Coronary Artery Bypass Grafting (CABG)

Coronary artery bypass graft surgery (CABG) is an invasive palliative treatment (not a cure) indicated for coronary artery disease. The surgical procedure is reserved for patients experiencing uncontrolled angina and ST-segment elevation myocardial infarction (STEMI). During surgery, a sternotomy is necessary to open the chest cavity and cardiopulmonary bypass is required to divert the patient's blood from the heart to a bypass machine for oxygenation. Coronary revascularization occurs as conduits are placed between major arteries and myocardium distal to blocked coronary arteries. Vessels used during CABG include the internal mammary artery, the saphenous leg vein, and the radial artery. The recovery period lasts 6-8 weeks with the patient staying at the hospital for the first 4-6 days postoperatively. Closely monitor the patient for transient limb edema and bleeding. Antiplatelet therapy and statins are prescribed postoperatively to improve graft patency. Promoting early ambulation, sequential compression devices, and use of an incentive spirometer decrease the risk of postoperative complications.



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Indications

ST-Segment Elevation Myocardial Infarction (STEMI)
Elevated St. and Mayo-heart Infarction-fart
CABG may be performed in select individuals with ST-segment elevation myocardial infarction (STEMI). Possible surgical candidates include patients with diabetes and cardiovascular disease involving three different coronary arteries. The procedure requires emergent reperfusion therapy.

Cardiovascular Disease (CAD)
Heart Diseased
Although not a cure, CABG is considered palliative treatment for patients with cardiovascular disease (CAD). The surgery improves patient outcomes based on quality and quantity of life. However, older patients have an increased risk of postoperative complications and mortality.

Uncontrolled Angina
Uncontrolled Angel
Patients experiencing uncontrolled angina not responsive to medical therapy may be candidates for CABG. The procedure decreases pain by allowing oxygen to adequately perfuse the heart through revascularization of the coronary arteries.

Considerations

Internal Mammary Artery
Milk-bottle and Artery-archer
The internal mammary artery is the preferred artery for CABG. The artery is left attached to the subclavian artery and dissected from the chest wall. The artery is then connected with sutures to the coronary artery distal to the blockage. The patency rate of using internal mammary artery grafts after 10 years is greater than 90%.

Saphenous (Leg) Vein
Sapphire Vine
The saphenous leg vein may also be used during CABG. Sections of the saphenous vein are attached to the ascending aorta and the coronary artery distal to the blockage. However, this vein is more likely to develop intimal hyperplasia and lead to future stenosis and graft occlusions. The patency rate of using saphenous vein grafts after 10 years is between 50-60%

Transient Limb Edema
Limb Edamame
Transient limb edema may occur 4-6 weeks after CABG procedures involving the saphenous vein. Ankle swelling in the operative leg is common and may be minimized by wearing elastic support stockings and elevating legs while sitting.

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Closely Monitor Patients

Monitor Close to Patient

The postoperative CABG patient should be closely monitored for any complications. This includes monitoring for signs of bleeding by assessing the patient's chest tube drainage and incision sites. Hemodynamic values and fluid status should be assessed in patients bleeding postoperatively after CABG surgery.

Venous Thromboembolism (VTE) Prophylaxis

Vines Trombone Elmo with Purple-axes

Venous thromboembolism prophylaxis should be initiated in patients after CABG surgery. Prophylactic measures include encouraging early ambulation and use of sequential compression devices.

Incentive Spirometer

Incentive Spirometer

Encourage the patient to use an incentive spirometer while recovering from CABG surgery. An incentive spirometer helps prevent postoperative respiratory complications by keeping the airway open and preventing fluid or mucus from building up in the lungs. Coughing and deep breathing exercises will also help prevent respiratory complications. To minimize pain, instruct the patient to splint the incision.

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