UW Medicine
UNIVERSITY OF WASHINGTON MEDICAL CENTER

腹腔镜胃底折叠术

胃-食道反流病的治疗方法

目录

如您有任何疑问，请与您的医生讨论。

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什么是胃-食道反流症（GERD）？

胃-食管反流病（GERD）是一种影响*食道*的疾病，食道是将食物从口腔输送到胃部的管道。胃-食道反流病的发生是由于胃酸回流到食道。

胃-食道反流病是美国最常见的食道问题。在美国，约有 20%的人受到影响(每 100 人中有 20 人)，其中包括婴儿和儿童。

胃-食道反流病的原因是什麼？

胃食道反流病通常是由*下食道括约肌*（LES）的问题引起的。这块肌肉是食道和胃之间的阀门。健康的下食道括约肌在您吞咽后会立即关闭，以防止反流。但是，如肌肉无力或在错误的时间放松，胃酸就会上升到食道。

以下这些情况都会引起胃食道反流 GERD:

- 下食道括约肌或食道受损。
- *食道疝气*，部分胃部通过横膈膜上的一个孔洞推到腹腔外。这将影响到下食道括约肌 LES，使其无法正常操作。并**非**每位有食道疝气的人都会发生胃-食道反流病。
- 肥胖或怀孕带来的体重过重和脂肪会压迫胃部。这可能会移动*下食道括约肌*（LES）或对它造成压力。
- 饮食和生活方式的选择会使症状恶化（见下文）。）

那些因素会使胃-食管反流病（GERD）恶化？

- 吃太多辛辣、脂肪或橙桔类食物
- 吃了太多含咖啡因的饮食和巧克力
- 吃得过多
- 吃饭时间太接近睡觉时间
- 使用任何种类的烟草
- 穿腰部太紧的衣服
- 服用某些药物

胃-食道反流（GERD）有那些症状？

胃食管反流病（GERD）最常见的症状是*烧心*。烧心是指*胸骨*后或腹部的疼痛感。其他症状包括：

- 胸部疼痛
- 口臭及口内泛酸

- 进食后恶心
- *反流*（食物或胃酸从胃部进入食道）。
- 打嗝
- 腹胀
- *吞咽困难*(吞咽时的疼痛或问题)
- 声音嘶哑或声音变化
- 气管问题
  - 咳嗽
  - 清嗓子
  - 肺炎
  - 哮喘
  - 肺部疾病

胃食管反流病（GERD）还会引起其他那些问题?

- 时间久了，胃酸可能会伤害食道内敏感的内膜，这可能会引起食道炎（食道发炎、刺激或肿胀），从而导致*食道溃疡*（疮损）。
- 胃酸对食道的损伤会形成疤痕组织。这可能会使食道更加狭窄，导致吞咽问题。
- 胃酸可以改变食道的细胞结构，使其变得更像胃和肠的内壁。这就是所谓的*巴雷特氏食道症(Barrett's esophagus)*。它是*食道恶性腺瘤*（癌症）产生的一个高风险因素，尤其对于老年人。
- 喉部的癌症
- 哮喘
- *肺呛入*，即分泌物、食物或饮料或胃内容物上升到喉部（声带）和下呼吸道。
- *纤维化*，一种在肺部组织中形成疤痕的疾病，导致严重的呼吸问题。

如何治疗胃-食道反流病 (GERD)?

起初，医生最常开出改变饮食和生活方式的处方，以治疗胃-食道反流病症（GERD）。也可能使用药物治疗。如这些方法都不奏效或效果不佳，医生则可能会建议您做手术。

以下是一些有助于减轻胃-食道反流病症状（GERD）的方法:

改变饮食

- 将体重保持在健康范围内
- 少吃多餐
- 少吃油腻、油炸、辛辣食物。
- 避免食用以下食物：
  - 辣椒
  - 葱类
  - 橙桔类
  - 巧克力
  - 咖啡因
  - 汽水类

请参阅我们的讲义“食道饮食 Esophageal Diet”，以了解更多有关胃食管反流病（GERD）。的饮食指引。

改变生活方式

- 增加运动量
- 避免穿腰部太紧的衣服
- 至少在睡觉前 2-3 小时吃最后一餐
- 戒烟及避免吸入二手烟
- 戒酒
- 抬高床头。睡觉时用枕头把头抬高到胸部以上

药物

医生可能会给您开一些药物来帮助减少胃酸。这些药物可以*中和*胃酸或阻止胃酸的产生。

- **抗酸剂(Antacids)**用于帮助控制轻度至中度烧心。医生可能会给您开抗酸剂，或者建议您使用无需处方即可购买的抗酸剂，如 TUMS、Mylanta 或 Alka-Seltzer。这些药物可以中和胃酸。但是，由于胃需要酸才能很好地运作，所以经常服用抗酸剂会影响对食物的消化。它们还可能导致腹泻和其他副作用。
- **组胺 H2-阻断剂 (Histamine H2-blockers)**（雷尼替丁 Ranitidine、西米替丁 Cimetidine、Zantac 和 Tagamet）对轻度的、偶尔的反流很有

