



# Hiatal hernia repair: postoperative diet, activity, and optimal long-term follow-up

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**Abstract:** Are dietary restrictions and activity restrictions necessary following hiatal hernia repair? The question is simple and it seems the answer should be simple as well. However, a paucity of data exists to guide dietary advancement and activity restrictions following hiatal hernia repair. The same is true regarding recommendations for long-term follow-up of patients who have undergone a hiatal hernia repair. Therefore, the components of post-operative dietary recommendations following hiatal hernia repair vary significantly from one surgeon to another and one institution to another. The same is true regarding activity restriction recommendations following hiatal hernia repair. Despite the fact that variations exist regarding the specific postoperative recommendations following hiatal hernia repair, there is general agreement when it comes to the reasoning behind both dietary limitations and activity restrictions. The reasoning for postoperative dietary recommendations and the reasoning for postoperative activity restrictions will serve as the basis for discussion in this article. Examples of the management plans that we use at our institution will also be provided. Additionally, we will examine long-term follow-up recommendations following hiatal hernia repair, and the indications for pursuing additional evaluation. Special consideration will be given to the current recommendations regarding surveillance of Barrett's esophagus following hiatal hernia repair and fundoplication.

**Keywords:** Hiatal hernia; fundoplication; diet; activity; long-term follow-up

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## Postoperative diet

The goal of a modified post-operative diet is to minimize bloating, nausea, vomiting, dysphagia, and retching. Minimization, or even avoidance, of these side effects serves two purposes. First, avoiding these side effects avoids patient discomfort. When patient discomfort is avoided, patients have improved satisfaction, but they are also less likely to require additional healthcare utilization such as additional clinic or emergency department visits. Second, these side effects can place strain on the hiatal hernia repair and the fundoplication. Sudden increases in intraabdominal pressure can result from retching and/or vomiting. These increases in intraabdominal pressure can result in immediate postoperative failure of the hiatal hernia repair or fundoplication, or they can lay the groundwork for

a future failure (1-3).

Dysphagia is especially common following hiatal hernia repair with fundoplication. This symptom is generally transient and has several causes. Reestablishment of an antireflux barrier can create some degree of esophageal outlet resistance. Surgery at the gastroesophageal junction can result in edema which further compounds esophageal outlet resistance. Additionally, chronic reflux can cause ineffective distal esophageal motility. This reduction of motility is generally reversible but takes time to fully recover. Finally, maladaptive eating behaviors such as eating too quickly, failing to chew food well, and failing to remain upright during eating can accentuate small increases in esophageal outflow resistance.

During hiatal hernia repair and fundoplication, we

do not routinely utilize nasogastric decompression tube. Immediately following surgery, if nausea exists it is treated aggressively with intravenous anti-nausea medications. Once the patient is fully awake and is free of postoperative nausea and/or vomiting, we begin a clear liquid diet. This generally occurs within the hours after the surgery is complete. Postoperative contrast studies are not routinely recommended before diet advancement, and in fact, postoperative contrast studies are not routinely recommended at any point in an asymptomatic patient (2). In instances of exceedingly complex or difficult repairs, surgeon discretion may move them to obtain imaging prior to initiating a diet. Examples of these cases may include those which require an esophageal lengthening procedure, those in which an inadvertent perforation is created, or those which involve a revision following prior foregut surgery. If clear liquids are tolerated well, we advance to a “post-esophageal surgery” diet. This diet could be considered a soft or puree diet. The purpose of the post-esophageal surgery diet is to minimize dysphagia and avoid retching that can result from dysphagia. We also avoid carbonated beverages to minimize symptoms of bloating. The components and consistency of the diet are important in the postoperative period, as well as strict attention to eating behaviors. We counsel patients to adhere to small volume meals, chew food well, eat slowly, and sit upright while eating and for 30–60 minutes following a meal. Again, these recommendations are designed to avoid dysphagia, retching, and bloating. We send patients home on this diet for 2-weeks. If they are doing well at the 2-week follow-up appointment, we instruct them on graduated advancement of their diet. If they are still experiencing some dysphagia at the 2-week follow-up, we advise them to remain on the puree diet for up to 6-weeks. Patients are counseled that they will likely lose 10–15 pounds during the first 4–6 weeks after surgery before the nadir of weight loss (2). Our post-esophageal surgery dietary instruction also includes methods for boosting protein and caloric intake if needed. Of note, if patient compliance is to be maximized, we recommend providing these dietary instructions preoperatively, postoperatively during the inpatient hospital stay, and during a follow-up phone call after discharge from the hospital.

In addition to the dietary guidelines, we also recommend crushing large pills for the first 2 weeks after surgery. The goal is to avoid retching from pill dysphagia and to avoid pill esophagitis which can result from slow esophageal emptying and which can cause significant discomfort. We

generally recommend that pills larger than the size of pencil eraser be divided or crushed. Great attention must be paid to determining which pills cannot be crushed and which capsules cannot be opened. Extended-release medications may need to be replaced with standard formulations during the immediate postoperative period to allow for crushing or dividing the pills.

