

Bariatric Surgery and Complications

Bariyatrik Cerrahi ve Komplikasyonları

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ABSTRACT

Obesity, the prevalence of which is increasing day by day, is a serious health problem. Bariatric surgery provides long-term weight loss by reducing the size of the stomach and restricting calorie intake, thus playing an important role in the recovery of comorbid conditions that occur with obesity. Although obesity is a risk factor for all surgical procedures, it makes bariatric surgery patients even more risky. For this reason, it is important to know the complications, which may occur in the preoperative or postoperative period, to avoid morbidity and mortality. In this review, which was prepared based on the literature data, complications in patients undergoing bariatric surgery in the postoperative period are addressed. This review will be guiding for nurses and other healthcare professionals who care for patients undergoing bariatric surgery regarding its complications.

Keywords: Bariatric Surgery, Complication, Obesity.

ÖZ

Gün geçtikçe görülme sıklığı artan obezite ciddi bir sağlık sorunudur. Bariyatrik cerrahi, mide boyutunu küçültüp kalori alımını kısıtlayarak uzun dönemde kilo kaybı sağlar, bu sayede obezite ile birlikte meydana gelen komorbid durumların iyileşmesinde önemli bir rol oynar. Obezite, tüm cerrahi girişimler için bir risk faktörü olmakla birlikte bariyatrik cerrahi hastalarını daha da riskli hale getirmektedir. Bu nedenle ameliyat sonrası erken ve geç dönemde oluşabilecek komplikasyonların bilinmesi, morbidite ve mortalitenin önlenmesi açısından önem arz etmektedir. Literatüre dayalı olarak hazırlanan derlemede, bariyatrik cerrahi geçiren hastalarda ameliyat sonrası dönemde görülen komplikasyonlara yer verilmiştir. Bu derleme, bariyatrik cerrahi geçiren hastalara bakım veren hemşire ve diğer sağlık profesyonellerine, bariyatrik cerrahi ve komplikasyonları ile ilgili yol gösterici olacaktır.

Anahtar Kelimeler: Bariyatrik Cerrahi, Komplikasyon, Obezite.

Introduction

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Interventions to treat obesity were first performed in the 1950s. Initial surgeries included bypass surgeries, which left most of the jejunum and ileum out of function, surgeries disabling part of the stomach, and horizontal-band gastropasty. However, serious complications, such as diarrhea, electrolyte imbalance, and liver failure were encountered frequently after surgery in those years (1). The emergence of obesity as an increasing problem and the ability to perform surgeries that had relatively low morbidity and mortality rates, such as vertical band gastropasty, led to the spread of obesity surgeries. When the National Institute of Health (NIH) reported that surgical treatment was an effective method in morbidly obese patients, obesity surgery was widely performed (1-3).

Patient Selection Criteria for Obesity Surgery

There are recommendations and rules that were identified by the National Institute of Health for using surgical treatment in obesity (4, 5), which are as follows; body Mass Index (BMI) > 40 kg/m² or BMI > 35 kg/m² and additional diseases (Type 2 Diabetes Mellitus (DM), hypertension (HT), sleep apnea, hyperlipidemia), the risk of surgery must be acceptable, failure in non-surgical treatments, absence of psychiatric pathological conditions or alcohol and drug addiction and no medical problems that will prevent the life that surgery will bring (5).

Methods Used in Obesity Surgery

Although different techniques and applications are applied in obesity surgery, these are structured on two basic principles. The first group consists of restrictive interventions in which the gastric volume is reduced, and the second group consists of malabsorptive interventions disrupting food absorption. In addition to these, combined initiatives that employ these two basic mechanisms are also performed (1,6).

Gastric volume reduction interventions

Gastric Balloon (GB): Gastric Balloon is a non-surgical and retrievable weight loss method. After the balloon is inserted

endoscopically in the stomach, it is inflated with air or water, leaving less room for food in the stomach, allowing the patient to feel early satiety. Gastric Balloon is used in periods of 3-6 months; and longer use is not recommended (7).

Adjustable Gastric Band (AGB): Adjustable Gastric Band reduces food intake, providing weight loss. It is often applied by the laparoscopic method today. A 25-30 cm reservoir is created in the proximal area by wrapping an inflatable silicone band around the stomach three cm below the esophagogastric junction. The gastric volume can be changed by filling/emptying the band with serum accompanied by Fluoroscopy (6,8).

Vertical Band Gastropasty (VGB): The front and back walls of the stomach are attached to each other with stapling technique 5 cm below the esophagogastric junction in this method. A ring is attached to the end of this junction to avoid the stomach from expanding. In this way, a small "upper stomach" is formed, and a satiety feeling is experienced as soon as this pouch is filled with food (6).

Sleeve Gastrectomy (SG): A total of 70-80% of the stomach is removed with this method, and a narrow and long stomach that has a diameter of approximately 2 cm is formed by preserving the pylori of the stomach. Since the stomach volume is reduced, food intake also decreases, and the feeling of satiety is felt faster because the part of the stomach secreting ghrelin is removed. Although the stomach volume is reduced, its functions are maintained (6,9,10).