效。这些药物能阻断组胺，组胺是人体内的一种激素，能使胃细胞产生酸。这些药效不如质子泵抑制剂强（见下段）。

- **质子泵抑制剂 (Proton pump inhibitors)**（Nexium、Prilosec 和 Prevacid）。当胃-食道反流症（GERD）的症状属于中度至严重时，就会使用它们。它们是可以抑制胃酸分泌和释放的强效药物。
- **黏膜保护剂 (Mucosal protective agents)**（海藻酸 alginic acid 和蔗糖酸悬液 sucralfate suspension）是涂在食道内侧的胶状物或泡沫。这样可以保护食道，防止胃酸反流损伤食道。

腹腔镜胃底折叠术（Fundoplication Surgery）

胃-食管反流病（GERD）的治疗多年来一直采用一种叫做*胃底折叠术（fundoplication）的手术*，效果非常好。有兩種主要的胃底手術：完全性 (Nissen) 和部分性 (Toupet) 。完全性（Nissen）胃底折叠术比较常见，但外科医生也可能会建议部分胃底折叠术（partial fundoplication）。

在胃底折叠术中（ fundoplication），外科医生将胃的上半部包裹在食道末端，以加强食道下括约肌（LES）。

胃底折叠术（Fundoplication）:

- 在食道下括约肌（LES）处于休息状态的时候加强它的压力。
- 恢复食道进入胃的适当角度。
- 再造 "单向阀"，防止胃酸反流。

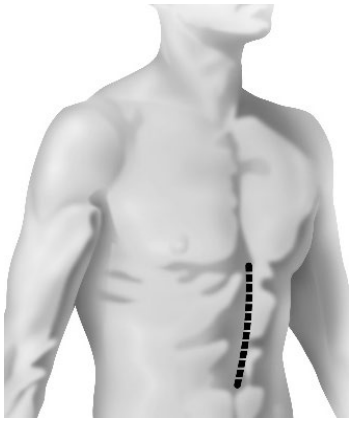
如胃-食道反流症（GERD）是由食道裂孔疝引起的，外科医生也会采取下列措施：

- 减小疝气的大小
- 将裂孔减小到正常大小
- 可能用天然（生物）材料造的网罩来增强封闭效果。

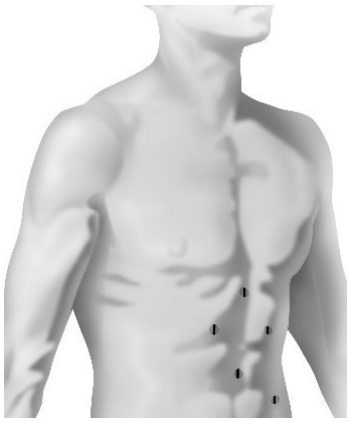
成功率

- 在华大医疗中心 UWMC，超过 90%以上的患者（即 100 名患者中有 90 名）采用胃底折叠术来治疗常见的长期胃-食道反流的症状（GERD）（如烧心和反胃）都能成功。
- 对于胃-食道反流病症（GERD 涉及呼吸道的患者，约有 70%的患者（100 名患者中 70 名）手术效果良好。

开腹手术和腹腔镜手术中使用的切口



开腹式胃底折叠术需开一个长的切口



腹腔镜胃底折叠术仅需开数小切口

微创手术

在华大 UWMC，胃底折叠术（fundoplicatio）是用腹腔镜（微创）方法代替开腹手术。这两种手术使用不同类型的切口（请参见第 6 页的图）。

- 在**开腹手术**中，会在腹部做一个长长的切口
- 在**腹腔镜手术**中，会在您的腹部做几个小切口。

腹腔镜手术的疤痕较少，恢复时间也比开腹手术短。腹腔镜手术后，您可以在 1 或 2 天内回家，而开腹手术需住院 4 或 5 天。

华大医疗中心 UWMC 的外科医生是世界著名的胃-食道反流症及其手术的专家。他们是太平洋西北地区第一个做腹腔镜胃底手术的医生团队，目前已做了约 4000 例这类手术。大多数情况下，我们的外科医生不需要将腹腔镜手术计划改为开腹手术，但有时也会发生这种情况。

手术过程

在腹腔镜胃底折叠（laparoscopic fundoplication）手术中，外科医生使用腹腔镜的光纤摄像机和微小的手术器械。这些设备被插入到微小的切口中。摄像机让外科医生看到身体内部，并帮助指导手术。

胃底折叠手术（Fundoplication）的问题

这些问题可能在胃底折叠手术（laparoscopic fundoplication）中出现:

- 出血
- 感染
- 伤害身体其他组织

胃底折叠手术的副作用

腹腔镜胃底折叠（laparoscopic fundoplication）手术可能会发生这些副作用:

