

P042 The relationship between angiogenesis, vascular endothelial growth factor and its receptors in human surgical wounds

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Angiogenesis plays an essential role in tissue repair, although it is not well characterised in humans. Vascular endothelial growth factor (VEGF) directly mediates wound angiogenesis through receptor kinases VEGF-R1 and R2 and co-receptors, the neuropilins (Np1 and Np2) although this has yet to be fully characterised. This study aims to establish the spatial and temporal expression of these factors in relation to angiogenesis in surgical wounds.

Scar biopsies were obtained from patients between 3 days and 2 years post-surgery (n=96). Normal skin control biopsies were taken peroperatively (n=21). Microvessel density (MVD) was quantified using the Chalkley grid. VEGF, VEGF-R1, VEGF-R2, Np1 and Np2 endothelial expression was determined by immunohistochemistry, analysed semi-quantitatively, and correlated with MVD and scar age.

Cumulative MVD was increased in scars compared to controls ($p < 0.01$), and was related to scar age. VEGF, VEGF-R2, Np1 and Np2 expression were significantly ($p < 0.05$) elevated in all scars and correlated with MVD, whereas VEGF-R1 expression decreased, correlating with increased VEGF and VEGF-R2.

These results demonstrate that VEGF, VEGF-R2, NRP1 and NRP2 are elevated whereas VEGF-R1 expression is decreased in wound angiogenesis, suggesting a significant role for VEGF-receptor complexes in early wound healing.