

Capstone for Impact Submission | GY2021

Project Title: Parastomal Hernia Risk Factors and Prevention

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Summary (~250-500 words):

Parastomal hernias are common complications following ostomy surgery and can significantly affect patients' quality of life. Previous studies have reported varying rates between 5-50%. The purpose of this study was to determine rates of and risk factors for parastomal hernias in patients who underwent surgery resulting in a permanent ostomy such as a urostomy, colostomy, and/or ileostomy. We hypothesized that patients who engaged in more physical exercise would have a lower incidence of parastomal hernias.

This was a retrospective cohort study combined with a cross-sectional survey of Michigan Medicine patients who had surgery resulting in a permanent ostomy between 2014 and 2018. Patients were identified from the DataDirect clinical data warehouse by searching surgical procedure codes for operations that included a permanent urostomy, colostomy, and/or ileostomy. Patients were sent a postal survey, which included validated instruments for measuring quality of life (Stoma Care QOL) and physical activity (IPAQ-SF), as well as questions about parastomal hernia presence, symptoms, and lifestyle. Demographic and clinical data were abstracted from the medical record. Descriptive statistics, chi-square tests, and Mann-Whitney U tests were performed.

441 of 725 (60.8%) patients responded to the survey. 127 patients (28.8%) self-reported a parastomal hernia diagnosis with rates of 27.1% for urostomy, 39.6% for colostomy, and 23.2% for ileostomy. Patients with parastomal hernias had significantly worse Stoma Care QOL scores (Median: 51.5 v. 58.0, $p=0.003$). There was a statistically significant association between less exercise [measured in total activity metabolic equivalent (MET)-minutes/week] and higher incidence of parastomal hernias (Median: 586.5 MET-minutes/week for those with parastomal hernias v. 1710 for those without; $p=0.001$). Prior surgery for any hernia ($p=0.006$) and obese/morbidly obese BMI ($p<0.001$) were found to be associated with parastomal hernia.

Parastomal hernia rates remain high in modern surgical practice, and hernias are associated with poorer quality of life. This study shows an association between patients' physical activity and their rates of parastomal hernia, with a higher rate among patients who exercise less. Future research can be designed to test the effectiveness of postoperative physical and exercise therapy programs in preventing parastomal hernias and improving quality of life.

Methodology:

This was a retrospective cohort and survey study at a large academic medical center between 2014 and 2018. Patients were identified by surgical procedure codes for operations that included a permanent urostomy, colostomy, and/or ileostomy. A postal survey was conducted and included questions about parastomal hernia presence, symptoms, lifestyle, and validated instruments to measure stoma quality of life (Stoma Care QOL) and physical activity (IPAQ-SF). Demographic data and clinical data regarding medical comorbidities were abstracted from medical records. Descriptive statistics, chi-square tests, and Mann-Whitney U tests were performed.

Results:

441 of 725 (60.8%) patients responded to the survey. 212 patients (48.1%) had urostomies, 159 (36.1%) had colostomies, and 97 (22.0%) had ileostomies. 127 patients (28.8%) self-reported a parastomal hernia diagnosis with rates of 27.1% for urostomy, 39.6% for colostomy, and 23.2% for ileostomy. Patients with parastomal hernias had significantly worse Stoma Care QOL scores (Median: 51.5 v. 58.0, $p=0.003$). The QOL subscales for self-esteem ($p=0.008$), relationships ($p=0.011$), and ostomy device function ($p=0.002$) were all worse amongst patients with parastomal hernias, while the sleep/fatigue subscale was not significantly different.

There was a statistically significant association between less exercise [measured in total activity metabolic equivalent (MET)-minutes/week] and higher incidence of parastomal hernias (Median: 586.5 MET-minutes/week for those with parastomal hernias v. 1710 for those without; $p=0.001$). Prior surgery for any hernia ($p=0.006$) and obese/morbidly obese BMI ($p<0.001$) were found to be associated with parastomal hernia; however, reported heavy lifting, gender, COPD, smoking, cirrhosis/ascites, and emergency surgery were not significantly associated.

Conclusion (~250-500 words):

Parastomal hernia rates remain high in modern surgical practice, and hernias are associated with poorer quality of life. We hypothesized that patients who engaged in more physical exercise would have a lower incidence of parastomal hernias. This study showed that patients with parastomal hernias had significantly worse Stoma Care QOL scores (Median: 51.5 v 58.0, $p = 0.003$). Subscales for self-esteem, relationships, and ostomy device function were all significantly worse among patients with parastomal hernias.

There was also a significant association between patients' physical activity and their rates of parastomal hernia, with a higher rate among patients who exercise less. Patients who exercised less (Median: 586.5 MET-minutes/week) had a higher incidence of parastomal hernias compared to patients without hernias (Median: 1710 MET-minutes/week). Prior surgery for any hernia and obese/morbidly obese BMI were also found to be associated with parastomal hernias, which confirmed data from previously conducted studies. However, reported heavy lifting, gender, COPD, smoking, cirrhosis/ascites, and emergency surgery were not associated.

Future research can be designed to test the effectiveness of postoperative physical and exercise therapy programs in preventing parastomal hernias and improving quality of life. A previous study had revealed that a majority of patients did not engage in abdominal or core exercises as part of hernia prevention efforts. Furthermore, that study also showed that roughly a quarter of patients did not exercise at all. Future

directions will include collaborating with PM&R physicians, physical therapists, and ostomy nurses to develop a safe and effective exercise therapy program for patients who undergo permanent ostomy surgeries.

Reflection/Impact Statement:

For me, this project was an excellent way to combine my interests in patient's quality of life, quality research, and general surgery. It was also a way for me to start from the methodology of the project and see it to its initial conclusion with concrete data. I am hopeful that we will be able to help the many patients who undergo a permanent ostomy surgery. Initial steps include developing potential exercise interventions and therapy programs, in conjunction with other members of the healthcare team such as PM&R physicians, physical therapists, and ostomy nurses. Even in residency, I hope to remain involved in the project and continue to learn more about research methodology/development from the other members of the research team. I would advise other students to check-in periodically with their CFI mentors and also aim to work within a team. I was very fortunate to have the opportunity to work with other researchers and have learned tremendously from them.

References

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