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HHS Vulnerability Disclosure

# Colonic sterilization for natural orifice transluminal endoscopic surgery (NOTES) procedures: a comparison of two decontamination protocols

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## Abstract

**Background:** This study aimed to evaluate the effect of two different sterilization protocols on the bacterial counts in the swine colon as preparation for natural orifice transluminal endoscopic surgery (NOTES) surgery.

**Methods:** In this study, 16 swine were randomized to two different colonic sterilization protocols: low colonic irrigation using 300 ml of a 1:1 dilution of 10% povidone-iodine (Betadine) with sterile saline, followed by 1 g of cefoxitin dissolved in 300 ml of saline or two consecutive 300-ml irrigations using a quaternary ammonium antimicrobial agent (Onamer M). Colonic cultures were taken before colonic cleansing after a decontamination protocol and after completion of the NOTES procedure. The Invitrogen live/dead bacterial viability kit was used to assess for change in the bacterial load. A qualitative culture of peritoneal fluid was obtained at the end of the NOTES procedure. Colon mucosal biopsies obtained immediately after the sterilization procedure and at the 2-week necropsy point were evaluated for mucosal changes.

**Results:** Protocol 1 resulted in an average 93% decrease in live colonic bacteria versus 90% with protocol 2 (nonsignificant difference). After a NOTES procedure, group 1 had a 62% increase in live bacteria and group 2 had a 31% increase (nonsignificant difference). Peritoneal cultures also were obtained. Bacteria were isolated from the peritoneal fluid of all the animals, and two or more species were isolated from 75% of the animals. There was no evidence of peritoneal infection at necropsy. Reactive epithelial changes and mild inflammation were the only pathologic abnormalities. No changes were noted at histologic evaluation of colonic mucosa after 2 weeks, demonstrating that these were temporary changes.

**Conclusion:** Colonic irrigation with Betadine and antibiotics are as effective for bacterial decontamination of the swine colon as a quaternary ammonium compound. The results of this study support the use of either protocol. Despite thorough decontamination, peritoneal contamination occurs. The significance of this for humans is unknown.

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