反流或食道裂孔疝复发

胃-食道反流症（GERD）是由于身体组织的磨损及拉扯造成的。随着正常的呼吸、抬重物和进食，做了胃底折叠手术的部位会随着时间而拉伸。我们 80%的患者（100 个患者中有 80 个）在手术后都能得到症状缓解，且持续超过 10 年，但也有部分患者会出现反流突破。如反流复发大多数情况下用药物很容易控制。只有 3%的患者（100 名患者中的 3 名）因反流复发需要再做第二次手术。

吞咽困难

可能会对食物进入食道感到阻力。大多数情况下，可以细嚼慢咽和慢慢进食来解决这个问题。

腹胀或气体

胃底折叠术（fundoplication）后，可能会比较难打嗝（打嗝）。如吃得太多或吞下太多空气，就可能会有一些胀气，直到气体排出。通常，吞下的空气经打嗝，或通过下消化道排出。术后因为打嗝比较困难，就可能会有更多下消化道排气。大多数患者不觉得这是一个问题。

排便更频繁

胃底折叠术（fundoplication）后，胃排空更快。可能排便就更频繁。许多胃食管反流症患者发现这对胀气或下消化道排气有帮助。

手术后: 住院期间

恢复

- 手术后，会在恢复室中大约 2 个小时渐渐从麻醉苏醒
- 恢复室的护士会监测疼痛程度，并给您服用药物使您感到舒适
- 您的家人可能会到恢复室看望您。这取决于您及房间里其他病人的护理情况。
- 当您醒来时，您会有:
  - **氧气罩**提供额外的氧气。当肺部功能恢复后就换成**鼻管**输氧。
  - **静脉注射管**（IV）在手术期间和手术后给予液体和药物。
  - 在您的腿上套有**间歇性压缩套（SCDs）。**压缩套会不时充气来挤压腿部。这可以改善血液流动，帮助预防血栓。
- 有些病人会在膀胱里插上**导尿管**。这使我们能够在手术期间和手术后监测尿液的输出。导尿管将在午夜时取出。

在病房

- **药物:** 您所有的药物均将压碎、或是液体的。
- **呼吸的练习**：我们会给您一个叫激励肺活量计的吹气机来帮助你锻炼肺部。锻炼肺部是很重要的、可预防肺部感染（肺炎）和其他问题。

  使用激励肺活量计的方法：
  - 在椅子上或床上坐直。将激励肺活量计与眼睛保持同一水平。您可以抱着或拿一个枕头盖在伤口上会感到舒适些。
  - 将口含的部分放入口中并将嘴唇封紧。
  - 缓慢地吐尽气。然后慢慢地吸气，尽可能地深呼吸，然后尽可能地屏气。

- 您的呼吸会使装置中的一个球移动。试着让球尽可能地升高。
- 通过您的嘴慢慢吐气。
- 休息几秒钟，然后重复再做。在您醒的时候，每小时做 10 次。
- 做完 10 次深呼吸后，一定要咳嗽来清肺。
- 任何时候感到头晕，就请停下来休息。

- **活动：**起身走路是很重要的， 即使是在手术后的当晚也是如此。 您的护士会在头几次帮助您以确保您的脚步稳定**。主动请护士帮助您走路。不要等护士问您是否想走。**
- **饮食：**营养师会在手术后的第二天来拜访您，告诉您离开医院后需要遵循的饮食习惯。
- **家人和朋友：**家人和朋友对您的康复很重要。 在您康复的过程中，有一个支持的人在家里照顾您是很有帮助的。他们可以帮助您做一些让您更舒服的事情，比如帮您松松枕头，给您拿杯水，或者找您的遥控器。不要害怕 请他人协助您。

手术后：回家休养

大多数病人在手术后第二天上午 11 点前出院。如您住在离医院超过 2 小时车程的地方，我们建议您在西雅图地区多住 1、2 晚。这额外的休息时间将有助于您的恢复。如发生任何问题您也会在附近。

在家自我护理以加速康复

在手术后 24 小时内，以及您正在服用含有阿片类药物的期间，切勿：

- 独自驾车或旅行
- 饮酒
- 独自在家
- 负责照顾其他任何人，如孩子、宠物或需要照顾的成年人
- 操作机械
- 签署任何法律文件或其他重要的表格

驾车

- 手术后至少 2 周内**不要**开车
- 在服用处方止痛药（阿片类药物）时不要开车。这些药物会影响您的反应时间和做决定的能力。
- 当您确定您的反应时间正常时，您可以开始开车。

