Chapter 66
Postoperative Care

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66.1 General Considerations

Although the duodenal switch is one of the most complex laparoscopic bariatric procedures, it also benefits from the enhanced recovery protocols [1, 2]. These protocols involve different practices aimed to maintain physiological function, enhance mobilization, reduce pain, and facilitate early oral nutrition postoperatively by reducing perioperative surgical stress. These protocols have shown to reduce morbidity and hospital stay, enhancing early recovery and return to normal activity.

The main aspects of the enhanced recovery protocols after duodenal switch can be summarized in the following points

- Analgesia—Implementation of multimodal analgesia avoiding usage of opioids. Acetaminophen and short-term NSAIDs are recommended
- Nausea and vomiting prophylaxis—Liberal use of antiemetics from two different classes is recommended, typically dexamethasone and ondansetron
- Prevention of postoperative ileus—Restricted use of fluids is highly recommended, as well as early ambulation. Early discontinuation of intravenous fluid therapy is strongly recommended

The typical pathway goes as follows. Patients are encouraged to wake up 4 h after surgery, meaning that pain should be controlled early on, but without drugs that may limit patient's awareness. Early ambulation will favor bowel mobilization and better fluid tolerance and should be encouraged and instructed before surgery.

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As a continuation of early ambulation, patients are given clear fluids 6–8 h after surgery. This measure will allow the discontinuance of intravenous fluids and facilitate better food tolerance. Patients should be instructed to drink slowly and in small volumes. The sleeve gastrectomy component may induce some nausea and oral tolerance difficulties in the early hours after surgery, so antiemetics should be used routinely.

Moreover, respiratory physiotherapy is crucial in bariatric surgery patients. Patients should have been instructed prior to surgery in breathing exercises to learn how to expand the thoracic cavity and the lungs. Breathing incentives can be given to the patients to complete this task.

Finally, thromboembolic events should be addressed, as they are potentially deathly complications after bariatric surgery. Thromboprophylaxis in duodenal switch patients should be multimodal. Patients will need lower limb stockings, and the use of intermittent compression pumps is highly recommended. Pharmacological prophylaxis will include low molecular weight heparins or unfractionated heparins. The first dose should be as early as 8 h after surgery, with half the daily treatment dose, and continued for at least 7–10 days. High-risk patients will need to continue prophylaxis for up to 4 weeks. Special attention may be taken in patients with previous anticoagulation of pro-thrombotic conditions, and consultation to hematology is advised to obtain tailored prophylaxis. All these measures have to be completed by early ambulation and instruction to avoid sedentarism after surgery.

66.2 Postoperative Admission to ICU

Bariatric surgery patients usually do not need admission to an intensive care unit (ICU). General recommendation is to perform strict surveillance and monitorization for the first 6–24 h. This monitorization will include pulse, blood pressure, oxygen saturation, and pain control.

All patients should be prophylactically supplemented with oxygen in a head-elevated or semi-sitting position. A low threshold for initiation of positive pressure support must be maintained in the presence of signs of respiratory distress. Patients with obstructive sleep apnea (OSA) that were previously treated with CPAP or BiPAP therapies must continue this treatment in the early postoperative weeks.

Some centers reserve ICU for patients with high-risk respiratory comorbidities such as hypoventilation, high-risk obstructive sleep apnea, or other uncontrolled or poorly controlled diseases. Patients with cardiac comorbidities as low left ventricle output, dilated myocardiopathy, or severe ischemic damage could be also candidates of ICU. In these cases, cardiac monitoring and some prophylactic therapies may be needed. Finally, in patients with unexpected surgical or anesthetic intraoperative complications, it could be also recommended to keep the patient under intensive care at least some hours after surgery.

66.3 Routine Examinations After Surgery

Routine complementary examinations are not usually mandatory after bariatric procedures. However, some protocols recommend a blood test 24 h after surgery, to check hemoglobin and C-reactive protein levels. Elevated C-reactive protein levels have been correlated with surgical complications, but evidence is still low, and cut-off levels have not been clearly defined.

Moreover, it is not recommended to systematically perform any image test to check for leaks or other complications. Nevertheless, in case of intraoperative complications or the slightest clinical suspicion, a CT-scan should be considered.

66.4 Patients' Comorbidities Management After Surgery

66.4.1 Type 2 Diabetes

Glitazones, glinides, and dipeptidyl-dipeptidase 4 inhibitors (DDP4i) should be discontinued 24 h before surgery, with a reduction of basal insulin dosage to 0.3 U/kg of body weight [3]. Metformin should be discontinued on the day of surgery. As in any hospitalized patient, from the day following the operation until discharge, target glucose values should be 140–180 mg/dL. Basal insulin at a dose of 0.1 U/kg may be prescribed if values are above 180 mg/dL in two consecutive determinations.

