

Genetic Contribution towards Thrombosis in Free Flap Surgery: Pilot Study

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Introduction. Role of microvascular surgery as part of reconstructive surgery has been enhancing over the past three decades and has been technically improved, for example, failure rates have declined to under 10 percent in most centres; nevertheless, mishap due to thrombosis still occurs delaying restitution thus bearing detrimental effect for patient, medical team and expenses. Hereditary thrombophilia is a well known factor possessing increased risk for vascular events; however, still beyond the scope of the microvascular surgery.

Aim, Materials and Methods. The goal of the study is to educe whether the link between genetic factors and likelihood of thrombosis in microvascular free flap surgery exists. A total of 60 patients who have undergone free flap microvascular surgery were enrolled in the cohort study, we selected nine SNPs (rs5361 in *SELE*, rs2066865 in *FGG*, rs2227589 in *SERPINC1*, rs1613662 in *GP6*, rs13146272 in *CYP4V2*, rs2289252 in *F11*, rs1801133 in *MTHFR*, rs6025 in *F5*, rs1799963 in *F2*) reported to be associated with vascular thrombosis.

Results. The first analysis among all patients (n = 60), male (n = 53), mean age 39.35 in 10/60 (17%) patients' free flap failure due to thrombosis occurred; 4/10 were heterozygous for polymorphism rs2227589 *SERPINC1* with no perioperative thromboprophylaxis; other 7 patients with the same gene mutation but with thromboprophylaxis (7/10) due to co-morbidities showed no sign of thrombosis; 3 having thrombotic complication revealed heterozygosity for polymorphism rs1613662 for gene GP6 with no perioperative thromboprophylaxis, and 7/9 of those having same polymorphism with perioperative thromboprophylaxis had no negative surgical outcome. F11 gene polymorphism at rs2289252 were revealed in 6/10 patients without thromboprophylaxis and no sign of thrombosis was observed in 25 with the same polymorphism and 14/25 with perioperative thromboprophylaxis.

Conclusions. Several gene polymorphisms are found in patients with thrombotic complications indicating potential cause of microvascular free flap thrombosis; however, likely synergistic with other well-known thrombophilia aggravating factors. Further data is mandatory to set clear relationship between gene mutation and thrombotic complications in microvascular free flap surgery.