疼痛控制

- 您的伤口部位会有一些疼痛。我们鼓励您根据需要服用对乙酰氨基酚（acetaminophen）或布洛芬（ibuprofen）来缓解疼痛。
- 在伤口处冷敷可以帮助缓解疼痛。如您使用冰块，不要直接放在皮肤上。先用毛巾把冰块包起来。每次敷冰 20 分钟，然后取下 20 分钟。
- 医生会给您开一种处方药（阿片类药物），以帮助缓解中度至重度疼痛。仅在对乙酰氨基酚或布洛芬不能控制疼痛时才服用这种药物。
- 如果您需要加服阿片类药物：
  - 在我们再开阿片类药物处方之前，医疗提供者必须通过电话或亲自为您做评估。
  - 如您已获准重新补拿阿片类药物，我们不能将处方传到您的药房。您必须亲自将处方送到药房。若要取得处方，您可以来医院领取，也可以打电话给我们，要求我们将处方邮寄给您。如您希望我们将处方邮寄给您，请务必在您需要补药前几天打电话给我们。
- 在手术后的头几天，您可能还会有肩膀疼痛。这是由手术时给腹部充气用的气体（二氧化碳）引起的。这种疼痛通常会持续 4 到 5 天。阿片类药物不能缓解这种肩部疼痛。如发生这种疼痛，我们建议步行、按摩该区域或使用加热垫。
- 有些止痛药会导致头晕。因此下床时要寻求帮助，以免摔倒。
- 有些处方止痛药会导致便秘。请遵照医嘱服用泻药。如开始出现大便溏薄即停止服用。

药物

- **在手术后的 4 至 6 周内，所有药物都必须先压碎或呈液体状。**在这段时间内，不要吞下整颗药丸。在您回家之前，会给您一个药片粉碎器。如您对压碎药片有任何疑问，请致电您的药房。
- **切勿服用任何抗酸剂。**如您的胃-食道反流症状（GERD）再次出现，请致电您外科医生办公室。在第 12 页的方格有上您外科医生办公室的电话号码。
- 依据处方服用出院时所有的药物。其中一种药物可以帮助防止恶心和呕吐。在手术后的最初几周内避免呕吐是很重要。请遵循药物的书面说明服用。
- 您可以恢复所有其他常规药物，除非您的医疗提供者告诉您不要服用。

术后尽早开始行走

活动

- 6 周内，**切勿**提拿任何超过 15 磅的东西。（一加仑的水约 9 磅重）。
- 6 周内，避免剧烈活动，尤其是那些使用腹部肌肉的活动。在康复过程中慢慢增加活动量。
- 走路很重要。手术后可能的话要尽快开始行走。每天步行 3 到 4 次总共至少 1 英里。随着您的恢复增加步行的距离。
- 只要您遵守所有活动的注意事项，即可在手术后 2 周恢复性生活。
- 以疼痛成为您的指南! 如果某些事情让您感到疼痛，就停止做。改天再试。

敷料和皮肤的护理

- 手术后 48 小时后，请取下您的纱布和水凝胶伤口敷料（Tegaderm）。
- 敷料下面会有白色的胶带，称为免缝胶带（Steri-Strips）。**切勿**将它们撕掉。在 1 到 2 周内会自行脱落。

淋浴

- 术后第二天可以淋浴。水凝胶伤口敷料 （Tegaderm）是塑料的可以防水。
- 取下敷料后即可洗澡，免缝胶带（Steri-Strips）亦可沾湿。
- 淋浴后，请轻轻拍干免缝胶带（Steri-Strips）**不要**擦干。
- 手术后 2 周内，或在伤口完全愈合之前，不要泡浴、游泳、坐在热水浴缸中，或浸泡伤口。

饮食和营养

- 按照营养师的指示决定在手术后可以在家吃什么食物。请阅读营养师给您的讲义。如有疑问，请致电营养师。
- 手术后住院期间，您是吃液体的饮食。离开医院时，您就开始软的食道饮食。将持续软食道饮食 4 至 6 周。这可防止食物卡在手术的部位。
- 在这段时间里，尝试吃软的食物，如土豆泥、鸡蛋、农家奶酪和浓汤。
- 在 4 至 6 周内改到正常饮食。当开始吃常规食物时需要注意下列事项：
  - 每天吃 5 到 6 顿小餐，而不是 3 顿大餐。
  - 小口吃，好好咀嚼，慢慢吃
  - 当吃饱时，就停止进食

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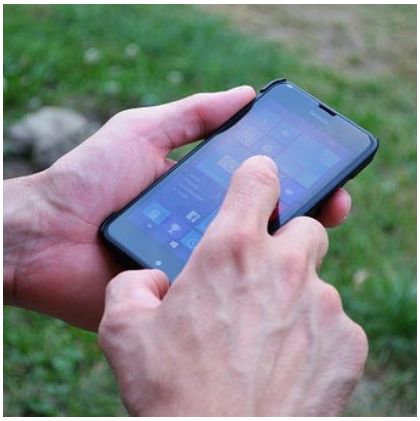
- **不要**喝汽水或用吸管喝液体
- 大多数患者在手术后体重会减轻 10 磅左右。除非想要减肥，否则体重会恢复。

排便

- 手术后您可能会因为饮食的改变而出现腹泻（大便稀薄）。这通常会在几天内停止。
- 如您腹泻超过 3 天，请致电外科诊所。
- 除非您的外科医生团队说可以，否则不要服用任何治疗腹泻的药物。



