

Endoscopic treatment of a rectovesical fistula following radical prostatectomy by over-the-scope clip (OTSC)

Milos Brodak, Josef Kosine, Ilja Tachecí, Jaroslav Pacovsky

Department of Urology, Charles University Hospital, Hradec Kralove, Czech Republic

Videosurgery Miniinv 2015; 10 (3): 486–490

DOI: 10.5114/wiitm.2015.54101

Abstract

The successful management of a rectovesical fistula after radical prostatectomy is difficult. Minimally invasive treatment by over-the-scope clip (OTSC) is a novel method. The authors present results with the use of OTSC. This method was used in 2 patients. The first patient had a rectovesical fistula detected on the fifth day after a prostatectomy. The second patient experienced rectal perforation during prostatectomy and a recurrent fistula after fistulorrhaphy. Both patients had a small fistula located in the vesicourethral anastomosis. Both patients underwent endoscopic OTSC placement. The median follow-up was 26 months. The success rate was 50%. The first patient healed successfully and the second patient had a relapse. The York-Mason procedure was eventually successful. According to our initial experience, the OTSC is suitable for small fistulas detected shortly after a prostatectomy. A more complex fistula, though small, carries a higher recurrence risk.

Key words: rectovesical fistula, radical prostatectomy, endoscopy, over-the-scope clip.

Introduction

Rectovesical fistula following radical prostatectomy is a rare but serious complication. The management of this condition is challenging. Many demanding and invasive, open or laparoscopic procedures have been described [1–5]. According to existing literature and our initial experience, the minimally invasive over-the-scope clip (OTSC) method is a suitable alternative to surgery that could be used in the management of small rectovesical fistulas [6–8]. The OTSC device was primarily proposed for the treatment of complications such as bleeding or perforation, during gastroscopy or colonoscopy. The principle of this method is clamping the tissue and closing the lumen of vessels, or the closure of perforation [6, 9].

The aim of our paper is to present our experience with the OTSC endoscopic method as a minimally invasive treatment of the rectovesical fistula in 2 patients.

Case reports

Case report 1

A 62-year-old man underwent laparoscopic radical prostatectomy for prostate cancer T2cN0M0 with initial prostate-specific antigen (PSA) 6.8 ng/ml and a definitive Gleason score of 6. The laparoscopic surgery was without visible complications. The operation took 146 min; blood loss was 150 ml. The rectal wall was checked by filling the prostatic fossa with water in the pelvis, and gas insufflation in the rectum. No perforation was detected. The vesicourethral anastomosis was performed by running the V-Loc barbed stitch. The first postoperative days were uneventful. On the fifth postoperative day, the patient experienced profuse watery diarrhea. Suspecting a rectovesical fistula, a cystography was carried out and a small transmission was detected. The fistula was located in the urethrovesical anastomo-

Address for correspondence

Milos Brodak MD, PhD, Department of Urology, Charles University Hospital, 581 Sokolska St, 50005 Hradec Kralove, Czech Republic, phone: +42 0495833378, fax: +42 0495833431, e-mail: brodak@fnhk.cz

sis (Photo 1). A rectoscopy was performed by opening the fistula near the anal sphincter (Photo 2). The method of treatment chosen was OTSC, to ensure minimal invasion, because of the small size of the fistula, and because of the short period since a radical prostatectomy had been performed. The procedure was performed under analgesedation, and the duration of surgery was 20 min. The fistula and its surrounding tissue were clasped with a special device and closed by a special Nitinol clip – OTSC (Photo 3). The indwelling catheter was left in for 21 days after OTSC placement. Broad-spectrum antibiotics and a low-residue diet were administered for 5 and 10 days, respectively. The second cystography was performed after 21 days when the healed fistula (Photo 4) and the catheter were removed. The subsequent postoperative course was without complications. The patient became continent within a few days, with no further fecal disturbances, and he was in biochemical negative remission.

