

Available online at www.sciencedirect.com

ScienceDirect

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

Original Article

High rates of postoperative urinary retention following primary total hip replacement performed under combined general and spinal anaesthesia with intrathecal opiate

Michael David^{a,*}, Elizabeth Arthur^b, Raveena Dhuck^b, Ellie Hemmings^b, David Dunlop^c

^a West Midlands Deanery, Trauma & Orthopaedic Training Programme, Birmingham B16 9RG, United Kingdom

^b West Midlands Deanery, GP Training Programme, South Birmingham B16 9RG, United Kingdom

^c The Royal Orthopaedic Hospital, Arthroplasty Hip & Knee, Birmingham B31 2AP, United Kingdom

ARTICLE INFO

Article history:

Received 15 August 2015

Accepted 18 October 2015

Available online 18 November 2015

Keywords:

Urinary
Retention
Hip
Replacement
Opiate

ABSTRACT

Background: Postoperative urinary retention (POUR) occurs frequently following hip replacement.

Methods: 94 consecutive primary hip arthroplasty patients were assessed prospectively for POUR. 80 patients followed our anaesthesia protocol with combined general and spinal anaesthesia using bupivacaine and intrathecal diamorphine.

Results: 29 instances of POUR with higher rates in men and younger patients (under-50s), independent of either pre-existing renal impairment or opiate strength. POUR was observed to increase length of stay by 1.6 days.

Conclusions: We report a 36% overall rate of POUR. Males demonstrated a 3-fold increased risk. Patients should be counselled pre-operatively on the risk of urinary retention.

© 2015 Prof. PK Surendran Memorial Education Foundation. Published by Elsevier, a division of Reed Elsevier India, Pvt. Ltd. All rights reserved.

1. Introduction

Postoperative urinary retention (POUR) is a common problem with overall rates looking at the entire surgical population quoted between 4% and 6%.^{1,2} Lower limb arthroplasty patients are described as having a 20-fold greater risk³ with much variation in the literature on the account of differences

in anaesthesia and postoperative analgesia regimes. Published incidence rates thus vary widely from 0% to 75%,^{4,5} with little overall difference on meta-analysis.³

Increasing age and male gender have already been identified as independent risk factors.⁶ In men, there is evidence both for and against a link between POUR and either obstructive uropathic symptoms or the International Prostate Symptom Score (IPSS).^{7–9} Propofol along with volatile anaesthesia agents

* Corresponding author.

E-mail address: michaeldavid@nhs.net (M. David).

<http://dx.doi.org/10.1016/j.jor.2015.10.020>

0972-978X/© 2015 Prof. PK Surendran Memorial Education Foundation. Published by Elsevier, a division of Reed Elsevier India, Pvt. Ltd. All rights reserved.

used during a general anaesthesia impair the micturition reflex and reduce detrusor contractility.^{10,11} Intrathecal bupivacaine used for spinal and epidural anaesthesia abolishes detrusor control within 5 min and can last up to eight hours.^{12,13} High quality postoperative analgesia is believed to positively impact functional rehabilitation and in-patient hospital stay. Baldieri has summarised that all analgesia modalities have been linked with POUR, with a systematic review showing rates of 33% with postoperative systemic opiates and epidural analgesia, but only 9% with continuous peripheral nerve blocks³; however their quoted summary statistic could not control for anaesthesia modality.

Urinary catheterisation is traditionally advised for bladder volumes distended over 600 ml, to avoid long-term detrusor muscle damage and bladder atony.² Most studies use this as a cut-off to define postoperative urinary retention. Prolonged over-distension leads to ischaemic detrusor muscle injury and impaired function. Subsequent increased post-void residual volumes of static urine predispose to urinary tract infection (UTI) independent of urethral instrumentation.³ Either intermittent in-and-out catheterisation or an in-dwelling urinary catheter with early removal, once a patient is mobile following hip arthroplasty, is used to treat POUR and decompress the bladder. Early removal is important, as a risk of UTI is reported to rise 5% for each day a urinary catheter remains in situ,¹⁴ and associated bacteraemia is linked with deep prosthetic joint infection.¹⁵⁻¹⁷ Intermittent catheterisation is less favoured in the United Kingdom, as repeated urethral instrumentation has a greater financial burden,¹⁸ and is imagined to increase infection risk despite evidence to the contrary.¹⁹

Our institution is a dedicated tertiary-referral orthopaedic unit with a high volume arthroplasty department comprising six surgeons. Average annual primary hip arthroplasty procedures performed exceeds 850 cases per year,^d with established patient pathways that standardise rehabilitation, anaesthesia, and perioperative surgical care regimes. Our aim was to evaluate the burden of POUR, which is an attempt to identify risk factors and establish if POUR impacts on length of hospital stay, as the unit endeavours to devise and roll-out an effective enhanced recovery protocol.