如有本页所列的任何症状，请致电您的基础保健医生。

何时需要与医生联系

如在接下来的 7 天内出现以下任何症状，请致电您的初级保健提供者（PCP）：

- 不能吞咽食物或只能喝液体
- 不能吞下液体
- 吞咽困难
- 即使服用止吐的药物，还是会呕吐
- 呕吐物是绿色的，带血的，或者看起来像咖啡渣
- 胸痛或气喘
- 严重的、持续的疼痛、止痛药和休息也无法缓解
- 背部或肩部疼痛不退
- 感到非常饱，腹部鼓胀
- 无法排便
- 腹泻
- 大便呈黑色或柏油状
- 站立时头晕或晕倒
- 新发或加剧的无力、麻木或刺痛感
- 您的一条腿或手臂发热、有触痛感、疼痛、肿胀或发红
- 伤口出血量增加
- 身体或伤口周围有下列感染迹象：
  - 发烧超过 37.8°C (100.5°F)

- 颤抖或发冷
- 排液增加，或排液浓稠或有异味
- 发红或肿胀
- 伤口部位或附近疼痛或触痛不断加剧-

您有疑问吗?

我们很重视您的提问。如有疑问或顾虑请致电您的医疗提供者。

您外科医生办公室的电话号码：

_____

工作日上午 8 点至下午 5 点，请拨打 206.598.4477，听到录音后请按 8。

非工作时间、周末和节假日，请拨打 206.598.6190，要求传呼叫外科 O 组。

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UW Medicine
UNIVERSITY OF WASHINGTON MEDICAL CENTER

Laparoscopic Fundoplication

A treatment for gastroesophageal reflux disease

Contents

Talk with your doctor about any questions you have.

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What is gastroesophageal reflux disease (GERD)?

Gastroesophageal reflux disease (GERD) is a condition that affects the *esophagus*, the tube that carries food from the mouth to the stomach. GERD occurs when stomach acid flows back into the esophagus.

GERD is the most common esophagus problem in the United States. It affects about 20% (20 out of 100) of people in the U.S. This number includes infants and children.

What causes GERD?

GERD is often caused by problems with the lower esophageal *sphincter* (LES) muscle. This muscle acts as a valve between the esophagus and stomach. A healthy LES prevents reflux by closing right after you swallow. But, if the muscle is weak or relaxes at the wrong time, stomach acid can rise up into the esophagus.

All of these conditions can cause GERD:

- Damage to the LES or esophagus.
- A *hiatal hernia*, where part of the stomach pushes up through a large hole in the diaphragm and out of the abdominal cavity. This affects the LES and keeps it from working well. GERD does **not** occur in every person who has a hiatal hernia.
- Too much weight and fat from obesity or pregnancy can push on the stomach. This can move or put pressure on the LES.
- Diet and lifestyle choices can make symptoms worse (see below).

What can make GERD worse?

- Eating too much spicy, fatty, or citric foods
- Eating too much caffeine and chocolate
- Eating large meals
- Eating too close to bedtime
- Using tobacco of any kind
- Wearing clothing that is tight around your waist
- Taking some medicines

What are the symptoms of GERD?

The most common symptom of GERD is *heartburn*. Heartburn is a feeling of pain behind the *sternum* (breastbone) or in the abdomen. Other symptoms include:

- Chest pain
- Bad breath and a sour taste in your mouth

- Nausea after eating
- *Regurgitation* (food or stomach acid comes up into your esophagus from your stomach)
- Burping
- Bloating
- *Dysphagia* (pain or problems when you swallow)
- Hoarseness or voice changes
- Airway problems
  - Coughing
  - Throat-clearing
  - Pneumonia
  - Asthma
  - Lung diseases

What other problems can occur with GERD?

- Over time, stomach acid can harm the sensitive lining of the esophagus. This can cause *esophagitis* (inflammation, irritation, or swelling of the esophagus), which can lead to *esophageal ulcers* (sores).
- Damage to the esophagus from stomach acid can cause scar tissue to form. This can make the esophagus more narrow and lead to problems with swallowing.
- Stomach acid can change the cell structure of the esophagus so that it becomes more like the inner lining of the stomach and intestine. This is called *Barrett's esophagus*. It is linked with a higher risk of esophageal *adenocarcinoma* (cancer), especially in older adults.
- Cancer of the larynx.
- Asthma.
- *Pulmonary aspiration*, in which secretions, food or drink, or stomach contents rise into the larynx (voice box) and lower respiratory tract.
- *Fibrosis*, a disease in which scars are formed in the lung tissues, causing serious breathing problems.

How is GERD treated?

At first, doctors most often prescribe changes in diet and lifestyle to treat GERD symptoms. Medicine may also be used. Your doctor may advise surgery if these things do not work or become less effective over time.

Here are some ways to help lessen GERD symptoms:

Diet Changes

- Keep your weight in a healthy range
- Eat smaller meals
- Eat fewer fatty, fried, and spicy foods
- Avoid foods such as
  - Peppers
  - Onions
  - Citrus
  - Chocolate
  - Caffeine
  - Carbonated beverages

See our handout "Esophageal Diet" to learn more about dietary guidelines when you have GERD.

