Introduction:
The effects of abdominal negative pressure treatment (NPT) on splanchnic hemodynamics after abdominal surgery for sepsis are not well known.

Methods:
Twenty mechanically ventilated pigs underwent surgery for splanchnic hemodynamic monitoring under general anesthesia, followed by analgo-sedation and randomization to fecal peritonitis or controls with/without NPT (ABThera, KCI, US) (n=5/group). After 8 hours of untreated peritonitis, animals were resuscitated w/wo NPT for 76 hours (resuscitation period, RP). Splanchnic hemodynamics and laboratory parameters were measured at baseline (BL, start of RP), and 24h, 48h and 72h after start of RP. Two/three-way RM-ANOVA or mixed-effects analysis, and Student t tests were performed.

Results:
NPT in controls had no effect. After sepsis induction, mean arterial pressure (MAP) decreased by 15 (7-22) mmHg, cardiac output (CO) by 1.3 (0.7-2.2) L/min, and arterial lactate increased by 0.2 (0.1-0.5) mmol/L. Sepsis and resuscitation was associated with increasing hepatic and renal arterial flows (p≤0.002, both), and increasing prothrombin time [max. increase 1.4 (0.3-2.9) sec], aspartate aminotransferase [max. increase 70 (49-79) IU] and creatinine [max. increase 72 (59-85) µmol/L; all p≤0.005]. MAP, CO, or hepatic/renal hemodynamics and functions were not affected by NPT. Nevertheless, NPT in sepsis resulted in numerically less noradrenaline administration (0.3±0.3 ug/min/kg in sepsis with NPT vs. 0.8±0.7 ug/min/kg without NPT, p=0.310) and positive fluid balance (2.8±0.4 ml/h/kg with NPT vs. 3.1±0.4 ml/h/kg without, p=0.241).

Conclusion:
In our experimental fecal peritonitis model, NPT did neither impair splanchnic hemodynamics nor abdominal organ function. Whether NPT helps to reduce noradrenaline and volume administration in abdominal sepsis should be evaluated in further studies.