

Simultaneous gastrectomy and off-pump coronary artery bypass grafting: a case report

Eşzamanlı gastrektomi ve off-pump koroner arter bypass greftlemesi: Olgu sunumu

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The surgical treatment of surgically resectable gastric cancer in a patient with concomitant severe coronary artery disease is still controversial. In this article, we report a case of simultaneous gastrectomy and off-pump coronary artery bypass grafting for the treatment of gastric adenocarcinoma and severe ischemic heart disease.

Key words: Coronary artery bypass grafting; gastric carcinoma; surgical.

Coronary artery disease is an important cause of morbidity and mortality in patients undergoing noncardiac surgical procedures. Surgical strategy in the patients with malignant tumor and concomitant coronary artery disease needs a great concern. The challenge behind these cases is due to the timing of each procedure. There are two surgical policies about the management of these patients, first one is the staged and second one is the simultaneous approach. With the improvements in surgical technology, off-pump cardiac surgery offers reasonable results compared to the conventional cardiac surgery in selected patients.^[1] Also, there is a great enthusiasm for simultaneous coronary artery bypass grafting (CABG) and noncardiac surgery in recent years.^[2] This strategy is advantageous as these patients are treated without a delay by this way.^[1] Here in this case we present a patient who underwent simultaneous off-pump CABG and gastrectomy.

CASE REPORT

A 61-year-old man was admitted to our hospital with bilateral lower extremity pain. He had been experiencing shortness of breath and chest discomfort for the last four months. His stress electrocardiogram (ECG) was maximally positive. For this reason, a

Ciddi koroner arter hastalığı olan bir hastada eşlik eden cerrahi olarak rezeke edilebilir mide kanserinin cerrahi tedavisi, günümüzde hala tartışmalıdır. Bu yazıda mide adenokarsinomu ve ciddi iskemik kalp hastalığının tedavisi için eşzamanlı olarak gastrektomi ve pompasız koroner arter bypass greftleme uygulanan bir olgu sunuldu.

Anahtar sözcükler: Koroner arter bypass greftleme; gastrik karsinom; cerrahi.

coronary angiography was performed, and he was found to have a critical lesion in the left anterior descending (LAD) artery just before the first diagonal branch, a proximal lesion in the circumflex artery, and a total occlusion proximal to the right coronary artery. His left ventriculography showed posterobasal akinesia and lateral wall hypokinesia. Based on these results, an off-pump CABG surgery was planned. Upon preoperative evaluation, he was found to be anemic with a hemoglobin level of 7.15 g/dl and a mean cell volume (MCV) of 70 fl. A review of the patient's history revealed two previous episodes of upper gastrointestinal system bleeding. An upper gastrointestinal system endoscopy showed a tumor located in the gastric corpus. The tumor was bleeding, and its surface was necrotic. A biopsy of the tumor revealed a poorly differentiated adenocarcinoma.

The general surgery, cardiovascular surgery departments, and the patient agreed on a consensus for simultaneous surgery for both ischemic heart disease and gastric adenocarcinoma.

Through a midline sternotomy, the pericardium was opened. An evaluation of the coronary arteries revealed a graftable LAD but a diffusely calcified and thin circumflex artery. The left internal thoracic

Received: April 27, 2009 *Accepted:* April 30, 2009

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artery (LITA) was harvested and prepared. The patient was heparinized, and his activated clotting time (ACT) levels were kept at approximately 250 seconds. This level is half the ACT level during CABG with cardiopulmonary bypass (CPB). Left internal thoracic artery-LAD anastomosis was performed as the heart was beating by using a tissue stabilizer (Octopus® 3 Tissue Stabilizer, Medtronic, US). After the sternotomy closure, a midline laparotomy was performed under the same anesthetic setting. During the exploration, the tumor was located at the gastric corpus, and it had invaded the serosa. There were metastatic lymph nodes located at the minor omentum. A distal subtotal gastrectomy and gastrojejunostomy were performed. The patient was taken to the intensive care unit (ICU) postoperatively and to the ward on the first postoperative day. Oral fluids were started on the third postoperative day. He was uneventfully discharged on the eighth postoperative day. At present, two years after surgery, the patient has no cardiac symptoms, and he is receiving appropriate treatment for the gastric carcinoma.

DISCUSSION

Patients with malignancy requiring general surgery and concomitant coronary artery disease are of great concern. They are at increased risk of perioperative myocardial infarction and cardiac mortality during major noncardiac surgery under general anesthesia.^[3] There are ongoing arguments about the treatment of concomitant ischemic heart disease and the malignant neoplasm. Generally, these patients are referred to the cardiology departments to undergo percutaneous transluminal coronary angioplasty (PTCA)/intracoronary stent placement or to receive maximal medical therapy. However, antiplatelet agents or other anticoagulants are required after PTCA/intracoronary stent placement. This may be associated with bleeding complications, as seen in our case. In conventional CABG with CPB, heparinization (ACT levels 400-600 seconds) may also cause bleeding problems during the cancer surgery. However, during off-pump CABG, we do not fully heparinize the patients, and the ACT levels are kept at approximately 250 seconds. This strategy may prevent such troublesome complications. We preferred off-pump CABG because the patient had had a history of gastrointestinal bleeding twice before, so full heparinization during CPB could have caused additional difficulties.

There is no agreement whether to perform these operations simultaneously or in a two-stage manner.^[4] In the literature, there are reports supporting the simultaneous surgical strategy.^[5-7] It is also known

that CPB enhances the systemic inflammatory response which can lead to several comorbidities, especially in a patient with a malignancy that requires prolonged and special postoperative care.^[1] This situation may also exhaust the general condition of the patient and result in delaying the final surgery. Additionally, although there has yet been no definite data about how CPB influences the outcome of patients with malignant disease, there is general agreement that tumor seeding during CPB may also lead to problems in these patients. Off-pump CABG is a good alternative in this regard as it does not carry the risks of CPB. Thus, it can be stated that off-pump CABG can be a better option in simultaneous operations.^[1]

In this case, we preferred off-pump CABG through a midline sternotomy instead of a minimally invasive procedure because we planned to bypass the circumflex artery in addition to the LAD preoperatively. However, at the time of exploration, we could not find a graftable target within the circumflex territory. Therefore, only a LIMA-LAD anastomosis was carried out on a beating heart setting.

In conclusion, this case shows that simultaneous off-pump CABG in conjunction with a gastrectomy is a safe and effective procedure and has advantages over a two-stage procedure. This strategy decreases the risks of bleeding, inflammatory response, and tumor seeding due to CPB. Off-pump CABG should be considered as a viable alternative to a percutaneous procedure in the malignancy setting and has an advantage over this procedure because the operation can be performed simultaneously with the final malignancy procedure.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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