



## **AN AUDIT OF BOWEL PREPARATION IN ANORECTAL PROCEDURES AMONG SURGERY RESIDENTS**

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<p><b>ARTICLE INFO</b></p> <p><b>Keywords:</b> Hemorrhoids, Fistulas, Anorectal disorders, Postoperative follow-up, Kleen enemas</p> <p><b>Corresponding Author:</b> <b>Amir Hamza Khan,</b> Medical Officer, Surgical Department, Mercy Teaching Hospital Peshawar, Pakistan Email: <a href="mailto:hamzakhan3366.hk@gmail.com">hamzakhan3366.hk@gmail.com</a></p>	<p><b>ABSTRACT</b></p> <p><b>Objective:</b> This study was designed to audit the adequate provision of Mechanical bowel preparation (MBP) in anorectal procedures and its effects on the overall post-operative outcome.</p> <p><b>Design:</b> A retrospective data review for audit cycle and a prospective design for re-audit cycle.</p> <p><b>Place and duration of study:</b> Department of surgery in Khyber teaching hospital Peshawar from January 2021 to December 2022.</p> <p><b>Methodology:</b> As part of the audit process, we took approval from the hospital ethical committee and investigated the files of 100 patients, between January 2021 and December 2022, obtained from the medical record room to whom MBP was not given before surgery, irrespective of the type of disease. Then the re-audit cycle began where the same number of patients were added to the study between January 2022 and December 2022, their management done, MBP was given and post operative outcomes were documented through OPD follow up.</p> <p><b>Results:</b> For both the audit and re-audit groups there was general male preponderance, 82% in audit and 74% in re-audit cycles respectively, and the mean age of the population was 37.4. Hemorrhoids and fistulas were the major pathologies seen in addition to a multitude of other anorectal disorders in the study. None of the candidates in the audit group were given MBP (kleen enemas). While in the re-audit group all patients were given 2 kleen enemas 6 hours apart before their surgeries and it was perceived that more than 90% of the patients had no symptomatology on fifth day post operative follow up.</p> <p><b>Conclusion:</b> Even though many experts recommend avoidance of MBP in centers across the globe for it being obsolete and unnecessary, this prerequisite still provides good benefit in controlling post-surgery ailments.</p>
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## INTRODUCTION

Mechanical bowel preparation (MBP) as general practice for colorectal and anorectal procedures can be performed in many different ways clinically such as keeping the patient nil by mouth for a certain amount of time, basic alteration in dietary habits, usage of oral suspensions such as purgatives and cathartics and also through per rectal enemas either single dose or multiple doses. Changes in dietary patterns include sticking to a clear fluid diet and restricting the patient from consuming semi solid or solid food items. The whole purpose behind this practice is to rinse the large bowl of fecal contamination which might interfere with the post operative outcome for these patients. For many years, mechanical bowel preparation (MBP) has been the norm before elective colorectal surgery. Its main implication lies in the fact that this practice reduces the number and variety of bacteria in the bowl through significant reduction in fecal quantity. It has been proposed that this mechanism leads to improvement in post-operative adverse effects specifically infections<sup>1</sup>.according to some, however, this knowledge is largely dependent on clinical experience rather than research and medical trials<sup>2,3</sup>. The earliest fundamental investigation to question the need for MBP was released in 1972<sup>4</sup>. Following that, studies have shown convincing documentation proving that MBP has little to no effect on post-operative outcome and results<sup>5-8</sup>. Nonetheless, a survey done in the Unites states in 2003 among colorectal surgeons revealed that almost 100 percent of the surgeons preferred MBP to be utilized as part of pre-operative preparation<sup>9</sup>. A multinational audit of 1082 patients from 295 hospitals in Europe and the United States conducted in 2006 revealed that 86%-97% (mean 94%) of patients received preoperative MBP<sup>10</sup>. Enemas for rectal clearance have been one of the most important mechanical components of MBP over the years. They are basically a therapeutic medicine, available in various shapes, containing a variety of components in different doses. They can either be administered by a general physician or a surgeon under surveillance in a hospital, such as in Europe, or they can be self-prescribed and used by the patient directly as practiced in the united states<sup>11</sup>. Theoretically speaking, the advantage of rectal washes done with enemas is seen during stapled anastomosis as this intervention decreases the chances of mechanical obstruction by lowering the amount of feces in the rectum. Hence for this reason, clinicians and surgeons recommend and perform a pre-operative kleen enema before anorectal and colorectal procedures<sup>8,12,13</sup>. Furthermore, it has been observed in clinical trials that by using oral laxatives alone without the application of rectal enemas and dietary modifications, results in inadequate clearance of the large gut<sup>14</sup>.

**OBJECTIVE:** We aimed to audit the trend, importance, and efficacy of using per rectal enema as part of bowel preparation among surgery residents during anorectal procedures.

