

CASE REPORT

## Endoclipping treatment of life-threatening rectal bleeding after prostate biopsy

Panagiotis Katsinelos, Jannis Kountouras, Georgios Dimitriadis, Grigoris Chatzimavroudis, Christos Zavos, Ioannis Pilpilidis, George Paroutoglou, George Germanidis, Kostas Mimidis

Panagiotis Katsinelos, Grigoris Chatzimavroudis, Ioannis Pilpilidis, George Paroutoglou, George Germanidis, Kostas Mimidis, Department of Endoscopy and Motility Unit, Central Hospital, 54635 Thessaloniki, Greece

Jannis Kountouras, Christos Zavos, Department of Gastroenterology, Second Medical Clinic, Aristotle University of Thessaloniki, Ippokration Hospital, 54635 Thessaloniki, Greece

Georgios Dimitriadis, First Department of Urology, Aristotle University of Thessaloniki, Central Hospital, 54635 Thessaloniki, Greece

**Author contributions:** Katsinelos P was the main endoscopist; Zavos C and Pilpilidis I analyzed and interpreted the patient data; Paroutoglou G, Germanidis G and Mimidis K reviewed the relative literature; Katsinelos P and Chatzimavroudis G wrote the paper; Kountouras J and Dimitriadis G were contributors in revising the manuscript critically for intellectual content.

Correspondence to: Dr. Panagiotis Katsinelos, Department of Endoscopy and Motility Unit, Central Hospital, Ethnikis Aminis 41, 54635 Thessaloniki, Greece. [gchatzim@med.auth.gr](mailto:gchatzim@med.auth.gr)

Telephone: +30-2310-963341 Fax: +30-2310-210401

Received: September 29, 2008 Revised: January 9, 2009

Accepted: January 16, 2009

Published online: March 7, 2009

### Abstract

Rectal bleeding is frequently seen in patients undergoing transrectal ultrasound (TRUS)-guided multiple biopsy of the prostate, but is usually mild and stops spontaneously. We report what is believed to be the first case of life-threatening rectal bleeding following this procedure, which was successfully treated by endoscopic intervention through placement of three clips on the sites of bleeding. This case emphasizes endoscopic intervention associated with endoclipping as a safe and effective method to achieve hemostasis in massive rectal bleeding after prostate biopsy. Additionally, current data on the complications of the TRUS-guided multiple biopsy of the prostate and the options for treating fulminant rectal bleeding, a consequence of this procedure, are described.

© 2009 The WJG Press and Baishideng. All rights reserved.

**Key words:** Prostate biopsy; Complications; Massive rectal bleeding; Endoscopic treatment; Endoclipping

**Peer reviewer:** Nageshwar D Reddy, Professor, Asian Institute of Gastroenterology, 6-3-652, Somajiguda, Hyderabad 500082, India

Katsinelos P, Kountouras J, Dimitriadis G, Chatzimavroudis G, Zavos C, Pilpilidis I, Paroutoglou G, Germanidis G, Mimidis K. Endoclipping treatment of life-threatening rectal bleeding after prostate biopsy. *World J Gastroenterol* 2009; 15(9): 1130-1133 Available from: URL: <http://www.wjgnet.com/1007-9327/15/1130.asp> DOI: <http://dx.doi.org/10.3748/wjg.15.1130>

