

Transrectal Hybrid Natural Orifice Transluminal Endoscopic Surgery Nephrectomy in a Porcine Model

Introduction and Objective: To evaluate feasibility of transrectal hybrid natural orifice transluminal endoscopic surgery (NOTES) nephrectomy in the porcine model.

Materials and Methods: After obtaining the approval of Committee of Ethics of Gannan Medical University, 6 female pigs (35 kg) underwent transrectal hybrid NOTES nephrectomy (3 right, 3 left). A 5- and 10-mm trocar were placed at the right and left margin of umbilicus. Pneumoperitoneum was achieved by either of the trocar. A 5-mm trocar was placed through the rectum into the abdominal cavity under the direct vision from a 5-mm flexible-tip 0° laparoscope inserted through the 5-mm trocar at the margin of umbilicus. Dissection was performed according to the method of a standard laparoscopic nephrectomy using conventional operating apparatus placed in the abdominal trocars, under direct vision achieved by the 5-mm flexible-tip 0° laparoscope placed through the rectal trocar. The renal artery, vein, and ureter were clipped with Hem-o-lock and Titanium clips in turn. The specimen was placed inside a homemade bag and removed transrectally, followed by transrectal incision closure.

Results: Transrectal hybrid NOTES nephrectomy was successfully performed in all cases. The median operative time was 120 (range 90 to 170) min. The median estimated blood loss was 40 (range 20 to 100) mL. On necropsy, no intraabdominal injuries were noted.

Conclusion: Transrectal hybrid NOTES nephrectomy appears to be a feasible and effective surgical technique, which results in excellent cosmesis. Survival studies are necessary to evaluate its short- and long-term complications. This approach may be useful as an alternative to transvaginal access.