Collegian (2015) xxx, xxx–xxx

Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/coll

Incidence of complications in men undergoing transurethral resection of the prostate

Snezana Kusljic, BSci (Hons), PhD[a,*], Jessica Aneja, BSci (Hons)[b,1], Elizabeth Manias, RN CertCritCare, BPharm, MPharm, MNurs, PhD[a,b,c]

[a] *Department of Nursing, The University of Melbourne and The Florey Institute of Neuroscience and Mental Health, Australia*
[b] *Department of Medicine, The University of Melbourne, Australia*
[c] *School of Nursing and Midwifery, Deakin University, Australia*

Received 2 October 2014; received in revised form 18 June 2015; accepted 7 July 2015

KEYWORDS
Aging;
Hematuria;
Medication use;
Physiological changes;
Transurethral resection of the prostate

Summary
Objectives: To examine the link between medication use and the risk of bleeding complications following transurethral resection of the prostate from the second postoperative day until hospital discharge.
Method: Using a retrospective observational study design, the medical records of all patients who underwent transurethral resection of the prostate over a 24-month period were examined. Comprehensive data regarding patients' medication history, comorbidities and complications that occurred either during or after surgery were collected from medical records. Inferential statistical analysis was used to examine associations between demographic and medication variables and the risk of complications.
Results: Complications arising after surgery occurred in 48/135 (36%) of patients. The most common complications postoperatively were hematuria, occurring in 41/48 (85%) and hematuria with clot retention, occurring in 24/48 (50%) of patients who suffered complications. There was a significant association between the number of medications prescribed and postoperative complications; for hematuria, χ^2 (12) = 21.50, $p = 0.04$; and for hematuria with clot retention χ^2 (12) = 24.97, $p = 0.015$.
Conclusions: Demographic data relating to patients' age, comorbid state and the number of standard medications prescribed is associated with an increase in macroscopic hematuria and

* Corresponding author at: Department of Nursing, The Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Level 7, Alan Gilbert Building, 161 Barry Street, Carlton, VIC 3053, Melbourne, Australia. Tel.: +61 3 8344 9428; fax: +61 3 8344 5391.
E-mail address: skusljic@unimelb.edu.au (S. Kusljic).
[1] The University of Sydney, Australia.

http://dx.doi.org/10.1016/j.colegn.2015.07.001

Please cite this article in press as: Kusljic, S., et al. Incidence of complications in men undergoing transurethral resection of the prostate. *Collegian* (2015), http://dx.doi.org/10.1016/j.colegn.2015.07.001

macroscopic hematuria with clot retention after transurethral resection of the prostate. These findings emphasize the importance of nursing practice in both preoperative and postoperative care of patients undergoing surgery. Nurses need to be very vigilant in assessing patients at risk of increased bleeding from a transurethral resection of the prostate by examining their medication regimen.

1. Introduction

Benign prostatic hyperplasia (BPH) and prostate cancer are age-dependent conditions that occur predominantly in men over the age of forty. Both conditions are characterized by formation of large nodules in the prostate gland, which can compress the urethra causing an obstruction that leads to lower urinary tract symptoms (LUTS) (Heidenreich et al., 2013; Oesterling, 1996). LUTS are comprised of obstructive and irrigative symptoms, which can significantly affect the quality of life of older men (Thorpe & Neal, 2003). Despite introduction of pharmacological therapies to relieve LUTS, transurethral resection of the prostate (TURP) remains the gold standard in the management of LUTS (Madersbacher & Marberger, 1999). Despite providing fewer complications than older treatments such as radical prostatectomy, TURP can cause serious short and long-term complications. Common complications include intraoperative and post-operative bleeding, clot retention, urinary tract infection, urethral strictures and bladder neck contractures (Rassweiler, Teber, Kuntz, & Hofmann, 2006).

