# SUMMARY

## Impact of Different Fluid Volume on Intestinal Anastomotic Stability

Anastomotic leakage is a serious post-operative complication following rectal resection, which occurs in approximately 2-12 % cases. The main objective of the theoretical part of this work was to summarize current knowledge about the resection of rectum. The main objective of the experimental part of this work was to analyze the impact of cumulative fluid balance on microcirculatory changes at anastomotic sites in the large bowel wall.

The study was performed using 14 female domestic pigs. Rectal resection was performed on all of them. The experimental animals were divided in three groups according to the volume of received IV crystalloids. During the operation and post-operative period they received IV crystalloids at constant rates 5, 10 and 15 ml/h. Large bowel micro-perfusion was observed at several points during the experiment using Laser Doppler Flowmetry (LDF). Each subject was observed for six hours after the procedure. Measured LDF values for each group were statistically analyzed using Levene's test and Welch's ANOVA.

The primary findings of this study showed that the group mean values agreed at baseline; i.e. prior to intervention, as well as at the end of the study ($p > 0.05$). The same result was also confirmed for the second measurement, and the next to last measurement ($p > 0.05$). On the other hand, differences in group mean values were demonstrated at the 2 intermediate time points ($p < 0.05$).

The original hypothesis of a blood perfusion disorder developing in the large bowel region after administration of large fluid volumes was not confirmed. However, a significant decrease in blood supply to the large bowel was observed after inferior mesenteric artery ligation. Secondarily, LDF was found to have high accuracy in measuring tissue microcirculation and has the potential to be used in clinical practice.