### INTRODUCTION

Screening for prostate cancer has become an important issue in recent years. Of all procedures used to diagnose prostate cancer, the gold standard is transrectal ultrasound (TRUS)-guided multiple biopsy of the prostate<sup>[1,2]</sup>. Complications from TRUS-guided prostate needle biopsy are occasionally encountered in the daily practice of urologists; the traditional spring-loaded device with a small-caliber needle used for the prostate biopsy is fast, safe, effective and associated with minimal complications, including self-limiting hematuria, hematospermia and pain<sup>[3-5]</sup>. Rare major complications include acute prostatitis, acute urinary retention, epididymitis, severe hematuria, sepsis, abscess formation, urinary tract infection, tumor tracking, vasovagal syncope, and significant rectal bleeding<sup>[3-7]</sup>. Most often, major and especially minor complications resolve with traditional conservative therapy<sup>[3,8]</sup>. Severe rectal bleeding is traditionally managed by the urologist, with rectum tamponade as the initial and simplest conservative method, or, when necessary, balloon compression by means of a transrectally inserted catheter<sup>[8]</sup>. Endoscopic intervention with injection of adrenaline and sclerosing solutions, thermocoagulation and band ligation have also been used successfully in some cases<sup>[9-13]</sup>. We describe, possibly for the first time, the use of endoclipping for the treatment of severe rectal bleeding following TRUS-guided prostate multiple biopsy.

### CASE REPORT

A healthy 59-year-old internist was found to have



**Figure 1** Endoscopic view showing oozing from biopsy sites in the anterior rectal wall.



**Figure 2** Hemostasis achieved after application of three clips.

prostate-specific antigen (PSA) at 5.8 ng/mL (normal < 3.5 ng/mL) during a screening test for prostate cancer. Laboratory data including platelet count, and prothrombin and bleeding times were normal. He underwent TRUS guided prostate multiple biopsy (18 cores) with a needle. Two hours later, he noticed rectal bleeding and thereafter he continued to pass a large volume of bright red blood through the rectum every 30 min. Manual compression and rectal tamponade with inflation of the balloon of an inserted urine catheter in the rectal cavity by his urologist failed to stop the bleeding. As a result of massive rectal bleeding that caused his hematocrit to drop from 45% to 28% and concomitant hemodynamic instability, he required hospitalization. Two packed red blood cell units were transfused and endoscopic consultation was requested. When transferred to our department, he was diaphoretic, with a pulse rate of 124 bpm and blood pressure of 100/70 mmHg. There was no history of hemorrhoidal disease. Urgent colonoscopy was performed without bowel preparation and revealed a rectal cavity full of fresh blood and clots, without a visible bleeding source. Vigorous washing and suction of the rectal cavity revealed two adjacent bleeding points in the anterior rectal wall, which corresponded to the sites of rectal wall injury caused by prostate multiple biopsy (Figure 1). Three endoclips (MH-858; Olympus, Tokyo, Japan) *via* an HX-6UR-1 applicator (Olympus) were applied to the bleeding lesions (Figure 2) and immediate hemostasis was achieved. The patient's condition was stabilized and 2 d later, he was discharged with an uneventful recovery.

## DISCUSSION

To the best of our knowledge, we report the first known severe rectal bleeding following TRUS-guided prostate biopsy, which was effectively managed by endoclipping.

There are two established techniques of prostate biopsy, including the more widely used transrectal technique, and the transperineal technique. Both techniques appear to be equally safe, although the transrectal technique is faster<sup>[14]</sup>. Currently, the preferred option for initial prostate biopsy is the transrectal procedure<sup>[15]</sup>. Nevertheless, concerns about the accuracy

of the standard sextant prostate biopsy for detecting prostate cancer have led to more cores being taken in each patient. This is not surprising, as mathematical models have shown that sextant biopsy misses 27% of tumors, and the probability of identifying a fixed volume of prostate cancer increases by taking more cores<sup>[16]</sup>. Results from clinical studies have shown that the sextant protocol for TRUS-guided prostate biopsy can miss cancer in 19%-31% of cases<sup>[17,18]</sup>. To overcome these diagnostic shortcomings, several extended biopsy policies have been advocated. Increasing the number of cores from six to eight, with extra cores targeted along the post-lateral margins of the gland, identifies up to 20% more tumors<sup>[19]</sup>, but even an eight-core biopsy may miss cancer, and others have advocated<sup>[16,18]</sup> more biopsies per gland<sup>[20-22]</sup>. However, trying to improve the diagnostic accuracy should not be at the expense of the increased complication rate that may accompany more core biopsies, particularly bleeding, as occurred in our patient, especially when the prostate and surrounding rectal tissue are supplied by a rich vascular bed that consists of branches of the inferior vesicular artery and the middle and inferior rectal arteries. Moreover, the venous plexus is also dense in the submucosal space of the region, particularly in patients with hemorrhoids. The total incidence of rectal bleeding is listed as 1.3%-58.6%, with a statistically significant positive correlation to the number of core samples obtained. In most cases, the rectal bleeding is slight without necessitating further therapeutic intervention<sup>[3,5]</sup>.

