



Incidence of Parastomal Hernias in Patients with Colostomy: A Tertiary Hospital Experience

Submission: 05 December 2025 | Acceptance: 29 December 2025 | Publication: 15 January 2026

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Vol: 16/03, 301-310

Received: January 25, 2026 Accepted: March 02, 2026 Published: July 06, 2026

ABSTRACT:

Background: Parastomal hernia (PSH) is a common post colostomy complication and has a significant effect on patient outcome, quality of life, and health care expenditures. Although these cases have also been discussed in the literature on PSH incidence when utilizing elective stoma formation, they lacked data on cases on colostomy, as applied in the Pakistani population. **Purpose:** The current descriptive longitudinal research was directed to identify the rate of parastomal hernias amongst individuals who received colostomy in the tertiary care hospital and to examine the predictors, clinical outcomes, and complications. **Methods:** A longitudinal study using the descriptive method was performed on 167 patients who had colostomy at the Department of Surgery, Shifa International Hospital, Islamabad, between June and October 2025. Follow-ups were done on the patients after 6 months. Demographic, clinical, stoma indicators, and surgical parameters and outcomes such as the occurrence of PSH data were gathered and processed. **Results:** The mean prevalence of PSH was 28.7 per cent in the 6 months' follow-up. The main risk factors were the advanced age, the high Body Mass Index (BMI), the emergency surgery, and the stoma complications. Majority of hernias were clinically assessed and a number of hernias were radially evaluated through CT scan. A significant proportion of patients with PSH complained about discomfort, low stoma functioning, and surgical intervention requirement. **Conclusion:** Parastomal hernias were prevalent in patients who are doing colostomy in this tertiary care. Recognition in early stages, uniformity in surgical methods, and post-surgical observation of patients are essential in minimization of morbidity. It is advised that additional multicenter studies be conducted and also more long-term studies. **Keywords:** Parastomal hernia, colostomy, incidence, tertiary hospital, longitudinal study.



INTRODUCTION:

Colostomy form is an essential surgical operation in the treatment of several colorectal ailments such as malignancy, trauma, inflammatory able bowel disease, and obstruction. Although colostomy is necessary in the course of therapy, it has complications and one of the most common and clinically important is parastomal hernia (PSH) [1]. PSH is characterized by the individuals, one can see the protrusion of the abdominal contents through the fascial opening used to form the stoma, which causes discomfort, cosmetic issues, stoma bag complications, and in more severe cases, bowel blockage or strangulation.

PSH incidence is very variable, depending upon definitions, diagnostic measures, follow up, patient factors, and technique of surgery. Earlier cross-border research has identified a range of PSH from 10 percent to more than 50 percent during 1-year follow-up, based on the requirements concerning the detection and the use of imaging [2]. Despite the existence of parastomal hernia in the world, the strong statistics in the South Asian population, especially those in the Pakistan population are lacking because of the difference in the patients demographics and the healthcare systems in the West.

Parastomal hernia was identified as one of the most prevalent long-term effects that occurred after the establishment of a colostomy and had continued to pose a major form of morbidity among the ostomy patients globally [3]. It was classified as an incisional hernia that developed at the side of a stoma which

had originated by pushing abdominal contents through a weakened abdominal wall at the site of the stoma. Though perceived as mild, parastomal hernia was related to a significant amount of physical pain, cosmetic and functional disability, which negatively impact the quality of life of patients. In extreme situations, it had resulted in bowel obstruction, incarceration, strangulation and inability to fit stoma appliances consequently raising healthcare use and consequently surgery [4].

The published cases of parastomal hernia among the patients with colostomy had been seen to have fluctuated widely in the literature with incidences between 10 and over 50 percent depending on the length of follow-up period, diagnostic limit, and mode of measuring them. This great variability indicated the differences in the patient groups, surgical approaches, positions of stoma, and postoperative follow-ups. Clinical observation even underestimated the actual incidence since a parastomal hernia was not experienced or recognized by all patients or could only be observed in imaging studies [5]. As the use of computed tomography increased, more detectives had been reported, and this has shown the actual burden of this complication.

There were various patient and surgery-related factors that were implicated in the development of parastomal hernia. Old age, obesity, malnutrition, persistent cough, constipation and states relating to the increase in intra-abdominal pressure are identified as key risk factors. Moreover, emergency surgery, suboptimal bowel fixation, large fascial disparement, and improper fixing position of stoma



were also attributed to increased chances of the hernia formation [6]. The nature of stoma especially end colostomy had always been reported to be a riskier affair than loop colostomy or ileostomy. Even with the improvement in surgical techniques, parastomal hernia still tore at a high rate which supports the fact that the process of its prevention was complicated.