Lifestyle Changes

- Exercise more.
- Avoid wearing clothes that fit tightly around your waist.
- Eat your last meal at least 2 to 3 hours before you go to bed.
- Quit smoking and avoid secondhand smoke.
- Stop drinking alcohol.
- Raise the head of your bed. Use a pillow to raise your head above your chest level while sleeping.

Medicines

Your doctor may prescribe medicines to help reduce your stomach acid. These medicines either *neutralize* the acid or keep your stomach from producing them.

- **Antacids** are used to help control mild to moderate heartburn. Your doctor may prescribe an antacid, or advise you to use one you can buy without a prescription, such as TUMS, Mylanta, or Alka-Seltzer. These medicines neutralize stomach acid. But, because the stomach needs acid to work well, taking antacids too often can affect how well you digest food. They can also cause diarrhea and other side effects.
- **Histamine H2-blockers** (Ranitidine, Cimetidine, Zantac, and Tagamet) work well for mild, occasional reflux. These medicines block *histamine*, a hormone in the body that causes stomach cells to create acid. These are not as strong as proton pump inhibitors (see next page).

- **Proton pump inhibitors** (Nexium, Prilosec, and Prevacid) are prescribed when GERD symptoms are moderate to severe. They are strong drugs that suppress the secretion and release of stomach acids.
- **Mucosal protective agents** (*alginic acid* and *sucralfate suspension*) are gels or foams that coat the inside of the esophagus. This protects the esophagus from being damaged by refluxed stomach acid.

Fundoplication Surgery

A surgery called *fundoplication* has been used to treat GERD for many years, with very good results. There are 2 major types of fundoplication: complete (Nissen) and partial (Toupet). The Nissen fundoplication is more common, but your surgeon may advise a partial fundoplication.

In fundoplication, the surgeon wraps the top part of the stomach around the end of the esophagus to strengthen the lower esophageal sphincter (LES).

Fundoplication surgery:

- Increases the pressure of the LES when it is at rest
- Restores the proper angle for the esophagus to enter the stomach
- Recreates a "1-way valve" to prevent acid reflux

If a hiatal hernia is involved in causing your GERD, your surgeon will also:

- Reduce the size of the hernia
- Narrow your hiatus back to normal size
- Possibly reinforce this closure with a natural (biologic) mesh to strengthen the closure

Success Rates

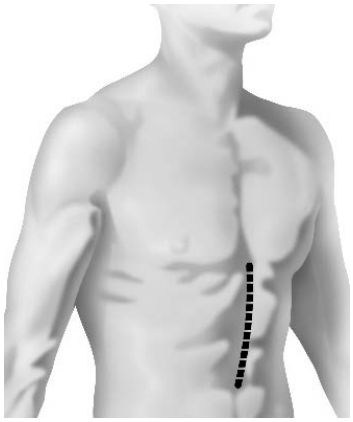
- At UWMC, a fundoplication is successful for more than 90% of patients (90 out of 100 patients) in treating common long-term GERD symptoms such as heartburn and regurgitation.
- For patients whose GERD symptoms involve their airway, this surgery works well for about 70% of patients (70 out of 100 patients).

Minimally Invasive Surgery

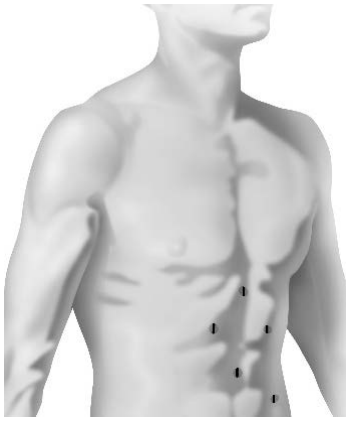
At UWMC, fundoplication is done using a *laparoscopic* (minimally invasive) method instead of open surgery. These two surgeries use different types of incision (see drawings on page 6):

- In **open surgery**, one long incision is made in your abdomen.
- In **laparoscopic surgery**, several tiny incisions are made in your abdomen.

Incisions Used in Open and Laparoscopic Surgery



One long incision is used in open fundoplication surgery.



Several tiny incisions are used in laparoscopic fundoplication surgery.

Laparoscopic surgery creates less scarring and involves a shorter recovery time than open surgery. You can expect to go home in 1 or 2 days after laparoscopic surgery instead of 4 or 5 days with open surgery.

UWMC surgeons are known worldwide as experts in GERD and GERD surgery. They were the first in the Northwest to do laparoscopic fundoplications, and have done about 4,000 of these surgeries. Most times, our surgeons do not need to change their plans and do an open surgery, but this can sometimes happen.

What Happens During Surgery

In laparoscopic fundoplication, your surgeon will use a fiber optic camera called a *laparoscope* and tiny surgical instruments. These devices are inserted into the tiny incisions. The camera lets your surgeon see inside your body and helps guide the surgery.