To overcome further the aforementioned diagnostic shortcomings, evaluation of the accuracy of TRUS-guided biopsies, by using combined magnetic resonance imaging (MRI) and magnetic resonance spectroscopic imaging (MRSI) in patients with persistently high PSA levels and negative TRUS-guided biopsy results, has revealed that MRI/MRSI have the potential to guide biopsies to tumor foci in these patients<sup>[23]</sup>. Overall, MRI and MRSI have accuracy similar to biopsy for intraprostatic localization of tumor and they are more accurate than biopsy in the prostate apex. Therefore, these imaging modalities may supplement biopsy results by increasing physician confidence when evaluating intraprostatic tumor location, which may be essential for planning disease-targeted therapy<sup>[24]</sup>. Our patient

did not accept further evaluation by these two imaging approaches.

In an extensive research of Medline using the key words rectal bleeding, prostate biopsy, hematochezia and rectal hemorrhage, we found seven publications that describe massive rectal bleeding occurring after transrectal biopsy, which required blood transfusion. In most of the cases, hemostasis was achieved with rectal tamponade by means of fleece tamponing, by urine balloon catheter inserted and inflated in the rectum by a condom filled with fluid in the rectal cavity, or after endoscopic intervention with injection of adrenaline or sclerosing solutions (polidocanol or pure ethanol), thermocoagulation and band ligation<sup>[9-13,25]</sup>. In our case, neither rectal tamponade nor manual compression of bleeding sites by a urologist succeeded in achieving hemostasis. Since the patient presented with hemodynamic instability (diaphoresis, tachycardia with drop of blood pressure), endoscopic consultation was requested. Having significant experience of endoclips for treatment of upper and lower gastrointestinal bleeding<sup>[26,27]</sup>, we proceeded with urgent endoscopy combined with placement of three clips at the sites of bleeding, which led to immediate hemostasis. We preferred endoclips instead of sclerosing solutions, despite the fact that the latter have been successfully used to achieve hemostasis in post-biopsy prostate bleeding<sup>[28,29]</sup>, because we were concerned about their risk of subsequent formation of deep ulceration. In contrast, the use of endoclipping has been widely reported in gastrointestinal endoscopy, without complications<sup>[26,27]</sup>.

Argon plasma coagulation (APC) is a safe, well-tolerated treatment option in prostatic cancer patients with radiation-proctitis-induced hemorrhage, and historically, has been superior to Nd: YAG laser ablation<sup>[30]</sup>. Regarding the endoscopic treatment for initial hemostasis in upper and lower gastrointestinal bleeding, apart from the endoscopic hemostatic devices used, APC is an alternative hemostatic method<sup>[31,32]</sup>. Its potential therapeutic application in patients with severe rectal bleeding following TRUS-guided prostate biopsy remains to be elucidated.

In conclusion, our case emphasizes that urgent endoscopy allows accurate diagnosis and endoclipping is a safe and effective therapy of massive rectal bleeding followed prostate biopsy.

