Preoperative Duplex Scanning and Intraoperative Direct Flow Correlation in Ischemic Lower Limb Revascularization

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Objective
The purpose of this study was to evaluate the existence of hemodynamic correlation between preoperative duplex scanning (DS) and intraoperative direct outflow resistance (IDOR) in ischemic lower limb revascularization..

Methods
Sixty-eight ischemic lower limbs were submitted to preoperative DS, and the anatomic and blood flow characteristics of each arterial segment were recorded. The best outflow artery was chosen based on these results and IDOR measurements obtained before distal anastomosis performance at the same arterial segment. Pearson correlation coefficient was obtained to study the preoperative DS power in predicting the intraoperative outflow resistance.

Results
DS was technically satisfactory and helped define the distal anastomosis site in 93.2% of the cases (supragenicular popliteal artery 19 [27.9%]; infragenicular popliteal artery 10 [14.7%]; crural artery 31 [57.4%]). A positive correlation could be found between preoperative DS and IDOR (0.450; $p < .001$). This correlation was particularly powerful in the crural (0.715; $p < .001$) when compared with the popliteal arterial segment (0.237; $p = .192$).

Conclusion
Preoperative DS could accurately define the best distal arterial and outflow segment to be revascularized based on anatomic and hemodynamic parameters. There is a positive flow correlation between preoperative DS and IDOR that seems to be stronger in crural revascularization surgery.