

Original Article

First defaecation and use of laxatives after hip fracture surgery

Sanne Høj Christensen¹, Laura Houstrup Matthiesen^{1, 2, 3}, Nicolai Kjældgaard Kristensen^{1, 2, 3, 4}, Patrick Korsgaard¹, Sarah Taghinejad-Fadakar¹, Jonas Amstrup Funder^{3, 5, 6} & Jeppe Lange^{1, 3}

1) Department of Orthopaedic Surgery, Horsens Regional Hospital, 2) Elective Surgery Centre, Silkeborg Regional Hospital, 3) Department of Clinical Medicine, Aarhus University, 4) Department of Orthopaedic Surgery, Viborg Regional Hospital, 5) Department of Abdominal and Plastic Surgery, University Hospital of Southern Denmark, 6) Department of Regional Health Research, University of Southern Denmark, Denmark

Dan Med J 2026;73(10):A12251029. doi: 10.61409/A12251029

ABSTRACT

INTRODUCTION. Patients undergoing hip fracture surgery are at risk of developing constipation post-operatively. This study investigated time to first defaecation after surgery.

METHODS. This retrospective cohort study included patients undergoing hip fracture surgery at a regional hospital from 1 May to 30 September 2024. Patients underwent a standardised hip fracture regimen, focusing on surgery within 24 hours of admission, early mobilisation, optimised medication including dual-drug laxatives, and daily geriatric post-operative rounds. Data were obtained from patient files after prospective data entry by the nursing staff, who were instructed on correct registration during the study period.

RESULTS. We included 102 patients (64% women), with a median age of 83 years (IQR: 76-88 years). The mean time to defaecation after surgery was 2.7 days (SD: 1.5 days). In 24% of the patients, first defaecation occurred later than three days post-operatively. Time to defaecation correlated with length of hospital stay ($r = 0.22$; 95% CI: 0.04-1.5; $p = 0.04$). No difference in time to defaecation was observed between patients who were mobilised before or after post-operative day three ($p = 0.91$). Overall, 66 patients (65%) received laxatives beyond the standard regimen.

CONCLUSIONS. Despite being treated with a contemporary, dedicated hip fracture regimen, post-operative delayed defaecation remains a frequent problem, and patients often require additional laxatives. This finding highlights a need to optimise post-operative constipation in hip fracture patients.

FUNDING. None.

TRIAL REGISTRATION. Approved by the Central Denmark Region.

Hip fractures are common, particularly among the elderly, with a higher proportion found in women [1, 2]. In Denmark, approximately 7,500 operations for proximal hip fracture are performed annually (2023), about 250 of which are performed at our institution [2].

Although constipation after hip fracture surgery is a well-known clinical problem, scientific literature describing incidence, risk factors and management remains sparse. In a Danish cohort from 2015, nearly 70% of patients developed constipation within the first days after hip surgery, and the mean time to re-established bowel function was 9.5 days after surgery [3]. Current literature identifies immobility and opioid use as contributing factors [3-5]. Constipation may cause abdominal pain, bloating, nausea, vomiting and absence of flatus and stool

[6], leading to patient discomfort and potentially prolonging hospitalisation and increasing healthcare costs [7].

In Denmark, no national guidelines specify which laxatives to give after hip fracture surgery [6, 8]. In clinical practice, most departments have implemented local guidelines that routinely include laxatives, but the choice and combination of agents vary across institutions.

The purpose of this study was to describe time to first defaecation and the use of laxatives among patients undergoing surgery for hip fractures at a public teaching hospital.

Methods

Study design and participants

This was a retrospective cohort study based on prospectively collected data.

The study cohort consists of patients who underwent surgery for a hip fracture at our institution between 1 May 2024 and 30 September 2024.

We included patients who underwent hip fracture surgery using one of the following procedures: cannulated screws, dynamic hip screw, intramedullary nailing, hemiarthroplasty or total hip arthroplasty. Periprosthetic fractures and other types of operations, such as Girdlestone procedure, were not included. We chose a five-month inclusion period to recruit 100 patients for a descriptive analysis.

Setting

All hip fracture patients received the department's standard dual-drug laxative regimen: bisacodyl 10 mg daily and Macrogol 3350, one sachet daily (13.125 g). Additional laxatives were prescribed as needed, on a case-by-case basis.