## REFERENCES

- 1 **Palisaar J**, Eggert T, Graefen M, Haese A, Huland H. [Transrectal ultrasound-guided punch biopsies of the prostate. Indication, technique, results, and complications] *Urologe A* 2003; **42**: 1188-1195
- 2 **Ecke TH**, Gunia S, Bartel P, Hallmann S, Koch S, Ruttloff J. Complications and risk factors of transrectal ultrasound guided needle biopsies of the prostate evaluated by questionnaire. *Urol Oncol* 2008; **26**: 474-478
- 3 **Raaijmakers R**, Kirkels WJ, Roobol MJ, Wildhagen MF, Schrder FH. Complication rates and risk factors of 5802 transrectal ultrasound-guided sextant biopsies of the prostate within a population-based screening program. *Urology* 2002; **60**: 826-830
- 4 **Djavan B**, Waldert M, Zlotta A, Dobronski P, Seitz C, Remzi M, Borkowski A, Schulman C, Marberger M. Safety and morbidity of first and repeat transrectal ultrasound guided prostate needle biopsies: results of a prospective European prostate cancer detection study. *J Urol* 2001; **166**: 856-860
- 5 **Rodríguez LV**, Terris MK. Risks and complications of transrectal ultrasound guided prostate needle biopsy: a prospective study and review of the literature. *J Urol* 1998; **160**: 2115-2120
- 6 **Chiang IN**, Chang SJ, Pu YS, Huang KH, Yu HJ, Huang CY. Major complications and associated risk factors of transrectal ultrasound guided prostate needle biopsy: a retrospective study of 1875 cases in taiwan. *J Formos Med Assoc* 2007; **106**: 929-934
- 7 **Sheikh M**, Hussein AY, Kehinde EO, Al-Saeed O, Rad AB, Ali YM, Anim JT. Patients' tolerance and early complications of transrectal sonographically guided prostate biopsy: prospective study of 300 patients. *J Clin Ultrasound* 2005; **33**: 452-456
- 8 **Maatman TJ**, Bigham D, Stirling B. Simplified management of post-prostate biopsy rectal bleeding. *Urology* 2002; **60**: 508
- 9 **Braun KP**, May M, Helke C, Hoschke B, Ernst H. Endoscopic therapy of a massive rectal bleeding after prostate biopsy. *Int Urol Nephrol* 2007; **39**: 1125-1129
- 10 **Strate LL**, O'Leary MP, Carr-Locke DL. Endoscopic treatment of massive rectal bleeding following prostate needle biopsy. *Endoscopy* 2001; **33**: 981-984
- 11 **Ustündag Y**, Yeşilli C, Aydemir S, Savranlar A, Yazicioğlu K. A life-threatening hematochezia after transrectal ultrasound-guided prostate needle biopsy in a prostate cancer case presenting with lymphedema. *Int Urol Nephrol* 2004; **36**: 397-400
- 12 **Kinney TP**, Kozarek RA, Ylvisaker JT, Gluck M, Jiranek GC, Weissman R. Endoscopic evaluation and treatment of rectal hemorrhage after prostate biopsy. *Gastrointest Endosc* 2001; **53**: 117-119
- 13 **Bullet E**, Guevara MC, Campo R, Falcó J, Puig J, Prera A, Prats J, Del Rosario J. Massive rectal bleeding following transrectal ultrasound-guided prostate biopsy. *Endoscopy* 2000; **32**: 792-795
- 14 **Miller J**, Perumalla C, Heap G. Complications of transrectal versus transperineal prostate biopsy. *ANZ J Surg* 2005; **75**: 48-50
- 15 **Hara R**, Jo Y, Fujii T, Kondo N, Yokoyama T, Miyaji Y, Nagai A. Optimal approach for prostate cancer detection as initial biopsy: prospective randomized study comparing transperineal versus transrectal systematic 12-core biopsy. *Urology* 2008; **71**: 191-195
- 16 **Chen ME**, Troncoso P, Johnston DA, Tang K, Babaian RJ. Optimization of prostate biopsy strategy using computer based analysis. *J Urol* 1997; **158**: 2168-2175
- 17 **Terris MK**. Sensitivity and specificity of sextant biopsies in the detection of prostate cancer: preliminary report. *Urology* 1999; **54**: 486-489
- 18 **Durkan GC**, Sheikh N, Johnson P, Hildreth AJ, Greene DR. Improving prostate cancer detection with an extended-core transrectal ultrasonography-guided prostate biopsy protocol. *BJU Int* 2002; **89**: 33-39
- 19 **Presti JC Jr**, Chang JJ, Bhargava V, Shinohara K. The optimal systematic prostate biopsy scheme should include 8 rather than 6 biopsies: results of a prospective clinical trial. *J Urol* 2000; **163**: 163-166; discussion 166-167
- 20 **Gore JL**, Shariat SF, Miles BJ, Kadmon D, Jiang N, Wheeler TM, Slawin KM. Optimal combinations of systematic sextant and laterally directed biopsies for the detection of prostate cancer. *J Urol* 2001; **165**: 1554-1559
- 21 **Levine MA**, Ittman M, Melamed J, Lepor H. Two consecutive sets of transrectal ultrasound guided sextant biopsies of the prostate for the detection of prostate cancer. *J Urol* 1998; **159**: 471-475; discussion 475-476
- 22 **Eskew LA**, Bare RL, McCullough DL. Systematic 5 region prostate biopsy is superior to sextant method for diagnosing

