Endolumenal colon occlusion reduces peritoneal contamination during a transrectal NOTES procedure: a controlled porcine survival study

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BACKGROUND
To enable an efficient and enduring decontamination of the rectal mucosa during transanal endoscopic procedures, we developed a device for reversible endolumenal colon occlusion (ColoShield). The aim of this study was to assess the value of ColoShield in reducing peritoneal contamination during a transrectal procedure.

METHODS
Sixteen pigs underwent transrectal hybrid NOTES cholecystectomy after standardized disinfective rectal washout either with endolumenal colon occlusion using ColoShield (N = 8) or without colon occlusion (N = 8). Rectal swab samples were taken before and after rectal washout and at the end of the procedure. Peritoneal biopsies for microbiological evaluation were obtained at the end of the procedure and at necropsy 7 days after surgery.

RESULTS
Peritoneal contamination at the end of surgery was significantly lower using ColoShield compared to not using colon occlusion [13 (1/8) vs. 75 % (6/8); P = 0.012]. No significant differences were found regarding contamination of rectal swabs and peritoneal contamination at necropsy.

CONCLUSION
The application of ColoShield may increase the safety of transrectal NOTES and transanal endoscopic procedures by reducing peritoneal contamination and consecutive infectious complications.