During the study period, a clinical dietician evaluated all hip fracture patients post-operatively for a specialised in-hospital diet, and geriatric post-operative rounds were performed. Post-operative mobilisation was guided by physiotherapists.

Paracetamol (1,000 mg $\times$ 4 daily) and sustained-release opioids (morphine 10 mg $\times$ 2 daily) were prescribed as standard for pain management, with the possibility of additional fast-acting opioids as needed.

Data collection

Ward staff were informed about the project before initiation to ensure prospective and complete data registration in the patients' electronic medical records. Ward personnel used standardised registration sheets to record patients' intake and output, ensuring standardised and valid data entry.

Healthcare professionals involved in the patient's treatment course extracted data from the electronic medical records and entered them into a study-specific database. Standard clinical practice and treatment procedures remained unchanged throughout the study period.

The primary outcome was the time to first post-operative bowel movement, as recorded on the patient's standard registration sheet.

Perioperative data, including age, sex, duration of surgery, fracture type, type of surgery, type of anaesthesia and nerve block, were collected to describe patient characteristics and perioperative factors considered clinically relevant to post-operative bowel function.

These variables were presented overall and stratified by bowel movement within $\pm$ 3 days post-operatively.

Post-operative outcomes included mobilisation status, use of laxatives, use of opioids, length of hospital stay, readmission within two weeks and mortality.

Statistical methods

Continuous variables were assessed for skewness by visual inspection of histograms and QQ plots.

Sex and age were derived from the personal ID number. Length of hospital stay was computed from admission and discharge dates.

The following variables were treated as binary: use of laxatives, use of opioids, mobilisation, readmission within two weeks and mortality within two weeks after discharge.

If mobilisation status was missing, the patient was excluded from the data analysis.

Descriptive statistics were used for time to first defaecation. Linear regression was applied to examine the association between time to first defaecation and length of hospital stay.

To compare groups, Student's t-test was used for parametric data, the Wilcoxon rank-sum test for non-parametric data, the chi-squared test for binary data or Fisher's exact test for small cell counts. A $p < 0.05$ was considered statistically significant. All estimates were reported with 95% CI. Means were presented with SD; medians, with IQR and range.

Analyses and data management were performed using Stata 19.5. The study follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Trial registration: approved by the Central Denmark Region.

Results

Participants

A total of 102 patients underwent surgery for a hip fracture during the five-month study period. The median age was 83 years (IQR: 76-88 years; range: 43-98 years), with 65 (64%) being women.

Two patients died during hospitalisation, and 15 patients died within the first two weeks after discharge.

A total of five patients were readmitted within two weeks after discharge.

Perioperative outcomes, including type of fractures, surgical procedures, type of anaesthesia and use of pre-operative femoral nerve block, are shown in **Table 1**.

TABLE 1 Perioperative and pharmacological outcomes.

	Total (N _{tot} =102)	Time from 1st post-operative defaecation		p value
		0-2 days (N ₀₋₂ = 46)	≥ 3 days (N _{≥3} = 44)	
Age, median (IQR), yrs	83 (76-88)	84 (76-90)	81 (74.5-87.5)	0.3
Female, n (%)	65 (64)	34	27	0.2
Procedure time, mean (SD), min.	81 (38)	77 (42)	85 (35)	0.3
<i>Type of fracture, n (%)</i>				
Collum femoris	49 (48)	22	20	0.8
Pertrochanteric femur	47 (46)	21	21	0.8
Subtrochanteric femur	6 (6)	3	3	0.9
<i>Surgical procedure, n (%)</i>				
Dynamic hip screw fixation	34 (33)	13	18	0.2
Hemiarthroplasty	32 (31)	13	14	0.7
Cannulated screws	15 (15)	9	5	0.3
Long TFNA	15 (15)	7	7	0.9
Short TFNA	6 (6)	4	0	0.045
<i>Type of anaesthesia, n (%)</i>				
Spinal	69 (67.7)	27	33	0.1
General	29 (28.4)	16	10	0.2
General and spinal	4 (3.9)	3	1	0.3
<i>Femoral nerve block?, n (%)</i>				
Yes	93 (91.2)	43	39	0.4
No	9 (8.8)	3	5	0.4

TFNA = trochanteric femoral nail advanced.

The mean procedure time was 81 minutes (SD: 38 minutes).

