

Original Research Article

Outcome of preventive interventions on the prevalence of constipation in hip fracture patients admitted in orthopaedic ward of a tertiary care hospital in eastern India

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ABSTRACT

Background: Orthopedic patients admitted with hip fractures are prone to developing constipation due to pain and immobility in bed. The reported incidence for constipation in orthopaedic patients varies from 44 % after thoracolumbar fusion surgery to 18-72% after hip replacement surgery to 39-43%.

Methods: This study was conducted for the admitted patients with hip fracture in orthopaedic ward of a tertiary care hospital. The study period was divided into first 3 months where prevalence was measured while administering the present standard nursing care, without any active preventive interventions and next 3 months where the prevalence was measured after adding implementation of active preventive interventions.

Results: The study had 78 % incidence of constipation in the former group compared to 26 % in intervention group. This was found to be significant statistically.

Conclusions: It was safely concluded that implementation of our preventive intervention protocol in all our admitted patients with hip fractures the prevalence of constipation could be significantly reduced.

Keywords: Constipation, Hip fractures, Flatulence, Abdominal distention

INTRODUCTION

The reported prevalence of constipation in literature varies and the definition of constipation is also very subjective, but for most practical purposes a significant change in consistency or frequency of stool passage (usually less than 2 episodes in a week) for an individual is described as constipation.¹ The North America nursing diagnosis association's 2011 definition of constipation is 'A decrease in a person's normal frequency of defecation, accompanied by difficult or incomplete passage of stool and/or passage of excessively hard, dry stool'.² We utilised the same principal in diagnosing constipation in our study

group with an added simplification of no defecation for 4 days or more to consider as constipation.

The impact of constipation in all indoor patients is multiple including faecal impaction, spurious diarrhoea and hemorrhoids, depression and mental confusion, urine retention, intestinal obstruction, and even vasovagal syncope. It also leads to increase in hospital length of stay and health care cost, Increased time for care from nursing and allied staff and a negative Impact on patient health.^{3,4}

Orthopaedic patients especially those admitted with a hip fracture become more prone to constipation because of the

added pain and inability to move due to the hip fracture.⁴ The reported incidence for constipation in orthopaedic patients varies from 44% after thoracolumbar fusion surgery to 18-72% after hip replacement surgery to 39-43% after admission in a medical ward.⁵⁻⁷ Considering the former significant impacts and our own experience during ward rounds we decided to conduct a prospective interventional study to measure the impact of preventive interventions on the prevalence of constipation in admitted hip fracture patients in orthopaedic ward of our hospital.

METHODS

It is a descriptive type of study on admitted patients with hip fracture in orthopaedic ward of Tata main hospital, Jamshedpur from the period June to November 2022 where in a cross-sectional survey was done at time of discharge from hospital to look at the impact on the incidence of constipation in admitted hip fracture patients after and before applying an active preventive interventional protocol.

study period was divided into first 3 months where prevalence was measured while administering the present standard nursing care, without any active preventive interventions and next 3 months where prevalence was measured after adding implementation of active preventive interventions. Fifty patients whose length of stay was 10 days or more, and who were admitted for hip fractures (i.e., intertrochanteric, neck of femur/subtrochanteric fractures of hip) were included in study. Patients with Gastrointestinal disorders, such as Crohn’s disease, colitis, diverticulitis and patients having abdominal surgery, colostomy/ ileostomy or dementia excluded from study.

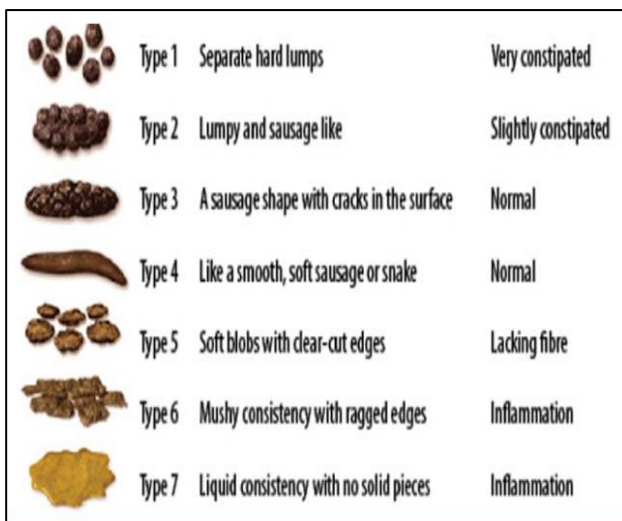


Figure 1: Bristol stool chart.

All these patients were interviewed on their day of admission and during their stay to know about their frequency and consistency of stool using Bristol stool chart (Figure 1). Pre-injury frequency of defecation and consistency of stool was compared with findings during

hospital stay, while administering the present standard nursing care given for prevention of constipation. Data was collected by consultants/ DNB residents and entered in excel sheet and prevalence of constipation in admitted patients with hip fractures was calculated.

After calculating the prevalence of constipation with standard nursing care, a departmental meeting with involvement of orthopaedic consultants, residents and nursing and other support staff was done. The following causes were identified as the reasons for constipation in indoor patients viz decreased intake of fluids, lack of physical activity, decreased intake of food, difficulty in using bed pan or in going to the washroom due to the injury and not comfortable in using the ward toilet, use of medications like opioids for pain management, feeling of hesitancy and shyness in communicating about constipation.

Intradepartmental discussion involving all consultants, residents, nursing staff and ward boys to evaluate the current practises to prevent constipation and to highlight the problem status. The dietician was consulted to formulate a diet plan for all orthopaedic patients to facilitate smooth regular bowel movements. The ward housekeeping team was communicated to ensure cleanliness of ward washrooms and easy access to bed pans. The physiotherapist devised a bedside exercise programme to help prevent constipation. Patient education regarding importance of regular bowel movements and how to prevent constipation while bed ridden, was ensured both verbally and via educating leaflets. The consultants took regular checks to ensure implementation of a comprehensive plan to prevent constipation. Pharmacologically the use of opioid analgesic was reduced.