Case report 2

A 72-year-old man underwent open retropubic radical prostatectomy and pelvic lymphadenectomy for high-risk prostate cancer, T4aN0M0. The initial PSA was 6.4 ng/ml and the definitive Gleason score was 10. The man had no comorbidities, and a strong desire to remove the cancer. The patient was informed in detail about the risk of a rectal wall injury, recurrence, and other adverse effects, as well as about alternative methods of treatment. During prostatectomy a resection of the rectal wall was performed to prevent a positive surgical margin. The rectal wall was sewn and the sigmoidostomy was executed with the collaboration of an abdominal surgeon. The recurrence of a fistula was found four months after surgery, and the patient underwent open fistulorrhaphy by an abdominal approach, 6 months after the initial prostatectomy. The next recurrence took place 4 weeks after the



Photo 1. Cystography with vesicorectal fistula



Photo 2. Rectoscopy with opening of the vesicorectal fistula

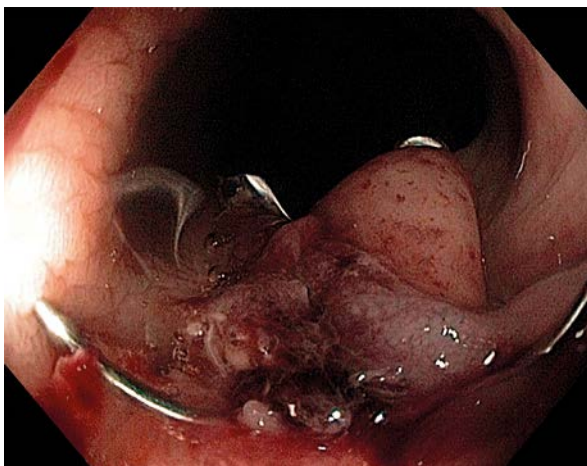


Photo 3. The OTSC placement over the fistula



Photo 4. Cystography with healed fistula

fistulorrhaphy. According to the cystography, rectoscopy and cystoscopy, the fistula was very small, located near the vesicourethral anastomosis and anal sphincter. The OTSC method was chosen because of the small size of the fistula and a preference for a minimally invasive method. The surgery was performed under analgesedation. The duration was 19 min, and the procedure went without complication, with the appropriate clip being placed. The indwelling catheter was left in for 21 days. The antibiotics and diet were administered for a week and 2 weeks, respectively. A cystography was carried out after 3 weeks with no transmission between bladder and rectum; the bladder catheter was removed. A fistula relapse was observed 7 days after the catheter had been removed. The next procedure used was the York-Mason transanal rectourethral fistula repair. This procedure was eventually successful. The sigmoidostomy was closed 8 weeks later. The patient received 1-year androgen-deprivation therapy after prostatectomy by LHRH analogues due to very high-risk prostate cancer. The patient was in biochemical negative remission and functionally he was urine- and fecal-continent.

Discussion

The use of the OTSC device is an endoscopic procedure primarily developed for managing complications during endoscopy of the gastrointestinal tract, predominantly for bleeding or perforations [9, 10]. The main principle of an OTSC device is the insertion of a Nitinol clip in the surrounding tissue of the fistula. Long-term closure of the fistula optimally leads to its healing. The insertion of the clip is carried out with a special device: Ovesco Endoscopy AG, Tuebingen Germany. The procedure starts with a clip fixed to a cap, fitted on top of the endoscope. After the clip is placed, the surrounding tissue of the fistula is clasped and pulled into the cap. Once the tissue is optimally clasped and pulled into the cap, the clip is put in place by a special releasing system. The clip is made from Nitinol, a special alloy of titanium and nickel with a strong shape memory. In optimal cases the fistula is completely closed in by the wide edge of the rectal wall [6].

The OTSC was first used in gastroscopy and later in colonoscopy [9, 10]. Parodi *et al.* reported the successful use of the OTSC in 8 out of 10 patients with fistulas in different segments of the gastrointestinal tract [7]. Another successful use of the OTSC was

presented in 2 patients with esophageal fistulas. The first patient healed after the OTSC method, whereas the second had a recurrence and underwent a second OTSC procedure. This repeated procedure was successful [11]. More case studies of this procedure in the management of intestinal wall lesions have been published [12–14].

More comprehensive studies assessing the OTSC method were published by Nishiyama *et al.* and Mönkemüller *et al.* The first paper described and evaluated a cohort of 23 patients with fistulas in different segments of the intestinal tract. The fistula healed in 19 out of 23 patients, at a success rate of 83%. The main reasons for clipping system failure were either the size of the fistula when bigger than 20 mm, or a long delay after the formation of the fistula [15]. The second paper evaluated the OTSC in a group of 16 patients, at a success rate of 70%. The reasons for malfunctions were similar [16]. The latest study, with a larger cohort of patients, was published by Mercky *et al.*, in 2014. The authors assessed 30 patients with fistulas in different parts of the gastrointestinal tract, predominately in the gastro-duodenal segment. The overall success rate was 71.4%, significantly higher in the gastro-duodenal segment. A rectovesical fistula was the risk factor for recurrence [17].