Post-operative defaecation

Data on the day of first post-operative defaecation were available for 90 patients, with a mean post-operative day of first defaecation at 2.7 days (SD: 1.5 days). Ten patients had not experienced defaecation by the time of discharge, or they died during hospitalisation. In two cases, the time of defaecation was not registered by the nursing staff. Those 12 cases were excluded from the analysis.

Fisher's exact test showed no significant association between no defaecation during hospitalisation and readmission ($p = 0.47$). OR = 1.9 (95% CI: 0.2-19.1; $p = 0.56$). Fisher's exact test showed no statistically significant association between type of fracture and no defaecation during hospitalisation ($p = 0.8$).

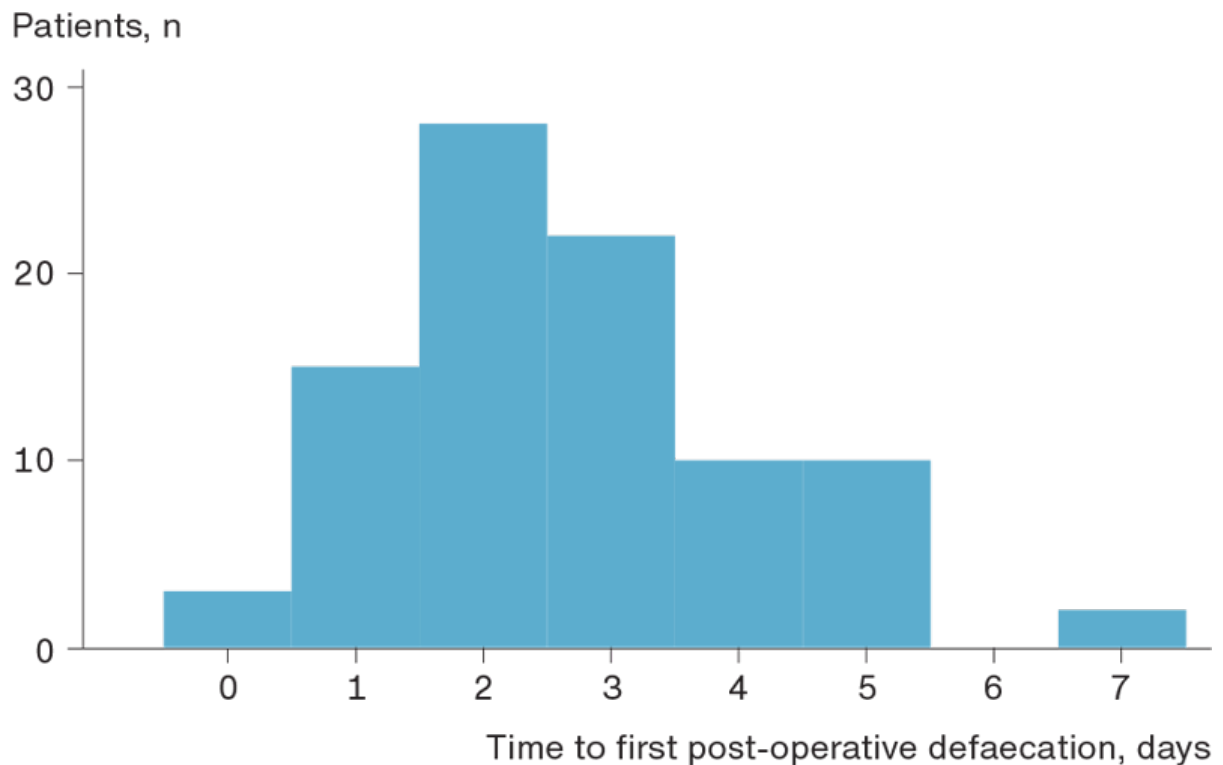
Use of laxatives

A total of 97 patients (95%) received standard dual-drug laxatives, whereas five patients declined to receive laxatives. In one case, a patient who had initially declined the standard laxative prescription subsequently received laxatives during admission. During admission, a total of 66 patients (65%) received laxatives in addition

to the standard regimen.

By post-operative day two, 44 patients had not yet experienced defaecation (**Figure 1**). Among those, 38 (86%) received extra laxatives administered ad hoc by the nursing staff. In these cases, the choice of laxative was based on an individual clinical assessment and included, among others, Macrogol, Bisacodyl, lactulose, laxoberal, oenema and magnesia, occasionally used in combination.

