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Bowel management post major joint arthroplasty: results from a randomised controlled trial

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Arthroplasty;
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Constipation;
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Abstract ***Aim:*** To evaluate the effect of a new post-operative bowel protocol in total hip and total knee replacement patients.

Background: Up to 65% of total hip and total knee replacement patients experience some degree of constipation post-operatively. A lack of robust evidence to guide bowel management and reduce constipation in this cohort was the impetus for this study.

Design: A multisite cluster randomised trial in private secondary and tertiary hospitals.

Methods: In total 331 patients were recruited across seven Australian hospitals over 13 months. Control participants ($n = 171$) received routine bowel management whilst intervention participants ($n = 160$) received bowel management as per the trial protocol.

Results: Intervention patients took 6 days less than controls to return to normal bowel function, and were more than seven times more likely to return to normal bowel function by day 5 post operatively. Age, gender and length of pre-operative fasting had no effect on these outcomes.

Conclusion: These results support the use of the Murdoch Bowel Protocol® for hip and knee replacement patients and may be relevant for other patient groups who experience opioid induced bowel dysfunction.

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Editor comments

This is a well-designed cluster RCT comparing approaches to maintenance of normal bowel function and avoidance of constipation following total hip and knee replacement surgery. There are a number of factors that contribute to patients having difficulty to return bowel function including: reduced mobility, opiate and codeine based analgesia, change of environment and diet. The study will help nurses to understand the importance to patients of having normal bowel function and avoidance of constipation and to consider guidelines and practice within their own clinical areas.

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Introduction

Total hip and total knee replacements remain one of the most commonly performed major orthopaedic procedures with the number having increased rapidly over the past decade in most Organisation for Economic Cooperation and Development (OECD, 2011) countries. On average, the rate of hip replacement increased by over 25% between 2000 and 2009 with the growth rate even higher for knee replacements, nearly doubling over the past decade (OECD, 2011). These patients are at very high risk for developing post-operative constipation for multiple reasons including: a change in diet, reduced fluid intake, pre-operative fasting, the advanced age of many, reduced mobility, the administration of an anaesthetic and the administration of opioid based analgesia both intravenously and orally (Ho et al., 2008; Schmelzer, 1990; Stumm et al., 2001). Despite the scope of this problem little evidence exists to guide bowel management in this cohort.

Background and literature review

In 2008 a baseline clinical audit of 30 orthopaedic patients was conducted at the researcher's 363-bed Australian tertiary hospital (one of 17 hospitals within Australia's third largest private hospital group). The audit was conducted after several major joint replacement patients required extended inpatient stays for management of severe constipation, the return of increasing numbers of post-operative patients for management of faecal impaction and the report of high rates of dissatisfaction with bowel management post discharge. The audit was based on the Practical Application of Clinical Evidence System (PACES) from the Joanna Briggs Institute (JBI), the world's largest provider of evidence based guidelines for nurses and allied health professionals and based at the University of Adelaide in South Australia. Baseline results using the audit tool 'Constipation associated with analgesia' revealed deficits across all four audit criteria. Discussions with senior nurses from the other surgical divisions within the hospital group confirmed that constipation in the post-operative orthopaedic cohort was a widespread problem. Whilst there is a significant body of evidence reporting the scope of constipation in orthopaedic patients, no robust evidence exists to guide bowel management in this cohort and surprisingly few articles have been published. Of those that have been, most are case studies or discussion papers with most research generally of poor quality, with small sample sizes or demonstrating questionable academic rigor. Whilst often considered a mild self-limiting problem, constipation may lead to significant morbidity and occasionally mortality (Davies et al., 2008; Groth, 1988; Ho et al., 2008; Kaçmaz and Kaşikçi, 2007; Linari et al., 2011; Madsen et al., 2010; Stumm et al., 2001).

One of the difficulties when comparing the incidence of constipation reported in the literature is the range of definitions used. While some studies used Rome I, II or III criteria (Drossman, 2006; Peppas et al., 2008) others relied on self-reporting which involves a significant degree of subjectivity. The Rome criteria were developed in Rome after a 1988 meeting where gastroenterologists sought to provide consensus guidelines for the diagnosis of functional gastrointestinal disorders. Rome I guidelines were published in 1989 with the updated Rome II guidelines published in 1999 and the current Rome III guidelines published in 2006 (Thompson, 2006). Other studies relied on more general measures of constipation such as laxative use, frequency of bowel actions per week or whether the patient had experienced a degree of incomplete evacuation making comparisons difficult. Despite the lack of a consistent definition of constipation, many studies cite an increased incidence in women (Belsey et al., 2010; Ho et al., 2008; McCrea et al., 2009; Selby and Corte, 2010) with this incidence increasing with age. In 2005 Ramkumar and Rao published a systematic review of the efficacy and