**STANDARD CRITERIAS ABOUT MBP:**

1. Stanford health care guidelines for EUA/ Seton placement/ Anal Fistula/hemorrhoidectomy:

Two per rectal enemas:

For morning surgery: one enema around midnight, the night before the surgery, and one enema early morning just few hours before surgery.

If evening, night time surgery: two enemas stat on the morning of the procedure few hours apart.

2. Sheffield Teaching Hospital NHS Foundation trust:

The NHS Foundation recommends phosphate enemas before surgery, as this allows easy passage of stools hence leading to a clean and clear bowel for surgery. It is advisable to take at least 250 ml of distilled water before the enema irrespective of time of surgery.

3. Bowel Preparation in Elective Colon and Rectal Surgery Clinical Practice Guidelines (2019) by American Society of Colon and Rectal Surgeons (ASCRS)

Preoperative enemas alone, without MBP and oral antibiotics, are generally not recommended for patients undergoing elective colorectal surgery.

**METHODOLOGY:**

In order to check the surgical patients admitted to the surgical department in 2021 and 2022, we took a sample population from the ward and examined the files of all adult patients admitted to the surgical department excluding pre-op patients. We checking the files of these patients including examination notes, progress notes, surgical notes, medication history, whether pre-operative bowel preparation was properly done or not, and how it affected the postoperative outcome in these patients. Then a process of re-audit began after 3 months in which all patients who presented to the surgical department were prepared according to international standards for bowel preparation, as mentioned above, for all anorectal procedures and we saw how this measure improved patient outcomes as well as hospital standards. The data was analyzed by using SPSS software version 23.0. All the data was expressed in the form of tables.

**RESULTS:**

- a. **Audit group:** A total of 100 patients' drug charts were reviewed over a one-year period from January 2021 to December 2021. There were 18 female patients (18 %) and 82 male patients (82%) and the mean age of the study population was 38.06 +\_ 14. 188(table 1 and 2). In general, most of

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the patients belonged to the age group of 26 to 45 (59%). The three most common anorectal pathologies among these patients were hemorrhoids (49%), fistula in ano (23%), anal fissure (13%) and a few other variable conditions as mentioned in Table 2. Keeping in mind these diseases, obviously the predominant surgical procedure was a classical Milligan Morgan hemorrhoidectomy (50%) followed by lord's anal stretch (13%) and a Fistulotomy (15%) for low lying simple fistulas and a fistulectomy plus seton placement (8%) for complex type of fistulas. In addition, several other procedures were performed for their respective indications as mentioned in table 2. None of these patients had undergone mechanical bowel preparation with klean enemas pre-operatively as mentioned in the standard guidelines above.

**b. Re-audit group:**

After implementation of the changes as mentioned in the methodology section, a process of re-audit began where 100 patient's drug charts were reviewed to confirm their pre-operative bowel preparation status and post-operative 5<sup>th</sup> day follow up in OPD was done over a one-year period from January 2022 to December 2022. There were 26 female patients (26%) and 74 male patients (74%) and the mean age of the study population was 36.81  $\pm$  14. 509(table 3 and 4). Exhibiting similar patterns as for the audit group, the three most prevalent disorders in the re-audit group were also hemorrhoids (51%), fistula in ano (30%) and anal fissure (12%). Perianal abscess, rectal polyp and rectal prolapse was also documented in the study population, although minimal cases were seen (table 4). For type of surgery, Milligan Morgan hemorrhoidectomy was the most frequently performed procedure (51%), lord's dilatation for anal fissure was done in thirteen patients (13%) and fistulotomies (16%) for low lying simple fistulas and a fistulectomy plus seton placements (14%) for complex type of fistulas were also carried out in their respective situations (table 4). As mentioned above, all of these patients had their bowel preparation done before the night of surgery. Once discharged, these candidates were called to our OPD after 5 days for follow up and their general condition in terms of symptomatology was assessed. The results showed more than 90% of the patients having no peri anal or anorectal symptoms at all on follow up, however pain and burning sensation while defecation was observed in three patients followed by Constipation and burning sensation in two patients each. Only one patient had bleeding from the surgical site, he was admitted for workup and further management (table 4).

**AUDIT TABLES:**

Statistics		
Table 1: Age		
N	Valid	100
	Missing	0
Mean		38.06
Median		36.00
Mode		30
Std. Deviation		14.188
Minimum		8
Maximum		83
Sum		3806
Percentiles	25	30.00
	50	36.00
	75	45.00

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**Table 2: Frequency and percentages for gender, disease and type of surgery (Audit group)**

VARIABLE	FREQUENCY		PERCENTAGE	
1. GENDER	MALE	FEMALE	MALE	FEMALE
	82	18	82	18
	Total = 100		Total = 100	
2. DISEASE	FREQUENCY		PERCENTAGE	
Anal fissure	13		13	
Buttock abscess	3		3	
Fistula In Ano	23		23	
hemorrhoids	49		49	
perianal abscess	9		9	
Rectal polyp	1		1	