FIGURE 1 Days to first post-operative defaecation.



Use of opioids

A total of 63 patients (61.8%) received standard pain management; 30 patients (29.4%) received additional pain management; eight patients (7.8%) received paracetamol only; and one patient (1%) received no pain management.

For patients who required additional pain management, the choice of analgesic was based on individual clinical assessment.

Mobilisation

A total of 22 patients were registered as not mobilised on the third post-operative day. Data were missing for one patient. A t-test showed no difference in time to first post-operative defaecation between patients who were mobilised before or after the third post-operative day ($p = 0.91$).

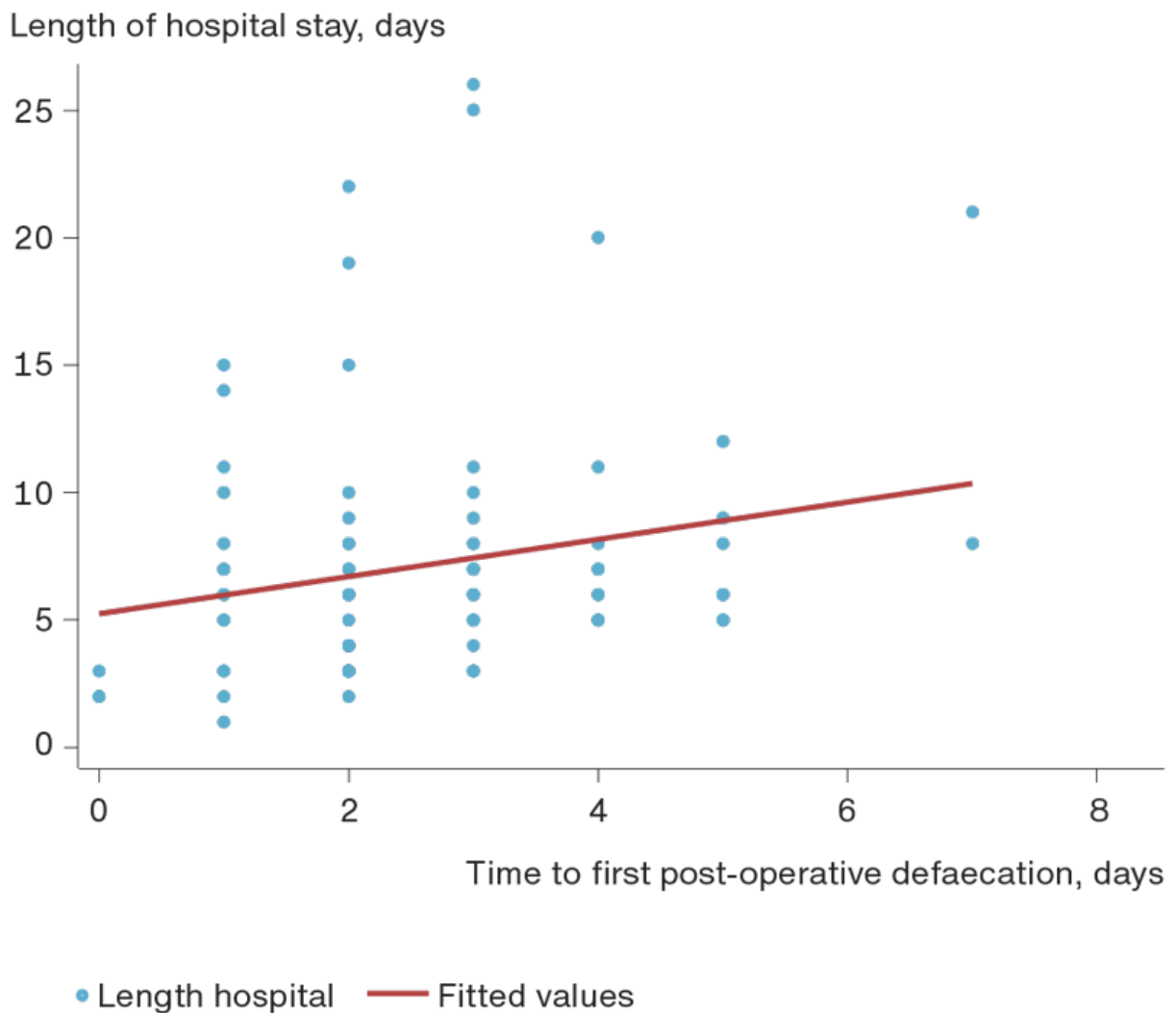
Length of hospital stay

The median length of hospital stay was six days (IQR: 3-8 days; range: 1-26 days).