Only a few papers have been published about the use of OTSC in the management of a rectovesical fistula. A case study exists of rectovesical fistula treatment after colon resection with a combination of the OTSC and cyanoacrylate glue [18]. Another paper describes the successful application of the OTSC method in a female patient with an anal transsphincteric fistula [8]. A year later, the same authors published results in a small cohort of 10 patients with anal fistulas treated by OTSC. Nine out of 10 patients were treated successfully with this method. The reason for a failed procedure in one patient was spontaneous early clip detachment on the third postoperative day [19]. The endoscopic management of a rectovesical fistula following radical prostatectomy has been described only in a case report from Katsinelos *et al.* The rectovesical fistula was diagnosed 2 weeks after radical prostatectomy. To repair the fistula, the authors employed a combination of tissue glue and endoclips (HX-600-900; Olympus). These clips were smaller but similar to the OTSC. The endoscopic treatment was effective [20].

Rectovesical fistula is a rare but serious complication following radical prostatectomy, with an inci-

dence rate of 0.1–11% [21–23]. The most common site of rectal injury is near the prostate apex due to its proximity to the rectum. Rectum perforation may be caused either by direct cutting, necrosis after massive coagulation, or during sewing anastomosis [24, 25]. Spontaneous repair or no surgical management is ineffective in most cases. The one effective procedure proposed was open transanal York-Mason surgery or some modification of it [1–3]. The main benefit of transanal surgery is having the shortest approach to the fistula [26]. Different open procedures with an abdominal or perineal approach [4, 27] have been proposed. The main disadvantage of all open procedures is their relatively high level of invasiveness. Beside these more common open procedures, laparoscopic fistula repair procedures have also been reported [5].

The main reason for choosing the OTSC device for our patients was the advantage of minimally invasive surgery and the promising data about this new method. The first patient from our cohort underwent a laparoscopic radical prostatectomy, and endoscopic treatment was very suitable. The second man underwent two large procedures, and the fistula was very small. The success in the first patient could be due to the fact that the radical prostatectomy had been performed only 5 days prior to the OTSC. The reasons for the relapse in the second patient could be the long time of fistula formation, and the presence of scar tissue after two operations. The main limitation of this paper is its small number of patients. More experience with this method treating rectovesical fistula after radical prostatectomy is mandatory.

Conclusions

The OTSC device is a suitable, minimally invasive method in the management of the rectovesical fistula after radical prostatectomy. According to our first experience, this method is appropriate for smaller rectovesical fistulas detected shortly after prostatectomy. There is higher risk of recurrence in patients with a history of previous surgery and longer periods since fistula formation.

Acknowledgments

This work was supported by the program PRVOUK P37/04.

Conflict of interest

The authors declare no conflict of interest.

