Publication Brief

Prediction of Early Graft Occlusion in Femoropopliteal and Femorodistal Reconstruction by Measurement of Volume Flow with a Transit Time Flowmeter and Calculation of Peripheral Resistance

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METHOD
- A transit time flowmeter was used for flow measurements and calculation of peripheral resistance in 48 primary femoropopliteal and femorodistal reconstructions to correlate with primary graft occlusions during the first 90 postoperative days.
- 25 men and 23 women (median age of 75 years) (8 diabetic). Indications for surgery were rest pain (n = 23), ischaemic ulcer (n = 16), gangrene (n = 8) and popliteal aneurysm (n = 1).
- Measurements were made before reconstruction on the artery at the site of the distal anastomosis.
- After reconstruction flow measurements were made on the graft near the proximal and distal anastomoses together with a proximal graft pressure measurement.

RESULTS
- Eleven grafts occluded and six patients died, four with patent grafts.
- Graft occlusion patients had significantly lower flows before (4 vs. 20 ml/min) and after (60 vs. 110 ml/min) reconstruction and higher peripheral resistance (1238 vs. 625 mPRU) than patent graft patients.
- The most significant differences were found in the femorodistal bypass grafts.

CONCLUSION
- The flow before and after reconstruction as well as the peripheral resistance could be used for the prediction of graft function within 90 days of surgery.

TRANSONIC OBSERVATIONS
- These measurements may help influence the surgeon whether or not revision of an occluded graft should be attempted. Because of overlap, the flow prior to reconstruction could not be used with total accuracy to predict graft occlusion. For this reason the authors do suggest that reconstruction should be attempted even if the flow is less than 4 cc/min.
- The authors confirm the findings of Little et al, that graft flow below 60 - 100 cc/min means a significantly increased risk of graft occlusion within 3-12 months of surgery. (It should be pointed out that this is controversial and in fact is refuted by other articles.)
- Peripheral resistance calculations seem highly predictive only for femorodistal (not above and below knee femoropopliteal) bypasses.
- This is another article that shows the value of knowing intraoperative flow rates and how they may be used to influence future treatment decisions.

REFERENCE