In linear regression, each additional day to first defaecation was associated with a 0.7-day increase in length of

stay ($\beta_1 = 0.7$; 95% CI: 0.04-1.5; $R^2 = 0.047$; $p = 0.04$). The association between length of hospital stay and time to first bowel movement is depicted in **Figure 2**.

FIGURE 2 Association between time to first defaecation and hospital stay.



Discussion

In this single-centre cohort study, we evaluated time to first defaecation after hip fracture surgery, and found it to be 2.7 days (SD: 1.5 days).

Despite a standardised dual-drug laxative regimen, 66 patients (65%) received extra laxative treatment, suggesting that current preventive strategies may not fully establish first defaecation within the hospitalisation period.

We found no difference in time to first defaecation after surgery according to fracture type (femoral neck, pertrochanteric, subtrochanteric). The number of patients in each fracture subgroup was relatively small, which

may have limited our ability to detect differences. Although different implants are occasionally used for different fracture types, any variation in constipation is more likely related to surgical complexity and operative duration than to the implant type itself. Direct comparison by fracture morphology is sparse in the literature, which largely addresses constipation as a general complication after hip fracture [3, 9, 10].

Longer time to first defaecation was associated with prolonged hospital stay, suggesting that patients with delayed bowel function tend to have longer admissions. A British study from 2008 reported similar findings, showing that patients undergoing hip fracture surgery who developed constipation had longer hospital stays, although the difference was not statistically significant [11].

In the present study, we did not record the reasons for prolonged hospital stay, so we cannot determine whether delayed bowel function contributed. Several other factors may influence length of stay.

We found no association in time to first defaecation between patients who were registered as mobilised and those who were not registered as mobilised on the third post-operative day. This suggests that early mobilisation alone may not be a key determinant of bowel recovery in this cohort. However, this finding should be interpreted with caution as the number of non-mobilised patients was limited and mobilisation status was based on clinical registration rather than objective measurement.

Definitions of post-operative constipation, as defined in the present study by time to first defaecation, vary in the literature, and no universally accepted criteria exist on timing or severity [6].

A Danish study from 2015 assessed constipation after surgery for hip fracture and found that nearly 70% of the patients developed constipation during the first post-operative days. This study used the North America Nursing Diagnosis Association's general definition of constipation, which describes the condition as "infrequent bowel movements (two or fewer per week)" and/or hard, difficult-to-pass stools.

In 2008, a British study investigating opioid and laxative use, as well as the incidence of constipation in patients undergoing hip surgery, defined constipation as "failure of the bowel to open for three consecutive days" [11] and reported that 33 patients (71.7%) developed constipation. A Korean study from 2015 defined post-operative ileus (POI) as absence of defaecation for three days combined with at least two additional symptoms (nausea/vomiting, inability to tolerate oral diet > 24 h, absence of flatus > 24 h). The study reported a 2.1% incidence of POI in 612 patients [12]. In our cohort, 22 patients (24%) had their first defaecation more than three days after surgery, highlighting the difficulty of determining whether delayed defaecation represents uncomplicated constipation or early POI in the absence of standardised definitions.

In the present study, we did not classify patients as constipated, but instead focused on time to first post-operative defaecation as an objective measure. We also did not assess patients' normal defaecation pattern before admission. While this approach provides a consistent, quantifiable assessment, it does not capture all aspects of constipation, such as stool consistency or subjective discomfort, which may limit detailed evaluation of bowel function and comparability with other studies [3].

Strengths of this study include prospective data collection and inclusion of a representative patient population treated according to contemporary hip fracture protocols. Limitations include the single-centre design and the study's observational nature, which precludes causal inference. Although no specific interventions were implemented, ward nurses were encouraged to record relevant data in the electronic patient file during the study period. This may have increased awareness of bowel function and led to earlier prescription of additional laxatives. Nevertheless, this approach reflects routine clinical practice and thus enhances the study's external validity. Five patients were readmitted within two weeks after discharge; however, the reasons for readmission were not related to bowel function but to medical issues. Likewise, we did not collect information on causes of

death. This is a limitation, as it would have been clinically relevant to know whether readmissions were related to bowel function. Among patients who had not experienced bowel movement by discharge ($n = 10$), one was readmitted within two weeks.