- carcinoma of the prostate. *J Urol* 1997; **157**: 199-202; discussion 202-203
- 23 **Bhatia C**, Phongkitkarun S, Booranapitaksonti D, Kochakarn W, Chaleumsanyakorn P. Diagnostic accuracy of MRI/MRSI for patients with persistently high PSA levels and negative TRUS-guided biopsy results. *J Med Assoc Thai* 2007; **90**: 1391-1399
- 24 **Wefer AE**, Hricak H, Vigneron DB, Coakley FV, Lu Y, Wefer J, Mueller-Lisse U, Carroll PR, Kurhanewicz J. Sextant localization of prostate cancer: comparison of sextant biopsy, magnetic resonance imaging and magnetic resonance spectroscopic imaging with step section histology. *J Urol* 2000; **164**: 400-404
- 25 **Gonen M**, Resim S. Simplified treatment of massive rectal bleeding following prostate needle biopsy. *Int J Urol* 2004; **11**: 570-572
- 26 **Raju GS**, Gajula L. Endoclips for GI endoscopy. *Gastrointest Endosc* 2004; **59**: 267-279
- 27 **Kaltenbach T**, Friedland S, Barro J, Soetikno R. Clipping for upper gastrointestinal bleeding. *Am J Gastroenterol* 2006; **101**: 915-918
- 28 **Harris MA**, Chadwick D, Ward DC. A novel way of controlling rectal bleeding after transrectal ultrasonography-guided prostate biopsies. *BJU Int* 2004; **93**: 1358
- 29 **Pacios E**, Esteban JM, Breton ML, Alonso MA, Sicilia-Urbán JJ, Fidalgo MP. Endoscopic treatment of massive rectal bleeding following transrectal ultrasound-guided prostate biopsy. *Scand J Urol Nephrol* 2007; **41**: 561-562
- 30 **Venkatesh KS**, Ramanujam P. Endoscopic therapy for radiation proctitis-induced hemorrhage in patients with prostatic carcinoma using argon plasma coagulator application. *Surg Endosc* 2002; **16**: 707-710
- 31 **Havanond C**, Havanond P. Argon plasma coagulation therapy for acute non-variceal upper gastrointestinal bleeding. *Cochrane Database Syst Rev* 2005; CD003791
- 32 **Suzuki N**, Arebi N, Saunders BP. A novel method of treating colonic angiodysplasia. *Gastrointest Endosc* 2006; **64**: 424-427

S- Editor Tian L L- Editor Kerr C E- Editor Yin DH