Problems with Fundoplication Surgery

These problems can occur with fundoplication surgery:

- Bleeding
- Infection
- Injury to other structures in the body

Side Effects of Fundoplication Surgery

These side effects can occur with fundoplication surgery:

Recurrent Reflux or Hiatal Hernia

GERD is caused by wear and tear on body tissues. With normal breathing, lifting, and eating, the area where fundoplication is done can stretch over time. Eighty percent of our patients (80 out of 100 patients) have relief after surgery that lasts longer than 10 years, but some have break-through reflux. If reflux returns, most times it is easily controlled with medicine. Only 3% of our patients (3 out of 100 patients) need a second operation for reflux that comes back.

Dysphagia

There is a chance that you may feel resistance to food going down your esophagus. Most times, this can be managed by chewing food well, and eating more slowly.

Bloating or Gas

You may have a harder time belching (burping) after fundoplication. If you eat too much or swallow too much air, you may have some bloating until the gas passes. Usually, swallowed air is either belched or passed through the GI track as gas. Because it is harder to belch, you may have a little more gas. Most patients do not find this to be a problem.

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Having Bowel Movements More Often

The stomach empties more quickly after fundoplication surgery. You may the need to have bowel movements more often. Many people with GERD find this helps their symptoms of bloating or gass.

In the Hospital After Surgery

Recovery

- You will spend about 2 hours in the recovery room waking up after surgery.
- Nurses in the recovery room will monitor your pain level and give you medicines to make you comfortable.
- Your family may be able to visit you in the recovery room. This depends on how you are doing and the care needed by other patients in the room.
- When you wake up, you will have:
  - An **oxygen mask** over your face to supply extra oxygen. You will be switched to **nasal prongs** when your lungs are ready.
  - **An intravenous (IV) tube** to give you fluids and medicines during and after surgery.
  - **Sequential compression devices (SCDs)** on your legs. These wraps inflate with air and squeeze your legs from time to time. This improves blood flow and helps prevent blood clots.
- Some patients will have a **urinary catheter** in their bladder. This allows us to monitor urine output during and after your surgery. The catheter will be removed at midnight.

On the Nursing Unit

- **Medicines:** All your medicines will be crushed or in liquid form.
- **Breathing exercises:** We will give you a device called an *incentive spirometer* to help you exercise your lungs. It is important to exercise your lungs to prevent lung infections (pneumonia) and other problems.

  To use the incentive spirometer:
  - Sit upright in a chair or in bed. Hold the incentive spirometer at eye level. You can hug or hold a pillow over your incisions for comfort.
  - Place the mouthpiece in your mouth and seal your lips around it.
  - Slowly breathe out fully. Then breathe in slowly, as deeply as you can, and then hold your breath as long as you can.
  - Your breathing will move a ball in the device. Try to get the ball as high as you can.
  - Exhale slowly through your mouth.

- Rest for few seconds and repeat. Do this 10 times every hour while you are awake.
- After you are done with your set of 10 deep breaths, be sure to cough to clear your lungs.
- If you feel dizzy at any time, stop and rest.

- **Activity:** It is important for you to get up and try to walk, even in the evening of your surgery. Your nurse will help you the first few times to make sure you are steady on your feet. **Please ask your nurse to help you walk. Do not wait to be asked if you want to walk.**
- **Diet:** A dietitian will visit you the day after surgery to talk about the diet you will need to follow when you leave the hospital.
- **Family and friends:** Family and friends can be important to your recovery. It's helpful to have a support person to help you at home as you recover. They can help by doing things that make you more comfortable, such as fluffing your pillow, getting you a glass of water, or finding your remote control. Don't be afraid to reach out for help.

Going Home

Most patients are discharged by 11 a.m. the day after surgery. If you live more than a 2-hour drive from the hospital, we advise you to stay in the Seattle area an extra 1 or 2 nights. This extra rest time will help your recovery. You will also be nearby in case any problems occur.

Self-care at Home

For 24 hours after surgery and while you are taking medicines that contain opioids, do NOT:

- Drive or travel alone
- Drink alcohol
- Be home alone
- Be responsible for the care of anyone else, such as children, pets, or an adult who needs care
- Use machinery
- Sign any legal papers or other important forms

Driving

- Do **not** drive for at least 2 weeks after surgery.
- Do not drive while you are taking prescription pain medicine (*opioids*). These drugs affect your reaction time and your ability to make decisions.

- You may begin driving when you are sure that your reaction time is normal.

Pain Control

- You will have some pain at your incision sites. We encourage you to take acetaminophen or ibuprofen as needed for pain relief.
- Cold packs on your incisions can help ease pain. If you use ice, do not place it directly on your skin. Wrap the ice in a towel first. Apply ice for 20 minutes at a time, then remove for 20 minutes.
- You will receive a prescription medicine (opioids) to help with moderate to severe pain. Only use this medicine if acetaminophen or ibuprofen do not control your pain.
- If you need a refill for opioids:
  - Before we can refill an opioid prescription, a provider must evaluate you, either over the phone or in person.
  - If you are approved for an opioid refill, we cannot send the prescription to your pharmacy. You must take it to your pharmacy in person. To get the prescription, you can either come to the hospital to pick it up, or you can call us and ask us to mail it to you. If you want us to mail you the prescription, be sure to call us several days before you will need your refill.
- You may also have shoulder pain for the first few days after your surgery. This is caused by the gas (carbon dioxide) that was used to inflate your abdomen during surgery. This pain usually lasts about 4 to 5 days. Opioids do not ease this shoulder pain. We advise walking, massaging the area, or using heating pads if this pain bothers you.
- Some pain medicines can make you dizzy. Ask for help when you get out of bed so that you do not fall.
- Some prescription pain medicines can cause constipation. Take the laxative as prescribed. Stop taking it if you start having loose stools.

