

00347 Can Microvascular Anastomosis Be Improved?

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Aims: End to end anastomosis through conventional interrupted sutures is time consuming, introduces inflammatory trauma, and raises the risk of microvascular complications by exposure to subintimal structures. More elegant techniques are required that reduce or remove sutures while providing continuous, water tight intima-to-intima apposition. Hypothesis: Exploiting intima apposition surgical techniques with tissue sealing adhesives optimizes throughput, reduces post-operative bleed, with reduced surgical complications.

Methodology: Four corner sutures based on a fish-mouth suturing technique aims to achieve intima apposition with sealing ensured by peripheral tissue adhesive application. Twenty anastomoses were carried out on bilateral common iliac arteries in ten rabbits. Conventional interrupted (n=10) versus four corner 'fish-mouth' (FCFM) technique (n=10) were compared on a bilateral common iliac arteries in New Zealand white rabbits. FCFM technique consists of four parallel incisions 90 degrees apart on transected vessel ends with a simple corner suture between each. Tissue adhesive was then applied on the periphery. Patency, anastomosis time, bleeding, and histopathological assessment are evaluated in regard to FCFM and conventional interrupted sutures.

Result: Mean anastomosis time for the FCFM group was reduced by 16% with both groups achieving 100% patency. Mean bleeding time was insignificant between the two groups. FCFM group had similar scores of inflammation and fibrosis despite the choice of a known inflammatory tissue adhesive.

Conclusion: The pilot study demonstrated the FCFM technique has a performance advantage in terms of surgical time with comparable patency outcomes. The results in herein offers a surgical approach for optimization of microvascular anastomosis with tissue adhesives and reduction of suture associated complications. The approach reduces suture trauma and exposure of thrombosis inducing subintimal tissues.