Conclusions

Our small study did confirm that post-operative constipation is clinically relevant and widespread after hip fracture surgery, even in a state-of-the-art and protocolled perioperative setting. We showed that our typical Danish standard dual-laxative regimen was, in fact, insufficient for most patients. While we await future research evaluating targeted interventions to prevent and manage constipation in this patient population, we strongly recommend a greater focus on monitoring post-operative bowel function and providing appropriate laxative regimens.

Correspondence *Sanne Høj Christensen*. E-mail: Sahchi@rm.dk

Accepted 16 July 2026

Published 14 September 2026

Conflicts of interest none. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. These are available together with the article at ugeskriftet.dk/dmj

References can be found with the article at ugeskriftet.dk/dmj

Cite this as Dan Med J 2026;73(10):A12251029

doi 10.61409/A12251029

Open Access under Creative Commons License [CC BY-NC-ND 4.0](https://creativecommons.org/licenses/by-nc-nd/4.0/)

REFERENCES

1. Jantzen C, Madsen CM, Lauritzen JB, Jørgensen HL. Temporal trends in hip fracture incidence, mortality, and morbidity in Denmark from 1999 to 2012. *Acta Orthop*. 2018;89(2):170-176. <https://doi.org/10.1080/17453674.2018.1428436>
2. Sundhedsvæsenets Kvalitetsinstitut. Årsrapport 2023 fra Dansk Tværfagligt Register for Hoftene Lårbrud. RKKP, 2024
3. Trads M, Pedersen PU. Constipation and defecation pattern the first 30 days after hip fracture. *Int J Nurs Pract*. 2015;21(5):598-604. <https://doi.org/10.1111/ijn.12312>
4. Neighbour C. Improving bowel care after surgery for hip fracture. *Nurs Older People*. 2014;26(10):16-22. <https://doi.org/10.7748/nop.26.10.16.e649>
5. Kurz A, Sessler DI. Opioid-induced bowel dysfunction: pathophysiology and potential new therapies. *Drugs*. 2003;63(7):649-671. <https://doi.org/10.2165/00003495-200363070-00003>
6. Martensen AK, Funder JA. Postoperativ ileus. *Ugeskr Læger*. 2029;181:V12180887
7. Wittbrodt ET, Gan TJ, Datto C, et al. Resource use and costs associated with opioid-induced constipation following total hip or total knee replacement surgery. *J Pain Res*. 2018;11:1017-1025. <https://doi.org/10.2147/JPR.S160045>
8. Foss NB, Jensen CM, Kirk G et al. Referenceprogram for patienter med hoftebrud. Dansk Sygeplejeråd, Danske Fysioterapeuter, Dansk Ortopædisk Selskab, 2008. www.ortopaedi.dk/fileadmin/Guidelines/Referenceprogrammer/Referenceprogram_for_patienter_med_hoftebrud2008.pdf (Aug 2026)
9. Celik B, Bilik Ö. Postoperative Constipation Incidence and Effects of Selected Risk Factors on Constipation Development in Elderly Patients With Hip Fracture. *Orthop Nurs*. 2022;41(6):397-405. <https://doi.org/10.1097/NOR.0000000000000896>
10. Hommel A, Bjorkelund KB, Thorngren KG, Ulander K. Differences in complications and length of stay between patients with a

hip fracture treated in an orthopaedic department and patients treated in other hospital departments. J Orthop Nurs. 2008;12(1):13-25. <https://doi.org/10.1016/j.joon.2007.11.001>

11. Davies EC, Green CF, Mottram DR, Pirmohamed M. The use of opioids and laxatives, and incidence of constipation, in patients requiring neck-of-femur (NOF) surgery: a pilot study. J Clin Pharm Ther. 2008;33(5):561-566. <https://doi.org/10.1111/j.1365-2710.2008.00949.x>
12. Lee TH, Lee JS, Hong SJ, et al. Risk factors for postoperative ileus following orthopedic surgery: the role of chronic constipation. J Neurogastroenterol Motil. 2015;21(1):121-125. <https://doi.org/10.5056/jnm14077>