Absorption-Blocking Applications

Biliopancreatic Diversion (BPD): Biliopancreatic Diversion surgery is among the advanced surgeries in obesity surgery. Distal Gastrectomy is performed in Biliopancreatic Diversion surgery with a stomach volume of 150-200 cc; and the proximal end of the duodenum is closed. The intestine in 250 cm proximal from the ileocecal valve is anastomosed to the stomach. The bypassed intestine is anastomosed to 50 cm of proximal of the ileocecal junction. As a result, the absorption of calories and nutrients is reduced significantly (6,8,11).

Duodenal Switch (DS): It is a technique that was developed as an alternative to Biliopancreatic Diversion surgery. With Duodenal Switch, Vertical Gastrectomy is performed, in which the pyloric area of the stomach is protected instead of Distal Gastrectomy. Also, the small intestines that carry the bile flow are attached at the last 100 cm instead of 50 cm. Less absorption restriction is applied in Duodenal Switch Surgery compared to Biliopancreatic Diversion Surgery (6,8,11).

Combined applications

Roux-en-Y Gastric Bypass (RYGB): A pouch with a volume of 20-50 cc is created in the gastric proximal part and anastomosed to the jejunum in gastric bypass surgeries. In this surgery, the purpose is to reduce the stomach volume and to eliminate some of the consumed food without absorption by disabling part of the intestines as in other obesity surgeries (8,9,11).

Complications of Obesity Surgery

Deterioration in general health conditions because of obesity, comorbidities, the difficulty of surgical technique, and changes in anatomical structures because of surgery are among the factors that affect the incidence of complications after surgery. Complications detected after obesity surgery are discussed in some sources in three periods as Early (first 30 days), Medium (first year), and Late (after one year). In the literature, it is usually reported as Early Period Complications (first 30 days) and Late Period Complications (after 30 days) as classified in this review (12,13,16-18).

Early Period Complications

Sudden Cardiac Death is seen in 0.2-1% after obesity surgery usually showing symptoms of tachycardia, hypoxia, and hypotension. Pulmonary embolism can occur in the bleeding and anastomosis area due to leaks (12,14,17). Deep Vein Thrombosis and Pulmonary Edema are detected at a rate of 0.5-4% after surgery, and are responsible for 15-32% of deaths. The risk increases in patients with a history of Deep Vein Thrombosis, who do not have sufficient activity, who have Obstructive Sleep Apnea, and in those with BMI > 60 kg/m² (12,19,20).

Postoperative bleeding is seen at rates that range from 2-4% stemming usually from the anastomosis area stapler line. Surgical

interventions should be performed again in postoperative bleeding at a rate of 15% (13,21).

Leaks from the anastomosis zone are detected at a rate of 1% and increases in techniques applied with gastrojejunostomy (2-4%) (14,17,20).

Nausea and vomiting are more commonly detected in restrictive methods, and might continue for up to three months after the surgery, and are often related to the patient's inability to become used to the new diet, and to consuming fast and plenty of food at one time. It is tried to be reduced by supporting the patient to become used to the new diet (12,20).

Diarrhea and constipation are mostly seen in surgical techniques where the small intestine is intervened and are rare in Sleeve Gastrectomy and AGB, and constipation, which can usually be managed with normal stool softeners, is seen in RYGB. Changes in the diet, drugs used, changes in the intestinal flora, and general defecation habits of the patient may be effective factors in diarrhea and constipation after surgery (16).

Dumping Syndrome is characterized by the rapid emptying of the stomach when foods with high-calorie carbohydrates are consumed. Although it is generally seen at higher rates in surgical techniques such as gastric bypass and BPD, which involve intervention on pylorus, it is rare in SG. Early Dumping Syndrome is seen in the 30-45 minutes after eating, and Late Dumping Syndrome is seen 2-4 hours after eating (17,20).

Late Period Complications

Stenosis in the anastomosis area is a condition varying between 5-15% in RYGB cases; and is detected in the gastrojejunal anastomosis region. Structural stenosis can be seen in the newly formed stomach in sleeve gastrectomy cases. The cause of gastric ulcers that are detected in 15% after surgery has not been fully elucidated, and is argued to be caused by smoking and non-steroidal anti-inflammatory drugs (14,16,17,20).

Band Shift (2-4%) and tissue erosion around the band (1-2%) are among the late complications, which may occur, after AGB surgeries, causing obstructions and abdominal pain (15,20).

Incisional hernias have an incidence of 15-20% in open procedures, and at a rate of 1% in laparoscopic procedures, since mesentery damage is less (15,16,20).

Gallstones are triggered by rapid weight loss (18,20). Patients with a history of gastroesophageal reflux have regression in their complaints after gastric bypass, and the incidence increases after surgical interventions such as SG and DS. It is suggested that this is caused by a lower esophageal sphincter with excessive resection of the proximal fundus (14,16).

Vitamin and mineral deficiencies are detected at much higher rates in malabsorptive methods than in restrictive methods (15,16,20).

Conclusion

Bariatric Surgery has become widespread in our country as well as in the entire world as an effective and safe method to treat morbid obesity. On the other hand, preoperative comorbid diseases increase the risk of postoperative complications in Bariatric Surgery patients. For this reason, knowing, detecting, and preventing complications, which might develop after surgery, will contribute to the recovery process.

Achieving the desired target in obesity surgery covers a certain process, relevant planning must be made for this purpose. Training programs must be prepared for patients and their relatives to achieve more effective results in obesity surgery, which creates permanent lifestyle changes in patients.

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