Implementation of a bedside small bowel follow-through protocol in the management of adhesive small bowel obstruction

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Introduction

Adhesions are a leading cause of small bowel obstruction and many resolve following nonoperative management with nasogastric decompression. Small bowel follow-through with a water-soluble contrast agent such as gastrografin is a diagnostic tool commonly used to determine whether an SBO is likely to resolve with continued nonoperative treatment. Studies have demonstrated SBFT to have high sensitivity and specificity in predicting spontaneous SBO resolution. The ability to expeditiously determine whether a patient will have resolution of their obstruction with nonoperative management will ideally allow for earlier diet advancement, and overall decreased length of stay.

The purpose of this study is to provide guidelines and establish a protocol for the use of bedside small bowel follow-through studies in the management of small bowel obstructions.

Case Description

A scout abdominal plain film was followed by oral contrast administration via nasogastric tube and a follow-up 4-hour abdominal plain film to monitor the progression of contrast. NGT would be placed back to suction in events of worsening pain, nausea, or failure of contrast progression by the 4-hour mark. A repeat abdominal plain film would be obtained the next morning. Inclusion criteria included clinically stable patients with clinical or radiographic evidence of SBO. Exclusion criteria included signs or symptoms of bowel compromise; obstruction not due to adhesive disease (e.g. malignancy); abdominal surgery less than 6 weeks prior to presentation; allergy to contrast requiring pre-administration steroids; or patients with altered mentation or significant comorbidities.

Study participants were enrolled over a 6-month period after the introduction of the bedside contrast challenge protocol into clinical practice. Patients were placed into two cohorts based on whether they were admitted pre- vs post-protocol implementation and the post-implementation cohort was further stratified into whether they underwent bedside vs standard contrast challenge. Patient charts were analyzed retrospectively to determine length of hospital stay and time elapsed from when the study was ordered to when the study began.

Results

Between February 2024 and February 2025, prior to implementation of the bedside SBFT protocol, 474 patients were admitted for SBO, 112 of which underwent standard SBFT. Between February 2025 and February 2026, after implementation of the bedside SBFT protocol, 481 patients were admitted for SBO, 71 of which underwent standard SBFT and 36 of which underwent bedside SBFT.

A non-parametric bootstrap analysis was performed. The average LOS before and after implementation of the bedside SBFT protocol demonstrated a significant difference of -4.37 with a 95% CI [-7.7, -1.4]. The average LOS for patients who underwent a bedside SBFT was 4.37 compared to an average LOS of 9.97 for patients who underwent standard SBFT which is again significant with a 95% CI of [-7.8, -3.5]. Additionally, the average time from when the study was ordered to when the exam begun showed a difference of -2.65 between bedside and standard with a 95% CI [-4.1, -1.3].

Figure 1. Breakdown of patients per cohort and sub-cohort.

Category	N.Missing	Count	Proportion
Time.Period.Pre	0	112	51.376%
Time.Period.Post	0	106	48.624%
Protocol.Standard	0	183	83.945%
Protocol.Bedside	0	35	16.055%

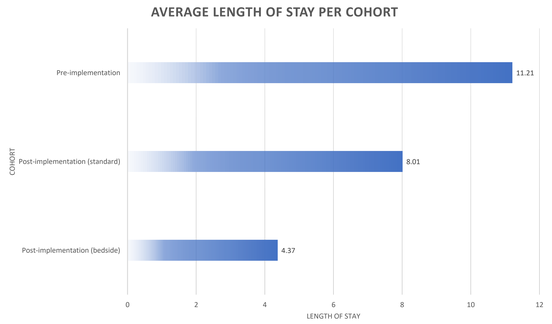

Figure 2. Average length of stay per cohort and sub-cohort.

Discussion

Implementation of a bedside SBFT pathway in the management of adhesive SBO significantly reduces LOS. This is likely in part due to decreased time elapsed between when the study is ordered and when the study starts as patients undergoing bedside SBFT do not need to wait to be scheduled with radiology. The next step would be stratifying the cohorts further into operative and nonoperative arms to investigate whether bedside SBFT decreased time to surgery for patients who ultimately failed nonoperative management.

One major limitation of this study is the inability to randomize patients to either arm of the post-implementation given stringent exclusion criteria for patient safety.

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