



# Factors associated with the successful removal of indwelling urinary catheters post-operatively in the fragility hip fracture patient

Genni Lynch RN, Grad Cert Diabetes Education, M Health Prac (Research Nurse)<sup>a,\*</sup>, Kate Bell BA Nursing, Grad Cert Ageing, Dementia, M Nurse Practitioner (Osteoporosis Fragility Fracture Nurse Practitioner)<sup>b</sup>, Debra Long BA Nursing (Clinical Facilitator)<sup>c</sup>, Liz Burmeister RN, BN, Msc (Nurse Researcher)<sup>d</sup>

<sup>a</sup> Orthopaedic Unit, Princess Alexandra Hospital, 199 Ipswich Rd, Woolloongabba 4102, Queensland, Australia

<sup>b</sup> Diabetes and Endocrine Unit, Princess Alexandra Hospital, 199 Ipswich Road, Woolloongabba, 4102 Queensland, Australia

<sup>c</sup> Princess Alexandra Hospital, 199 Ipswich Rd, Woolloongabba 4101, Queensland, Australia

<sup>d</sup> School of Public Health, Nursing Practice Development Unit, Princess Alexandra Hospital, University of Queensland, 199 Ipswich Rd, Woolloongabba 4101, Queensland, Australia

## KEYWORDS

Fragility hip fracture;  
Indwelling urinary  
catheter (IDC);  
Catheter;  
Aperient regime

**Abstract Introduction:** Patients presenting to hospital with a fragility hip fracture are routinely catheterized in the emergency department. Studies have found that the duration of catheterization is the greatest and most important risk factor for developing a urinary tract infection. Whilst there is a considerable body of evidence around correct techniques for insertion of urinary catheters, there appears to be little evidence as to the timing of their removal.

**Aim of the study:** To describe the current practice of indwelling catheter (IDC) removal post operatively in the fragility hip fracture patient and to identify factors associated with the successful removal of IDCs post operatively in the same cohort of patients.

**Methods:** This study was a retrospective cohort analysis of patients admitted to a large, tertiary hospital with an established ortho-geriatric model of care.

**Results:** Aperient regime was the only factor that appeared to have a significant impact on the successful IDC removal. The patient commenced on the aperient regime was three times more likely to have an unsuccessful IDC removal than the patient on a limited or no aperient regime.

\* Corresponding author. Orthopaedic Unit, Princess Alexandra Hospital, 199 Ipswich Rd, Woolloongabba 4102, Queensland, Australia. Tel.: +617 31766640; +438085284; fax: +617 31765156.  
E-mail address: [genni.lynch@health.qld.gov.au](mailto:genni.lynch@health.qld.gov.au) (G. Lynch).

**Conclusion:** This study highlights the need for redesigning care that is patient focused, evidence-based, effective and efficient. The argument that a patient's bowel is required to be emptied prior to the successful removal of an IDC appears to be false, as in this study it was not identified as a predictor of successful IDC removal. A prospective clinical trial may be the next step forward in developing a clinical guideline for the successful removal of IDCs in the fragility hip fracture patient and/or surgical patient. Nurses have a crucial role to play in contributing to evidence-based practice and are continually challenged to do so.

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*Abbreviations:* LOS, length of Stay; OGMOC, ortho-geriatric model of care; IDC, indwelling urinary catheter.

## Introduction

Hip fracture is the term used to describe a proximal fracture of the femur (Wakeman et al., 2009). It has been estimated that more than forty Australians sustain a hip fracture daily; with most being aged sixty five years and older and more than half aged eighty five and over (Australian Institute of Health and Welfare AIHW, 2010, p. 2). Hip fractures commonly occur in the frail and elderly (Sørbye and Grue, 2013) and are typically associated with osteoporosis (Elliot-Gibson et al., 2004) with the clinical manifestation of the disease being fragility fracture (Mitchell and Adekunle, 2010). It has been shown that in the elderly patient a fragility hip fracture can cause significant changes in their health status, with urinary continence one of the many areas affected (Sørbye and Grue, 2013). It has been reported that over one hundred million urinary catheters are used annually worldwide (Nasr, 2010). An estimated 15% to 20% of all patients admitted to hospital are catheterized to monitor urine output (Singh and Schmidt, 1996), with the use of indwelling urinary catheters being amongst the most over-used devices in modern health care (Gould, 2015). Patients presenting to hospital with a fragility hip fracture are routinely catheterized in the emergency department prior to surgery. Mears and Kates (2015) suggest this is to reduce skin inflammation and pain in female patients; and incontinence or voiding difficulties in males. However Wald et al. (2005) suggest the rationale for this is to reduce post-operative bladder dysfunction caused by anaesthesia and analgesia. Urinary retention is defined as the inability to voluntarily void urine (Selius and Subedi, 2008). It is acknowledged that urinary retention can have a debilitating impact on the patient's quality of life as well as causing increased cost to the health system (Yoon et al., 2015). Urinary retention is a common problem following indwelling urinary catheter removal and is estimated to potentially occur from 7 to 48 hours post-removal (Griffiths et al., 2004). One study highlighted elderly patients being at a

higher risk of developing drug induced urinary retention when certain existing co-morbidities and concomitant medications are used including anticholinergic medications and calcium channel blockers (Selius and Subedi, 2008). Another study reported the highest risk of urinary retention was found in men 60 years of age and over (Selius and Subedi, 2008). Baldini et al. (2009) report up to 70% of patients develop urinary retention post operatively and suggest that post-operative urinary retention is influenced by patient comorbidities, type of surgery and anaesthetic type.

There is a significant infection risk associated with catheterization which is (Getliffe, 2003) estimated to be about 5% per day for short-term catheter use. Studies have found that the duration of catheterization is the greatest and most important risk factor for developing a urinary tract infection (UTI) (Getliffe, 2003; Stamm, 1975). A large retrospective cohort study of 35,904 patients at 2,965 acute care hospitals in the United States found that indwelling urinary catheters, that remained in situ greater than 48 hours post operatively, resulted in twice the number of UTIs when compared with patients whose urinary catheters were removed within or less than 48 hours (Wald et al., 2008). Thus limiting the length of time a catheter remains in situ is an effective strategy to assist in the prevention of catheter acquired UTI (Nicolle, 2014).

Whilst there is a considerable body of evidence around correct techniques for insertion of urinary catheters, there appears to be little supporting evidence as to the timing of their removal, particularly in the fragility hip fracture patient. Irani et al. (1995) speculated that policies for removing indwelling urinary catheters are often based on personal preference rather than them being based on the application of research and clinical evidence. A Cochrane review (The Cochrane Collaboration, 2009) examining strategies for removing indwelling urinary catheters listed 26 trials involving a total of 2933 participants. Based on findings from 13 of the trials, limiting how long a catheter was left in place correlated

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