References

- Hadley DA, Southwick A, Middleton RG. York-Mason procedure for repair of recto-urinary fistulae: a 40-year experience. *BJU Int* 2012; 109: 1095-8.
- Nfonsam VN, Mateka JJ, Prather AD, Marcet JE. Short-term outcomes of the surgical management of acquired rectourethral fistulas: does technique matter? *Res Rep Urol* 2013; 5: 47-51.
- Rouanne M, Vaessen C, Bitker MO, et al. Outcome of a modified York Mason technique in men with iatrogenic urethrorectal fistula after radical prostatectomy. *Dis Colon Rectum* 2011; 54: 1008-13.
- Voelzke BB, McAninch JW, Breyer BN, et al. Transperineal management for postoperative and radiation rectourethral fistulas. *J Urol* 2013; 189: 966-71.
- Sotelo R, Garcia A, Yaime H, et al. Laparoscopic rectovesical fistula repair. *J Endourol* 2005; 19: 603-7.
- Surace M, Mercky P, Demarquay JF, et al. Endoscopic management of GI fistulae with the over-the-scope clip system (with video). *Gastrointest Endosc* 2011; 74: 1416-9.
- Parodi A, Repici A, Pedroni A, et al. Endoscopic management of GI perforations with a new over-the-scope clip device (with videos). *Gastrointest Endosc* 2010; 72: 881-6.
- Prosst RL, Ehni W. The OTSC® Proctology clip system for anorectal fistula closure: the 'anal fistula claw': case report. *Minim Invasive Ther Allied Technol* 2012; 21: 307-12.
- Kirschniak A, Kratt T, Stüker D, et al. A new endoscopic over-the-scope clip system for treatment of lesions and bleeding in the GI tract: first clinical experiences. *Gastrointest Endosc* 2007; 66: 162-7.
- Kirschniak A, Traub F, Kueper MA, Stüker D, Königsrainer A, Kratt T. Endoscopic treatment of gastric perforation caused by acute necrotizing pancreatitis using over-the-scope clips: a case report. *Endoscopy* 2007; 39: 1100-2.
- Pohl J, Borgulya M, Lorenz D, Ell C. Endoscopic closure of postoperative esophageal leaks with a novel over-the-scope clip system. *Endoscopy* 2010; 42: 757-9.
- Jacobsen GR, Coker AM, Acosta G, et al. Initial experience with an innovative endoscopic clipping system. *Surg Technol Int* 2012; 22: 39-43.
- Meister T, Kuhlitz J, Floer M. Over-the-scope clip (OTSC) application as rescue therapy for postoperative enterocutaneous fistula closure. *Acta Chir Belg* 2014; 114: 87-9.
- Manta R, Manno M, Bertani H, et al. Endoscopic treatment of gastrointestinal fistulas using an over-the-scope clip (OTSC) device: case series from a tertiary referral center. *Endoscopy* 2011; 43: 545-8.
- Nishiyama N, Mori H, Kobara H, et al. Efficacy and safety of over-the-scope clip: including complications after endoscopic submucosal dissection. *World J Gastroenterol* 2013; 19: 2752-60.
- Mönkemüller K, Peter S, Toshniwal J, et al. Multipurpose use of the 'bearclaw' (over-the-scope-clip system) to treat endoluminal gastrointestinal disorders. *Dig Endosc* 2014; 26: 350-7.

17. Mercky P, Gonzalez JM, AimoreBonin E, et al. Usefulness of over-the-scope clipping system for closing digestive fistulas. *Dig Endosc* 2015; 27: 18-24.
18. Mangiavillano B, Pisani A, Viaggi P, et al. Endoscopic sealing of a rectovesical fistula with a combination of an over the scope clip and cyano-acrylate injection. *J Gastrointest Oncol* 2010; 1: 122-4.
19. Prosst RL, Ehni W, Joos AK. The OTSC® Proctology clip system for anal fistula closure: first prospective clinical data. *Minim Invasive Ther Allied Technol* 2013; 22: 255-9.
20. Katsinelos P, Gkagkalis S, Chatzimavroudis G, et al. Rectovesical fistula treated by glue injection plus endoclipping technique. *Endoscopy* 2013; 45 Suppl 2 UCTN: E238. doi: 10.1055/s-0032-1308945. Epub 2013 Sep 5.
21. Wedmid A, Mendoza P, Sharma S, et al. Rectal injury during robot-assisted radical prostatectomy: incidence and management. *J Urol* 2011; 186: 1928-33.
22. Kheterpal E, Bhandari A, Siddiqui S, et al. Management of rectal injury during robotic radical prostatectomy. *Urology* 2011; 77: 976-9.
23. Park JW, WonLee H, Kim W, et al. Comparative assessment of a single surgeon's series of laparoscopic radical prostatectomy: conventional versus robot-assisted. *J Endourol* 2011; 25: 597-602.
24. Wedmid A, Mendoza P, Sharma S, et al. Rectal injury during robot-assisted radical prostatectomy: incidence and management. *J Urol* 2011; 186: 1928-33.
25. Hanus T. Rectourethral fistulas. *Int Braz J Urol* 2002; 28: 338-45.
26. Örhalmi J, Klos K, Ferko A, Jackanin S. STARR surgery in the treatment of rectocele and rectal intus susception. *Rozhl Chir* 2012; 91: 649-53.
27. Hechenbleikner EM, Buckley JC, Wick EC. Acquired rectourethral fistulas in adults: a systematic review of surgical repair techniques and outcomes. *Dis Colon Rectum* 2013; 56: 374-83.

Received: 12.04.2015, **accepted:** 13.08.2015.