Rectal Prolapse	2	2
Total	100	100
<b>3. SURGERY</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
Anal stretch	13	13
Delorme's procedure	2	2
Fistulectomy/Seton placement.	8	8
Fistulotomy	15	15
hemorrhoidectomy	50	50
Incision and drainage	11	11
Polypectomy	1	1
Total	100	100

RE-AUDIT TABLES:

Statistics		
Table 3: Age		
N	Valid	100
	Missing	0
Mean		36.81
Median		35.00
Mode		30 <sup>a</sup>
Std. Deviation		14.509
Minimum		14
Maximum		75
Percentiles	25	26.00
	50	35.00
	75	45.00

Table 4: Frequency and percentages for gender, disease and type of surgery (Re-audit group)

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VARIABLE	FREQUENCY		PERCENTAGE	
1. GENDER	MALE	FEMALE	MALE	FEMALE
	74	26	74	26
	Total = 100		Total = 100	
2. DISEASE	FREQUENCY		PERCENTAGE	
Anal fissure	12		12	
Fistula In Ano	30		30	
hemorrhoids	51		51	
Perianal Abscess	5		5	
Rectal polyp	1		1	
Rectal prolapse	1		1	
Total	100		100	
3. SURGERY	FREQUENCY		PERCENTAGE	
Anal stretch	12		12	
Delorme's procedure	1		1	
Fistulectomy +seton placement	14		14	
Fistulotomy	16		16	
hemorrhoidectomy	51		51	
Incision and drainage	5		5	
Polypectomy	1		1	
Total	100		100	
4. 5TH DAY FOLLOW UP	FREQUENCY		PERCENTAGE	
burning sensation and constipation	2		2	
burning sensation during defecation	1		1	
Constipation	2		2	
No symptoms	91		91	



<b>pain and burning sensation while defecation</b>	3	3
<b>Postoperative bleeding</b>	1	1
<b>Total</b>	100	100

#### DISCUSSION:

Per rectal enema is a therapeutic medicine used in patients for multiple indications such as treatment for constipation, preparing the bowel for colorectal/anorectal procedures, radiological investigations, colonoscopies and sigmoidoscopies. Some commonly used enema solutions include normal saline, glycerin, barium and phosphate enemas. Enemas as part of MBP for elective anorectal surgery aims to reduce fecal materials and bacterial counts with the objective to decrease surgical site infections (SSIs) rate including anastomotic leak. Recently a lot of evidence has been given in literature suggesting that MBP plus oral antibiotics should be the growing gold standard for colorectal surgery<sup>15</sup>. One analysis suggests that colorectal resection should be preceded by a combination of oral antibiotics, MBP and intravenous antibiotics at induction<sup>16</sup>. Combined MBP/oral antibiotic bowel preparation results in significantly lower rate of SSI, organ space infection, wound dehiscence, and anastomotic leak than no preparation and a lower rate of SSI than oral antibiotic bowl preparation alone<sup>17</sup>. Therefore, according to some international guidelines, it can be suggested that MBP as part of pre-operative preparation can be safely included in the checklist before performing anorectal surgeries<sup>18</sup>. However, some scholars suggest that MBP is not necessary before elective anorectal surgeries, in fact, most studies around the beginning of this century indicate inadequate evidence for using MBP in colorectal and anorectal procedures mentioning that they may cause harm and advise against it. Some disadvantages include serum electrolyte derangement, pain abdomen, tenesmus, lethargy, and the risk of perforation with enemas, especially in old age people<sup>19-23</sup>. The Tokac's study (2013) showed MBP performed before surgery does not provide intraoperative or post-operative benefit for Milligan Morgan hemorrhoidectomy<sup>24</sup>. Some limitations need to be highlighted in this analysis. It was a simple cross sectional data review of patient's charts in the audit cycle followed by a prospective method in the re-audit attempt. Some statisticians advised we do this analysis in a cohort design. The sample size was chosen randomly on experimental basis without the use of statistical and epidemiological formulas. There was limited access to free literature on the internet specifically for anorectal

procedures and basic descriptive statistics were applied due to discrete knowledge of the SPSS statistical software.

#### **CONCLUSION AND RECOMMENDATION STATEMENT:**

As far as surgical practice is concerned, application of MBP as part of pre-condition in colorectal and anorectal procedures has been a contentious topic for debate around the world. Fecal impaction has been considered as the most important cause for post operative pain and surgical site infections especially in patients with poor hygiene. Based on this theory, some experts acknowledge MBP before anorectal procedures and consider it to be safe and necessary. However current latest guidelines regard MBP as obsolete and redundant. Our recommendation is to continue with this practice because the benefits definitely outweigh the disadvantages. There is a need for more prospective clinical trials with larger sample sizes on this subject.

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