

ENDOTHELIAL FUNCTION STUDY

HYPOTHESIS:

Our primary hypothesis is that endothelial dysfunction, as measured by FMD of the brachial artery, can be used to stratify the risk of perioperative cardiac complications in a population of surgical patients undergoing high risk non-cardiac surgery, either alone or in combination with other currently used clinical risk estimates.

We will conduct a prospective observational pilot study to assess the utility of endothelial dysfunction, measured by FMD of the brachial artery, to predict perioperative cardiac complications in patients undergoing high-risk surgical procedures.

ENDO-PAT2000 SUB-STUDY:

The sub-study hypothesis is that the automated non-invasive assessment of endothelial function, using the EndoPAT-2000, will provide an accurate alternative to brachial artery FMD which is the current gold standard test of endothelial function.

END-POINTS:

The primary end-point is the peak troponin-I concentration within the first 3 post-operative days. This biochemical end-point will allow us to rapidly determine if larger-scale studies are appropriate to pursue.

Secondary end-points will include perioperative cardiac morbidity. This is defined as the composite of 30-day all cause mortality, myocardial infarct (MI) within 30 days of surgery or a coronary artery intervention

INCLUSION CRITERIA:

- Age \geq 40 yo.
- Elective high-risk non-cardiac surgery (including all aortic surgery, femoro-distal bypass surgery, pneumonectomy, oesophagectomy, gastrectomy, partial hepatectomy, whipples' procedure, pancreatectomy, radical cystectomy or radical prostatectomy, bowel resections where the anticipated surgical duration is $>$ 3 hours, re-do hip replacements, multi-level spine surgery where anticipated surgical duration is $>$ 3 hours).
- No contraindication to the procedure of brachial artery FMD testing.

EXCLUSION CRITERIA:

- Age $<$ 40.
- Emergency surgery.
- Unable to perform the procedure of brachial artery FMD testing.