Medicines

- **For 4 to 6 weeks after surgery, all of your medicines must be crushed or in a liquid form.** Do not swallow whole pills during this time. You will be given a pill crusher before you go home. Call your pharmacy if you have questions about crushing any of your pills.
- **Do not take any antacids**. If your GERD symptoms return, call your surgeon's office. Write your surgeon's office phone number in the box provided on page 12.

Start walking as soon as you can after surgery.

- Take all of the medicines you received at discharge as prescribed. One of these medicines will help prevent nausea and vomiting. It is important not to vomit in the first few weeks after your surgery. Follow the written instructions that come with your medicines.
- You may resume all of your other usual medicines, unless your provider tells you not to.

Activity

- For 6 weeks, do **not** lift anything that weighs more than 15 pounds. (A gallon of water weighs almost 9 pounds.)
- For 6 weeks, avoid strenuous activities, especially those that use your abdominal muscles. Slowly increase your activity as you heal.
- It is important to walk. Start walking as soon as you can after surgery. Walk 3 to 4 times a day, at least 1 mile total. Increase how far you walk as you recover.
- You may resume sexual activity 2 weeks after your surgery, as long as you follow all activity precautions.
- Let pain be your guide! If something causes you pain, stop doing it. Try it again another day.

Dressing and Skin Care

- Remove your gauze and Tegaderm dressings 48 hours after your surgery.
- You will have white strips of tape called Steri-Strips under your dressings. Do **not** peel them off. They will fall off in 1 or 2 weeks.

Showering

- You may shower the day after surgery. The Tegaderm dressing is plastic and will repel water.
- Once you remove your dressings, it is OK to shower and get the Steri-Strips wet.
- Gently pat the Steri-Strips dry after showering. Do **not** rub them dry.
- Do not take a bath, go swimming, sit in a hot tub, or soak your incisions for 2 weeks after your surgery, or until the incisions are fully healed.

Diet and Nutrition

- Follow your dietitian's instructions on what foods you can eat at home after your surgery. Read the handout your dietitian gave you. Call the dietitian if you have questions.

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- In the hospital, you will be on a liquid diet after your surgery. When you leave the hospital, you will start a soft esophageal diet. You will continue on a soft diet for 4 to 6 weeks. This will help keep food from getting stuck in the area where your surgery was done.

  During this time, try eating soft foods like mashed potatoes, eggs, cottage cheese, and thick soups.

- You will transition to a regular diet in 4 to 6 weeks. When you start eating regular foods:
  - Eat 5 to 6 small meals a day instead of 3 large meals.
  - Take small bites, chew them well, and eat slowly.
  - Stop when you are full.
- Do **not** drink carbonated beverages or use straws to drink fluids.
- Most patients lose about 10 pounds after this surgery. You will gain this weight back unless you try not to.

Bowel Movements

- You may have *diarrhea* (loose stools) after surgery due to the changes in your diet. This usually goes away in a few days.
- Call the surgical clinic if you have diarrhea for more than 3 days.
- Do not take any medicines for diarrhea unless your surgeon's team says it is OK.

Call your PCP if you have any of the symptoms listed on this page.

When to Call Your Doctor

Call your primary care provider (PCP) if you have any of these symptoms in the next 7 days:

- Cannot swallow foods or can only handle liquids
- Cannot keep fluids down
- Problems swallowing
- Vomiting even if you are taking medicines to prevent nausea
- Your vomit is green, bloody, or looks like coffee grounds
- Chest pain or shortness of breath
- Severe, persistent pain that is not relieved by pain medicine and rest
- Back or shoulder pain that does not go away
- You feel very full and your abdomen is distended
- You cannot have a bowel movement

- You have diarrhea
- Your stools are black or tarry
- Dizziness or fainting when you stand up
- New onset or increased weakness, numbness, or tingling
- One of your legs or arms feels warm, tender, painful, swollen, or red
- Increase in bleeding from your incisions
- Any sign of infection around your incisions:
  - Fever higher than 100.5°F (37.8°C)
  - Shaking or chills
  - Increase in drainage, or drainage that is thick or smelly
  - Redness or swelling
  - Increasing pain or tenderness on or near the incision sites

Questions?

Your questions are important. Call your doctor or healthcare provider if you have questions or concerns.

Your surgeon's office:

_____

Weekdays from 8 a.m. to 5 p.m., call 206.598.4477 and press 8 when you hear the recording.

After hours and on weekends and holidays, call 206.598.6190 and ask to page the Surgery O team.

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