Editorial Comment on: Endoscopic Closure of Transmural Bladder Wall Perforations
Richard Naspro
Urology Unit, Humanitas Gavazzeni Hospital, Bergamo, Italy
nasporichard@yahoo.com

Lima and coworkers present a well-conducted safety and feasibility pilot study that was performed using a novel endoscopic kit for the management of bladder wall perforations in a porcine model [1]. The results are of potential relevance as they are presented by authors with robust experience in the transvesical approach to the peritoneal cavity during natural orifice transluminal endoscopic surgery (NOTES). The thrust behind this paper seems to confirm the current trend of the surgical world and, in particular, of urology to find new, minimally invasive, alternative approaches for many surgical procedures [2,3].

As pointed out by the authors [1], the clinical usefulness of this endoscopic kit can be found in the apparently safe achievement of a water-tight bladder closure at the end of surgery; however, striving toward minimally invasive surgery must not distract the clinician from accurate and standard clinical management. In this case, the feeling is that the endoscopic closure of the bladder should be reserved for cases in which a targeted perforation is performed and any other extravasal problem has been previously assessed. When tackling abdominal trauma, for example, a laparoscopic abdominal inspection can be a better investigational tool. Anyhow, this study can indeed lead the way in suggesting an alternative when performing a novel and apparently valid method in a potentially catheter-free setting. As in most cases of uncomplicated bladder perforation, however, simple catheterization can be sufficient for healing. The question of when to use the device remains unanswered. Many points raised by this paper need to be further assessed, such as the cost–benefit ratio, the safety of the procedure, and the rationale and the correct indications for its use [4].

References


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Hiten R.H. Patel
Section of Laparoscopic Urology, Division of Surgery and Interventional Sciences, University College London Hospital, London, United Kingdom
hrhpatel@hotmail.com

NOTES (natural orifice transluminal endoscopic surgery) is gaining worldwide attention among the public [1] and interventional doctors [2]. Development of the instruments for this approach are a limiting factor; thus, Lima et al [3] should be congratulated for performing this feasibility study using a novel NOTES endoscopic suturing and cutting instrument (shown in Fig. 1 of their article) following intraperitoneal bladder rupture. This elegant system would appear to have a short learning curve and to be useful in clinical practice; however, as with any novel device, a few caveats need to be addressed.

Assuming a human model is used, there will on occasion be intraperitoneal corruption of varying degrees, including surgery, perforation of the bowel, inflammatory disease, or systemic illness. Although transvesical intra-
peritoneoscopy has been shown to be feasible in humans [4], the above examples would all cause adhesions, making blind entry or manipulation in this area unsafe.

In these situations, when performing laparoscopic surgery, we would advocate a retroperitoneal approach to avoid the corrupted areas [5]. If the surgeon were unfamiliar with this approach, an open technique (Hasson) would be used to safely enter the intraperitoneal space, followed by laparoscopic adhesiolysis.

Another issue would be the blind passing of the needle and thread with clips into the peritoneal cavity, which would increase the risk of bowel injury and potentiate the formation of an enterovesical fistula or bowel leak (see Fig. 1 in MacRae [1]). The clips to hold the suture and the suture itself are foreign bodies, so the risk of stone formation is an issue; however, this future risk is relatively small compared to performing an emergency laparotomy for the perforation.

Finally, if planning on performing this procedure, peritoneal inspection must be performed to reliably inspect the entire length of bowel. A flexible camera could overcome this issue and allow an adequate inspection. Any bowel injury would need suturing. The system described could oversew any areas with diathermy injury or formal enterotomy, but the bowel would need steadying to complete the repair. Currently, the described system cannot perform the latter.

If using this instrument in clinical practice, I would suggest that the patient be placed in steep Trendelenburg, followed by intraperitoneal pneumoinsufflation to further delineate the bladder perforation from any organs, placement of a 5-mm umbilical camera to inspect the bowel in detail, and direct observation of the instrument suturing the perforation. If bowel is affected, two additional 5-mm ports would suffice to safely repair any enterotomies (and if needed, repair the bladder).

I hope to see further development of these instruments as we move forward into the new era of NOTES.

References


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