2. Methods

Any patient undergoing primary total hip replacement during a 6-week consecutive period between October and November 2013, under the care of the six surgeons comprising the arthroplasty department, was included. Data were collected prospectively regarding their demographics, type of anaesthesia, strength of intrathecal opiate administered, pre-operative laboratory-calculated estimated glomerular filtration rate (eGFR), incidence of urinary retention within 24-hours of surgery. According to the format of eGFR values from our laboratory, patients were grouped into four categories of renal impairment: none (eGFR \geq 90 ml/min), mild (60-89), moderate (30-59), severe (16-29), end-stage failure (<15). These values were chosen based on established principles published by the

^d Calculated from internal clinical governance data (July to December 2013).

National Institute for Health and Clinical Excellence (NICE).^e Length of hospital stay data were collected retrospectively from our internal bioinformatics department, to ensure data accurately reflected weekend discharges, which would otherwise have been missed by our data collection team (RD, EA, EH). Data analysis and parametric statistical tests were performed independently by the lead author (MD) using Microsoft[®] Excel[®] for Mac 2011 (version 14.4.2 © 2010 Microsoft Corporation. All rights reserved). Non-parametric statistical tests were performed using GraphPad QuickCalcs (©2013 GraphPad Software, Inc. All rights reserved). Statistical significance was set at a p-value of less than or equal to 0.05.

All patients undergoing primary or complex primary total hip replacement follow a standardised perioperative regime that encompasses pre-medication, antibiotic and venous thromboembolism prophylaxis, anaesthesia, intraoperative fluids, postoperative analgesia and rehabilitation. The standard anaesthesia protocol includes intravenous propofol induction with sevoflurane gas maintenance using a computer-controlled delivery system that tracks brain activity through electroencephalography. The patient is turned from supine to a lateral position (with the operative side uppermost) for administration of supplementary spinal bolus of intrathecal 0.5% bupivacaine and diamorphine, prior to formal surgical positioning, skin preparation and draping. There is some variation in the strength of intrathecal opiate used, as well as locally infiltrated local anaesthesia agent and volume depending on anaesthetist and surgeon preferences respectively. Five of the six surgeons employ a posterior approach for total hip arthroplasty, while the sixth surgeon uses an anterolateral approach. Cementless hip arthroplasty are used for patients under the age of 75, with hybrid systems (uncemented acetabular and cemented femoral components) preferred for older patients. Nursing staff identify patients, who have failed to pass urine within six hours of completion of surgery, and perform bladder scans using a portable ultrasound bladder scanner (BladderScan[®] BVI 3000, Verathon Medical United Kingdom Ltd., Amersham, UK). Postoperative urinary retention is diagnosed by a residual greater than 700 ml, and a urinary catheter will be placed either by a trained nurse if available or the junior doctor on duty.

3. Results

94 consecutive primary hip replacements were performed during the six-week timeframe selected. Primary hip replacements designated as complex-primary for the purposes of National Joint Registry audit forms were not included. 14 patients received a planned variation from the protocol anaesthesia regime and were excluded from the main analysis, as the small numbers within this group for each anaesthesia variant precluded any meaningful statistical analysis. This left us with a sample size of 80 patients. Each patient had a complete dataset with the exception of one, in whom there was neither a pre-operative estimated glomerular

^e National Institute for Health and Care Excellence (2008), *Early identification and management of chronic kidney disease in adults in primary and secondary care*, CG73 – Quick reference guide.

Download English Version:

<https://daneshyari.com/en/article/3251784>

Download Persian Version:

<https://daneshyari.com/article/3251784>

[Daneshyari.com](https://daneshyari.com)