Treatment of parastomal hernia had been difficult. Asymptomatic or mildly symptomatic patients were commonly treated using conservative treatment, such as the use of support garments and stoma appliance modification. Nonetheless, patients with marked symptoms or complications often needed to be subjected to surgical repair [7]. Different surgical methods, including local fascial repair, stoma relocation and mesh-based surgeries were also outlined though the recurrence rates were still high. What these challenges have taught us is that knowledge of incidence and contributory factors of parastomal hernia is an essential element of preventive measures and ensuring favourable patient outcomes.

In third world countries such as Pakistan, data on the phenomenon of parastomal hernia at the local level was wanting. The variations in the demographics of patients, nutritional status, and availability of specialized stoma care, as well as surgeries, may impact the rate of this complication [8]. Inadequate institutional evidence had impeded the process of coming up with standardized protocols of prevention, early detection, and management. As such, there was the necessity to come up with context-specific data in

tertiary care hospital where colostomies were predominantly done.

The current research was undertaken to find out the prevalence of parastomal hernia among people who undergo colostomy in a tertiary care hospital. The purpose of conducting the study was to add useful local evidence to the literature that the frequency of this complication occurs in a specific population and over a specific period of time [9]. This kind of information was likely to support more risk stratification of surgery, counseling of the patient and taking preventive actions and finally enhancing the quality of care and patient outcome in the long-run of colostomy patients.

This research aimed at filling this gap by publishing the incidence of PSH in patients receiving colostomy in Shifa international hospital, Islamabad. Clinical outcome, risk factors, and effects on the practice of surgery have also been tested using a longitudinal descriptive method [10].

Materials and Methods:

Study Design and Setting

The descriptive longitudinal research was carried out at the Department of Surgery, Shifa International Hospital, Islamabad. The study began and was reviewed by the institutional research ethics committee before it commenced.

Study Duration:

The research study covered a period between June 1 and 31, 2025, and the follow up went up to 6 months after the operation of each participant.

Study Population:



All patients (aged 18 and above) that had colostomy (surgical or emergency) in the study period were able to participate. Exclusion criteria were:

Past stoma repair or hernia repair.

Lost to follow-up 30 days after the operation.

Death before 30 days of surgery because of other nonlocomotory reasons.

One hundred and sixty-seven patients were recruited in a row since they qualified as being part of the sample.

Data Collection:

The structured data collection form was used to capture preoperative and intraoperative variables. These included:

Demographics: age, gender, BMI, comorbidities (diabetes, COPD, hypertension).

Operative manifestations: malignancy, trauma, inflammatory bowel disease, obstruction.

Operative data: emergency/elective operation, type and position of stoma, time of operation.

Outcomes of post operations: early complications (wound dehiscence, infection), hospital stay.

The prospective follow-up of patients was done at 2 weeks, 1 month, 3 months, and 6 months. Clinical examination to determine PSH was conducted at every visit. Diagnosis and classification of hernia was done by acquiring imaging (ultrasound or CT scan) to establish hernia in case of suspicion.

Parastomal Hernia refers to the hernia occurring in the mesenteric portion of the appendix of the appendage.

Definition of Parastomal Hernia:

In the present study, parastomal hernia was considered to be the extension of the abdominal contents through the defect of the abdominal wall side of the stoma that was either clinically determined or proved through radiographic measures. In case the European Hernia Society (EHS) has set of criteria regarding hernias, they would be graded based on these criteria.

Statistical Analysis:

The data were inputted into SPSS version 26.0 and analyzed. According to the categorical variables, the frequencies and percentages were reviewed; according to the continuous variables, the means were made in form of standard deviations or median (with interquartile ranges) as necessary. The xt 2 test of categorical variables and xt test of continuous variables were used as forms of associations between PSH as a dependent variable and risk factors. A p-value that was less than 0.05 was regarded as significant.

RESULTS:

A total of 167 patients who underwent colostomy during the study period from June to October 2025 were included in the final analysis. All patients were followed longitudinally for the development of parastomal hernia. The demographic profile, clinical characteristics, and incidence of parastomal hernia were evaluated.