A reanalysis of 50 patients was done during the months September to November 2022 after adding implementation of active preventive interventions to the standard nursing care. Any difference in the prevalence between the initial and later 3 months was calculated and statistical significance if any calculated using the Chi square test. P<0.05 was considered as significant.

The active intervention protocol included oral fluid intake 2 to 3 litres/day, if not contraindicated otherwise. Diet plan was made to include use of high fibre containing items like salads, raw fruits, high fibre grains like muesli, oats, whole wheat. Bed side exercise programme was implemented which included abdominal massage, deep breathing exercises using spirometer, pelvic bridging exercises where not contraindicated, upper body exercises, frequent log rolling, Huffing-forced expiration techniques, Kegel’s exercise, abdominal muscle exercises. Easy access to bed pans, walkers, wheelchairs to help mobilise the patients were ensured. Patient education and regular feedback with help of Bristol stool chart in nursing sheet. Use of opioids like morphine, fentanyl, tramadol for pain relief was minimised.

Once daily interaction with nursing staff and with orthopaedic consultant/residents to enquire about bowel habits and ensuring implementation of the protocol.

RESULTS

Out of the 50 patients who were randomly questioned during the initial 3 months of June to August 2022 before discharge 39 patients (78%) complained of constipation with average period of no defecation for 4 days or more,

11 patients had regular bowel motions as during their preinjury period.

Out of the 50 patients interviewed after the implementation of preventive intervention protocol, during the period September to November 2022, 37 (74%) patients reported maintaining normal frequency and consistency of stool during the hospital stay, while 13 (26%) patients reported of having constipation. The results of the study are depicted in Table 1.

Table 1: Results.

Variables	Constipation present	Percentage (%)	No constipation	Percentage (%)	Total
Intervention done	13	26	37	74	50
Without intervention	39	78	11	22	50

The difference in prevalence was found to be statistically significant ($p=0.0029$).

DISCUSSION

Constipation in admitted orthopaedic patients with lower limb trauma is very common complaint during the ward rounds. A study by Trads et al reported a constipation prevalence of 69.1% in first few postoperative days and 62.3% till 30 days postoperative in hip fracture patients.⁸ The implications of this problem range from increased hospital stay, health care cost to complications like fecal incontinence, hemorrhoids, fissure, stool accumulation, urinary incontinence, abdominal pain and distention, gas accumulation, intestinal perforation, delirium, and reduced quality of life in patients and even syncope due to straining during defecation which can disrupt the blood supply to the coronary arteries and the brain.⁹⁻¹¹ In addition, the hesitation to talk to healthcare workers about constipation due to shame and embarrassment adds to the increasing prevalence.¹²

The use of aperients on a regular basis led to loss of their effects over time and can have side effects such as abdominal pain and bloating.¹³ Enemas, used in the treatment of constipation, are less commonly used due to the potential complications such as toxicity, fluid and the electrolyte disturbance, infection, local damage to the epithelial tissue as well as perforation of the intestine.¹⁴

The formulation of a protocol involving a multidisciplinary team approach and its efficient implementation is a non-invasive low-cost method to prevent this common complication in bed ridden hospitalised patients. This has a huge impact on patient wellbeing and thus indirectly on treatment outcome as well as the general satisfaction of the patient and their attendants.

Our study showed that the implementation of a constipation prevention protocol with active regular participation of the orthopaedicians, nursing staff, ward staff, physiotherapists, and nutritionist along with the

patient/their attendant education significantly lowers the prevalence of constipation in admitted patients with hip fractures. To the best of our knowledge no previous study has shown the effectiveness of implementing an active preventive protocol for prevention of constipation in hip fracture patients admitted in an Indian hospital setting. A similar study by Catherine Neighbour et al highlighted the importance of multidisciplinary team efforts in reducing the prevalence of constipation and regular need for laxatives after surgical fixation of hip fracture in cohorts of 40 patients in their study.¹ Another study by Mette Trads from Denmark compared the results between standard nursing care and an active intervention programme on constipation in operated hip fracture patients during hospital stay and till 30 days after discharge. Their study also reported a significant reduction in constipation rates in patients in the intervention group. There was a significant effect in reducing constipation by increasing fluid and fibre intake.¹⁵

The strength of our study is that it is a comparative study which highlights the importance of our preventive intervention protocol with stress on teamwork and patient involvement. The interventions are very low cost and non-invasive. The weakness of our study is that the researchers were not blinded and hence subject to bias. Also, the fact that we have utilised the frequency of no defecation for 4 days or more to define constipation may be considered a weakness as some patients may have lesser frequency as their normal. But a frequency lower than twice a week is rare and a similar study by Catherine Neighbour in 2014 utilised a period of no defecation for 4 or more days as constipation.¹

Another limitation of the study is that because of being of a cross sectional survey type in design we could not identify as to what among all the speculated causes is the more common cause of constipation and similarly which intervention among the interventions offered contributed the most to reduce the incidence of constipation. An analytical cohort study design with a control group may better answer the above questions as well as hence is suggested by the authors.

CONCLUSION

In our study we conclude that by the implementation of our preventive intervention protocol in all our admitted patients with hip fractures the prevalence of constipation could be significantly reduced. Implementation of this protocol may be utilised by nursing staff and primary care physicians for all bedridden indoor patients to reduce the prevalence of constipation in them, which will in turn lead to better patient satisfaction overall.

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