

COVER PAGE

Official title: Effect of general and regional anesthesia on endothelial glykokalyx

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Objective: The aim of the observational study was to evaluate the changes of PBR in patients undergoing elective joint surgery under general (GA) vs. neuraxial anesthesia (NA). Our hypothesis was that PBR will be lower in patients in NA.

Hypothesis to be tested: Regional anaesthesia affects GCX less than general anaesthesia.

Design: Two center prospective observational study.

Methods: Sixty consecutive patients (ASA 1-3) undergoing elective total knee or hip replacement under GA or NA were included in this prospective observational cohort study. PBR in the sublingual microcirculation was recorded in each patient using SDF at two time points - before surgery and 2 hours after surgery.

Scientific background: Damage of the endothelial glycocalyx (EG) has been described during surgery, but the effect of different anesthesia techniques remains unknown. Perfused boundary region (PBR) evaluated by side-stream dark field (SDF) imaging of the sublingual microcirculation enables *in vivo* EG assessment. PBR values are inversely related to the EG thickness.

Statistical considerations: Based on the expected difference in PBR between patients under GA and NA, the alpha error  $\alpha = 0.05$  and study power = 0.99, sample size calculation was 52 patients. We aimed to enrol 60 consecutive patients to reach 30 patients with each type of anesthesia, either general anesthesia or neuraxial.

For statistical analysis, we used Graph Pad Prism v6.0c (GraphPad Software, Inc., CA, USA). All data were tested for normality prior testing by D'Agostino-Pearson omnibus normality test. Data are expressed as mean (and standard deviation) or median (and interquartile range), a value of  $p \leq 0.05$  was considered as statistically significant for paired and unpaired t-tests. Z-test we used for two populations proportion analysis.

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