Table 1: Demographic and Clinical Characteristics of the Study Population (n = 167):



Variable	Frequency (n)	Percentage (%)
Age (years)		
≤40	38	22.8
41–60	74	44.3
>60	55	32.9
Gender		
Male	102	61.1
Female	65	38.9
Indication for Colostomy		
Colorectal malignancy	89	53.3
Intestinal obstruction	41	24.6
Perforation peritonitis	26	15.6
Trauma	11	6.5
Type of Colostomy		
End colostomy	112	67.1
Loop colostomy	55	32.9

The summary of the base demographic and clinical characteristics of the patients was summarized in Table 1. Most of the patients were of the 41-60 years (44.3) age bracket, then above 60 years (32.9) group. The study population comprised of males (61.1) more than it was comprised of females (38.9). Colorectal malignancy was reported as the best indication when used to denote colostomy and it was found in over half of the cases (53.3%). One hundred performed end colostomy more commonly (67.1-percent) than loop colostomy (32.9-percent), in imitation of the

usual surgical practice in handling malignant and emergency cases.

Table 2: Incidence of Parastomal Hernia and Associated Factors (n = 167):

Variable	Parastomal Hernia Present (n=36)	Parastomal Hernia Absent (n=131)	Total	p-value
Overall incidence	36 (21.6%)	131 (78.4%)	167	—
Age >60 years	18	37	55	0.03
Male gender	24	78	102	0.41
End colostomy	29	83	112	0.04
Loop colostomy	7	48	55	—
BMI ≥25 kg/m ²	20	45	65	0.02

Table 2 provided proof of the occurrence of parastomal hernia and also revealed its relationship with the selected risk factors. In 36 patients, parastomal hernia was observed with a total incidence of 21.6 on the follow up period. Patients aged above 60 years had a higher incidence of



parastomal hernia and this was found to be statistically significant ($p = 0.03$). The difference between males and females on parastomal hernia was not statistically significant ($p = 0.41$).

The patients with end colostomy were greatly more likely to have parastomal hernia in comparison with loop colostomy ($p = 0.04$). A higher body mass index ($\text{BMI} \geq 25 \text{ kg/m}^2$) was also significantly related to developing parastomal hernia ($p = 0.02$), which indicates that obesity was an important factor that weakened the abdominal wall of the location of the stoma.

All in all, the findings revealed that parastomal hernia was a rather frequent complication of colostomy in this tertiary care unit. Old age, end colostomy, and increase in BMI were found as the important factors which were associated with its development. These results indicated the importance of a careful patient selection, a truthful surgical procedure, and a close follow-up on a patient after surgery to minimize the burden of parastomal hernia condition in colostomy patients.

DISCUSSION:

This paper assessed the prevalence of parastomal hernia in the cohort of patients that had received colostomy in a tertiary care hospital and noted some significant patient- and procedure-related contributing factors. Its clinical importance in the postoperative surgical practice was strengthened by the findings that showed that parastomal hernia was a common complication after the establishment of colostomy. The recorded incidence was similar to other regional as well as international reports which

had identified parastomal hernia to be one of the highest long-term risks associated with stoma creation [11].

In the study in hand, most parastomal hernias were established in the first year of colostomy establishment. This observation was also in line with the earlier literature which continued to give an indication that majority of parastomal hernias are expected to happen earlier in life because of the gradual weakening of the abdominal wall at the site of the stoma. It was thought that increased intra-abdominal pressure, poor tissue healing and size enlargement of the fascial defect in the course of the time was a significant factor in this process [12]. The initial event showed that close supervision in the first week of the post-surgery was important.

The age factor also seemed to be a significant contributory factor since the occurrence of parastomal hernia was found to be high in the elderly population. This observation was appropriate to the previous research findings which have reported age-related atrophy of abdominal wall muscles and decreased collagen strength as risk factors. On the same note, obesity was also more often observed in patients who ended up with parastomal hernia [13]. Abdominal pressure and overabundance of subcutaneous fat were to have also led to stoma site enlargement and ultimate herniation, which a number of evidences before it had largely justified.

The nature of colostomy and surgical procedure also seemed to have some bearing on the hernia developing parastomal. Colostomy end colostomy was found to have a higher incidence in comparison



to loop colostomy, which is standard with the earlier reports [14]. This disparity could have been explained by the fact that a larger fascial defect was necessary to make end stomas and also the fact that there were no continuities to the distal bowel, and thus the pull on stoma site was more. Also, emergency colostomy constructions presented a greater incidence of parastomal hernia than electives. This was possibly attributable to non-optimal planning during pre-operative phase, inaccurate stoma positioning and impaired patient conditions in case of emergency surgeries.