Moderate postoperative bleeding is the most common complication after TURP which significantly affects patients' recovery, prolonging hospital stay and increasing chances of further complications such as urinary tract infections (Kavanagh, Jack, & Lawrentschuk, 2011). Approximately 25% of patients develop bacteriuria after TURP and therefore antimicrobial therapy is administered perioperatively (Girou, Rioux, Brun-Buisson, & Lobel, 2006). It is however important to emphasize that the severity of complications postoperatively is directly reflective of the medical condition and age of the patients undergoing TURP (Polanczyk et al., 2001; Turrentine, Wang, Simpson, & Jones, 2006). Current evidence shows that the mean age of patients undergoing TURP is 67 years (Mayer, Kroeze, Chopra, Bottle, & Patel, 2012) thus the incidence of co-existing medical conditions or comorbidities is highly prevalent in this group which in turn requires complex pharmacological regimens.

Hypertension is the most common cardiovascular problem amongst the older population followed by arrhythmias and cerebrovascular events such as stroke (Biskupiak, Kim, Phatak, & Wu, 2010; Piccini et al., 2012). Therefore, a high proportion of older people require prescription of multiple medications of which the most common are antihypertensive, antiplatelet and anticoagulant medications. These three medication classes are used to prevent further complications associated with cardiovascular and cerebrovascular disease (Dickerson & Gibson, 2005; Garcia-Rodriguez, Gaist, Morton, Cookson, & Gonzalez-Perez, 2013; Kumar, Calhoun, & Dudenbostel, 2013; Lamberts et al., 2013). Antihypertensive medications act by reducing the blood volume and peripheral resistance, whereas antiplatelet and anticoagulant medications modify the blood clotting mechanisms thus inhibiting the platelet aggregation and thrombus formation (Di Minno, Momi, Di Minno, & Russolillo, 2013; Neutel & Smith, 2013). Patients taking aspirin and warfarin have a higher rate of perioperative bleeding associated with TURP (Taylor, Filgate, Guo, & Macneil, 2011) while patients who had these medications withheld preoperatively have a significantly higher risk of myocardial infarction or stroke.

Current recommendations suggest that when antiplatelet medications are being used for primary prevention, for example, in patients with a family history of cardiovascular and cerebrovascular disease, these medications can be safely withheld preoperatively. However, when these medications are being used for secondary prevention, they should be used without interruption (Chassot, Delabays, & Spahn, 2007). With an increasing number of older patients being prescribed and requiring both anti-platelet and anticoagulant medications, it is a matter of deciding case-by-case whether the risk of ceasing medication is worth the risk of increased bleeding postoperatively. Conversely, there is evidence to show that certain medications such as finasteride are associated with a decreased risk of postoperative bleeding if administered before undergoing a TURP (Donohue, Hayne, Karnik, Thomas, & Foster, 2005). Finasteride is a 5α-reductase inhibitor that blocks the conversion of testosterone to dihydrotestosterone and as a result of that decreases the activity of androgen-controlled growth factors responsible for angiogenesis and hence leads to reduction in postoperative bleeding (Hagerty, Ginsberg, Harmon, & Harkaway, 2000). Administration of finasteride for two weeks prior to TURP significantly decreased the incidence of perioperative bleeding, thus allowing for a potentially shorter procedure, fewer complications, and reduced hospital stay post-surgery (Donohue et al., 2005).

It is apparent from the literature that patients undergoing TURP are older than 65 years of age and are likely to be on multiple medications due to the various co-existing chronic conditions (Biskupiak et al., 2010; Piccini et al., 2012) thus more susceptible to post-operative complications. Previous studies have demonstrated the link between anticoagulant and antiplatelet therapy and the risk of bleeding during and after TURP. However, no studies have addressed the relationship between other common classes of medications prescribed to older people and complications following TURP. The aim of this study was to examine the link between different medications, which are reflective of the patients' underlying medical conditions such as cardiovascular disease, diabetes mellitus, osteoarthritis and the risk of complications following TURP. Nurses play an important role in monitoring patients' risk of bleeding from a TURP and are the key-providers of hands-on care in these cases.

Please cite this article in press as: Kusljic, S., et al. Incidence of complications in men undergoing transurethral resection of the prostate. *Collegian* (2015), http://dx.doi.org/10.1016/j.colegn.2015.07.001