of flap thrombosis in breast reconstruction with free tissue transfer.
3. Complications of diabetes (atherosclerosis, raised serum creatinine), advanced age, COPD and distal tibia defect localisation are risk factors for flap survival in lower extremity surgery.
4. Malnutrition and history of chemo radiotherapy can lead to higher thrombosis rate in case of head and neck reconstructive surgery.

Conclusions. Attention should be paid to preoperative identification of patients with potentially high risk of microvascular tissue failure, detailed preoperative history is crucial. Patients could benefit from corresponding therapy before surgery in case of modifiable preoperative factors as anemia and malnutrition. Moreover, appropriate testing should be performed to assess coagulation status.