### Postoperative activity

Activity restrictions are to avoid sudden spikes in intra-abdominal pressure that can result from excessive lifting, strenuous exercise, or blunt force trauma. As noted earlier, the purpose of avoiding excessive increases in intraabdominal pressure is to avoid disruption of the hiatal hernia repair and/or the fundoplication (3). Our practice is to recommend avoidance of heavy lifting, awkward lifting, or excessive straining. This includes no lifting of more than 15 pounds for 6 weeks. That being said, we emphasize with the patient that this does not mean they should remain sedentary. We encourage early and frequent ambulation as well as non-strenuous activity. When patients reach the end of their activity restrictions, we recommend a slow reintroduction of activities.

### Long-term follow-up

No guidelines exist regarding long-term follow-up after antireflux surgery. Most agree that patients who have undergone antireflux surgery should have annual clinic visit for assessment of gastroesophageal symptoms. Some surgeons may take this on themselves while others may have the patient’s primary care physician perform these annual clinical assessments. Routine follow-up imaging immediately after surgery or for those who are asymptomatic at long-term follow-up is not generally recommended following hiatal hernia repair (2). There are, however, instances when follow-up imaging is recommended and that should be to the discretion of the surgeon. These are typically instances where recurrence of symptoms emerge or when there has been a change in the patients clinical well-being. Severe or persistent symptoms or side effects following surgery such as heartburn, dysphagia, regurgitation, nausea, vomiting, and/or retching require additional evaluation. The imaging modality of choice will depend on the patient’s symptom profile. Usually, barium esophagram is the first choice for imaging and the workup for symptoms can escalate from

there. Further work-up may include endoscopic evaluation, computed tomography, gastric emptying study, esophageal manometry, and/or pH testing. Possible long-term complications that can result in recurrent or new symptoms include hiatal hernia recurrence, fundoplication disruption, fundoplication slippage, or post-surgical gastroparesis.

Another group of patients that require routine post-operative imaging are patients who have Barrett's esophagus. These patients should continue to have routine surveillance endoscopy even after antireflux surgery and/or ablation therapy (4-6). In other words, antireflux surgery does not change the recommended surveillance guidelines for Barrett's esophagus. The impact of antireflux surgery on the natural history of Barrett's esophagus is widely debated and remains uncertain. However, it seems clear that some patients will continue to have neoplastic progression of Barrett's esophagus even after antireflux surgery. This has resulted in two recommendations from the major medical societies. First, antireflux surgery should only be offered to treat symptoms of gastroesophageal reflux disease, and should not be offered as an antineoplastic treatment (4-6). Second, in those patients who have Barrett's esophagus and undergo antireflux surgery, they should continue to have routine surveillance endoscopy for Barrett's esophagus (4-6). It is worth noting that there is no evidence indicating that endoscopic surveillance of Barrett's esophagus is more difficult or less effective after antireflux surgery (5).

## Conclusions

The details regarding postoperative dietary and activity restrictions following hiatal hernia repair remain variable, but there appears to be general consensus for the reasoning behind postoperative restrictions. Most would agree that these restrictions are designed to reduce patient discomfort, avoid complications, and ultimately reduce postoperative health care utilization. Routine follow-up imaging is not generally recommended in most cases (with the exception of those with documented Barrett's esophagus), but assessment of symptoms at regular intervals should be conducted. Testing and imaging should be guided by the development of new or progressive symptoms.

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## References

1. Jones R, Simorov A, Lomelin D, et al. Long-term outcomes of radiologic recurrence after paraesophageal hernia repair with mesh. *Surg Endosc* 2015;29:425-30.
2. Kohn GP, Price RR, DeMeester SR, et al. SAGES Guidelines Committee. Guidelines for the management of hiatal hernia. *Surg Endosc* 2013;27:4409-28.
3. Laliberte AS, Louie BE. Short-Term and Long-Term Outcomes of Paraesophageal Hernia Repair. *Thorac Surg Clin* 2019;29:405-14.
4. Shaheen NJ, Falk GW, Iyer PG, et al. American College of Gastroenterology. ACG Clinical Guideline: Diagnosis and Management of Barrett's Esophagus. *Am J Gastroenterol* 2016;111:30-50; quiz 51.
5. Stefanidis D, Hope WW, Kohn GP, et al. SAGES Guidelines Committee. Guidelines for surgical treatment of

- gastroesophageal reflux disease. *Surg Endosc* 2010;24:2647-69.
6. Markar SR, Arhi C, Leusink A, et al. The Influence of Antireflux Surgery on Esophageal Cancer Risk in England:

National Population-based Cohort Study. *Ann Surg* 2018;268:861-7.

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