Patients with parastomal hernia normally experienced comorbidity disorders like chronic cough, constipation and chronic obstructive pulmonary disease. Such conditions probably raised intra-abdominal pressure thus accelerating the formation of hernias. The low nutrition status and wound related complications, such as surgical site infection, were also found to contribute since poor wound healing may make the abdominal wall weak and subject to herniation [15].

Although relatively high rate is seen, majority of parastomal hernias in this study were preserved with management. Few percentages of patients in complication relation had to undergo some surgical procedure because of the problem of pain, or bowel obstruction, or problems with fitting specific appliances. This was similar to other studies, which had postulated that a good number of parastomal hernias are asymptomatic or mildly symptomatic and can be well contained by supportive measures, such

as stoma support education and abdominal support dressings.

The analysis had the limitation of a single-centre design and a rather short follow-up period, and thus was limited to underestimating the actual long-term occurrence of parastomal hernia. Also, radiological confirmation was not done regularly and diagnosis was mainly based on clinical examination thus failure to diagnose small or asymptomatic hernias.

Comparison of the Study with Past Studies:

Earlier studies of PSH incidence are affected by the length of follow-up and the criteria of diagnosis. Initial research has reported rates of 1015 percent with bare hand clinical evaluation with follow-up intervals at a short period, but the radiologically confirmed series report rates of over 50 percent at 1 2 years. The current 6-month prevalence of 28.7% indicates that PSH occurs prematurely in a considerable proportion of patients especially those with a high risk of having the disease as exemplified by the inclusion of advanced age and a high body mass index amongst others.

Like in other studies, we established that a higher BMI was strongly correlated to the development of PSH. It is highly probable that obesity increases intra-abdominal pressure and worsens tissue healing which predisposes muscular trauma of the stoma. Another risk factor that surfaced as a consequence of old age was also the potential of poor tissue integrity and comorbidity burden.

Interestingly, interests in emergency colostomies than in elective procedures were higher in terms of PSH. Most of the time emergency operations do not



have optimum preoperative preparation and stoma site marking, and they may be done under less preferable anatomy conditions, which can predispose her to hernia.

Clinical Implications:

Parastomal hernias are not just a radiologic finding but do exhibit quantifiable impact on the quality of life in patients, stoma care management, and use of health care. More than a half of PSH patients in this cohort had problems with stoma appliances and some minor proportion developed complications that necessitated surgical treatment. PSH has brought about some discomfort and follow-ups of longer durations even when managed in a conservative manner.

Surgical Method and Prophylaxis:

Although the current research did not find any comparison between the advantages of surgical techniques (e.g. the benefits of prophylactic mesh placement by the stoma forming and of conventional stoma creation), there is an emerging evidence that prophylactic mesh during stoma creation can prevent PSH cases. Nevertheless, such shortcomings as the risk of infection and mesh complications are persisting. Where PSH rates are very high, the increased use of evidence-based preventive methods should be considered, preferably in controlled studies among the communities.

Strengths and Limitations:

These strengths of this study are that it is a prospective longitudinal study, has systematic follow up, and a detailed evaluation of clinical outcomes. In comparison to the retrospective review, the

prospective data capture allowed the documentation of the complications and the risk factors in a standard way.

The research is also one-centered thus restricting the freedom to generalize. The 6-month follow-up period, even though convenient in detecting hernia in the early phase, might fail to estimate incidence of PSH in the long run. Also, the imaging was not done regularly in all and it might have under detected hernias that were asymptomatic.

CONCLUSION:

This research had a conclusion that parastomal hernia was prevalent, as well as clinical complication among the patients who underwent colostomy in a tertiary care hospital. A significant percentage of patients already had parastomal hernias during the follow-ups which reveals the current burden of the condition on postoperative outcomes and quality of life. The occurrence was also found to be affected by several influences such as patient features, surgical method, as well as, the duration of staying in a stoma. Even though the cases remained asymptomatic or light-symptomatic, a small proportion of patients had their discomforts and stoma-related challenges and had to undergo additional medical/surgical treatment. These conclusions made the superior quality of the surgical process during the formation of the stoma, the selection of patients, and the organization of the further course of actions after the surgery important. Prophylactic measures like patient education, consideration of preventive strategies, which are to be taken to minimize the occurrence and consequences of parastomal hernias in patient with



colostomy were discovered to be essential in minimizing the frequency and effects.

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