Early after surgery patients are instructed to drink fluids, but caloric intake would be minimal anyway. Thus, glycemic control is usually significatively improved. Treatment is directed predominantly toward fasting glucose values. Patients should be instructed to test blood glucose at least twice a day, during morning fast and through the day, with target values of 100–120 mg/dL in fast and less than 180 mg/dL 2 h after a meal.

If glycemic control after surgery is adequate, patients with oral hypoglycemic drugs may discontinue these treatments after discharge. If glucose levels are constantly high after surgery, low-dose metformin once or twice a day is recommended. Patients under poor glycemic control, or high doses of insulin prior to surgery, should be monitored postoperatively and may need metformin or lower doses of insulin depending on glycemic controls. In these cases, endocrinology consultation prior to discharge is advised.

66.4.2 Hypertension

Patients are recommended to reduce their usual dosing of medications, especially those with better control before surgery [3]. In the short term, weight loss improves blood pressure, and usually treatments can be discontinued early on. Daily monitoring and early check-up with a cardiologist is highly recommended after surgery.

66.4.3 Dyslipidemia

Hypertriglyceridemia and hypercholesterolemia improve after bariatric and metabolic surgery due to weight loss [4]. There is no consensus about resuming or not preoperative medications after surgery. One strategy could be not to rule them out initially, but reconsider this premise later on and depending on weight loss outcomes and the evolution of blood test. Patients using atorvastatin or drugs with similar pharmacokinetic properties should be closely monitored for both therapeutic effects and adverse events during the first years after gastric bypass and duodenal switch.

66.4.4 Obstructive Sleep Apnea

OSA is a quite common condition in morbidly obese patients. CPAP and BiPAP treatments should be continued just after surgery, following the same patterns that were in use prior to surgery. There is no contraindication for these treatments after duodenal switch.

Once the weight loss begins to be significant, patients may feel improvement of OSA and usually complain of worse tolerance to CPAP or BiPAP. Patients should be reviewed by their pneumologist in order to determine whether the BiPAP/CPAP pressures need adjustment and if a new sleep respiratory assessment should be undertaken.

66.4.5 Other Pharmacological Treatments

Duodenal switch will modify drugs' pharmacokinetics in different directions. While the absorption of drugs is predominantly reduced, tissue distribution, drug metabolism, and elimination also change their bioavailability, usually with unknown net balances. Immunosuppressants and other sensitive drugs, if possible, should be closely monitored, while weight is still changing in order to progressively adapt the dosage. Moreover, women with oral contraceptives are encouraged to use other non-oral contraceptive treatments due to reduced efficacy of oral contraceptives after duodenal switch.

On the other hand, it should be taken into consideration that during the first postoperative weeks, the patient may be incapable of taking solid drugs, so a change to a liquid presentation, when possible, may be recommended. Finally, NSAIDs and steroids should be avoided to prevent gastritis and anastomotic ulcers. In fact, patients are encouraged to keep on proton pump inhibitors for 3–6 months even when asymptomatic.

66.4.6 Other Considerations

After bariatric and metabolic surgery, patients are encouraged to have an active way of life, to go walking, to do some exercise, and to improve their physical condition. These activities should be initiated as soon as they feel able to. After discharge, patients are recommended to walk daily for at least 20–30 min.

Prophylaxis of metabolic deficiencies should be initiated as soon as possible. After duodenal switch, the most common deficiencies are iron, calcium, and vitamins A and D [5]. B family vitamins are also important, especially in patients with increased nausea and vomiting. Some patients will need parenteral B12 supplementation, but usually not in the early postoperative stage but months later. Multivitamin supplementation with calcium and vitamin D is the most common recommendation. Other common deficiencies should be checked during the follow-up routinary blood tests, every 3 months for the first year and every 6 months later.

Patients should go home with complete information about the procedure that has been performed, the recommended diet, and the possible complications. Health and sanitary education from the surgeon and the allied health professionals will improve the results and will avoid unnecessary consultations.

66.4.7 Patient Discharge

The discharge of the patient can be prepared for the second to the fourth postoperative day, depending on the postoperative evolution. Specific criteria for discharge vary between different hospitals, but they generally adhere to the main principles of meeting normal hemodynamics, not having pain or fever, having good oral tolerance, moving without difficulties, accepting to leave, and understanding the alarm criteria.

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