

All in one: Multiple coronary stents, history of stent thrombosis, pancreatic carcinoma, postoperative bleeding and thrombocytosis

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ABSTRACT

Although the management of a stent patient may appear in the guidelines, some patients may be unique and out of class. In this presentation, the patient had multiple thrombotic risk factors for perioperative myocardial injury. These factors included coronary artery disease with multiple implantations of drug-eluting stent (DES), stent thrombosis history, implantation of a new stent 11 months ago and hypercoagulability (due to malignancy and surgical procedure). The patient's history of DES presented a dilemma for the anesthesiology, surgery, and cardiology teams in considering the optimal method to minimize the risk of perioperative bleeding and stent re-thrombosis.

Keywords: Drug-eluting stent; dual antiplatelet therapy; myocardial infarction; perioperative bleeding; stent re-thrombosis.

INTRODUCTION

The management of antiplatelet therapy in patients requiring non-cardiac surgery after percutaneous intervention with stents is one of the most discussed issues in recent years. 15% of the patients require surgery within one year of stent insertion.^[1,2] In patients with drug-eluting stent (DES), it is recommended to use antiplatelet in addition to aspirin for one year. To prevent stent thrombosis, the use of dual-antiplatelet therapy (DAPT) is necessary; however, bleeding is a condition that concerns surgeons. Patients with coronary stents are categorized according to risks of thrombosis and bleeding. The guidelines contain recommendations for antiplatelet therapy, according to which multidisciplinary planning should be implemented and the patient undergoing non-cardiac surgery should be optimized before surgery. Although the management of a patient with stent appears in guidelines, some patients may be unique and out of class. In this presentation, we aimed to present a difficult and complex case with

controversial decisions throughout the process. Written consent for this publication has been obtained from the patient.

CASE REPORT

A 55-year-old male with a recent diagnosis of distal pancreatic adenocarcinoma presented for distal pancreatectomy+spleenectomy. No pathological condition was detected in the laboratory values of the patient. The patient had an extensive medical history, with hyperlipidemia, coronary artery disease, inferior myocardial infarction (MI), 2nd-degree atrioventricular block, multiple DES implantations. DESs were implanted into the both proximal- distal right coronary artery, distal circumflex coronary artery eight years before his current presentation. DAPT with clopidogrel+aspirin (for one year) and statin therapy were initiated after the implantation of stents.

Five years later, 90% and 99% stenosis were detected in the prior and after right coronary stents and 85% stenosis before

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the circumflex artery stent. Three new generations DES implantations were performed and aspirin+prasugrel were initiated again for one year.

Two years later, stent restenosis was detected in the right coronary artery, and a new DES implanted; DAPT with prasugrel was initiated again. It was learned that the patient did not use statin due to prior intolerance. The patient was diagnosed with cancer 11 months after the last events. It was deemed necessary to proceed urgently with surgery considering patient's aggressive malignancy. Although cardiologists proposed surgery under DAPT, surgeons did not accept it due to the concern of increased risk of significant perioperative blood loss due to excessive platelet inhibition and potentially worsened patient outcomes as a result of the major surgery. This decision was made by our highly experienced cardiology and gastroenterological surgery teams and the patient discontinued prasugrel seven days before and continued aspirin. The operation is performed in a cardiac center that has a 24-hour angiography laboratory.

The patient was taken to the operating room after routine monitoring. An invasive arterial catheter was inserted, and invasive hemodynamic monitoring was ensured with Pulse Index Contour Cardiac Output (PICCO)-PROAQT technology. Preoperative bilateral erector spina block was performed with bupivacaine for perioperative analgesia. After anesthesia induction with propofol, rocuronium and fentanyl, the patient was intubated. Sevoflurane and remifentanyl were used for anesthesia maintenance. In addition to arterial pressures, cardiac output (CO), systemic vascular resistance (SVR), stroke volume variation (SVV) and pulse pressure variation (PPV) were monitored. Fluid, vasopressor and inotropic drug requirements of the patient were determined according to SVV, PPV, SVR, CO parameters. PPV values above 13% were considered as the threshold for fluid infusion. During the intraoperative period, there were no hemodynamic problems requiring inotropic or vasopressor medication. The operation started with a hemoglobin value of 12.7 g/dl and finished with 11.2 g/dl. No blood or blood product transfusion was required. At the end of the operation, the patient was extubated without any problem and taken to the surgical intensive care unit followed by the surgeons. Paracetamol and tramadol were used for postoperative analgesia. Nonsteroidal anti-inflammatory drugs were not administered because of their prothrombotic effects.

The patient underwent distal pancreatectomy+splenectomy without any problem during the surgery. After the splenectomy procedure, the patient's platelets reached 1.5 million in the postoperative unit. Cardiologists planned to continue DAPT based on a history of stent thrombosis and platelet elevation, but hematologists claimed that platelet elevation was reactive and not requiring intervention. After the confirmation of stable haemostasis, prasugrel treatment was re-started seven days after the operation. On the 14th postoperative

day, patient's drains were withdrawn. In two hours following drain removal, the patient developed abdominal distension, hemoglobin reduction and general deterioration. The patient was urgently operated on because of the findings consistent with bleeding in the abdominal ultrasound examination. Although no active bleeding was observed during emergency laparotomy, two litres of hematoma was evacuated from the abdomen. The general status was improved by fluid replacement and two units of erythrocyte suspension, and hemodynamic parameters were recovered. Platelet transfusion or blood products was not considered since active bleeding was not observed and the event was under control. Although cardiologists and anesthesiologists planned to continue DAPT at least one more month, the patient's prasugrel treatment was stopped due to the surgeons' objections; patient was discharged with high platelet value in the following days with only aspirin. A month later, the patient was examined; his platelet levels returned to normal and no negative symptoms could be found.

DISCUSSION

In noncardiac operations, myocardial injury is one of the main causes of mortality during the perioperative period. Risk stratification should be undertaken and optimised during the preoperative period to prevent potential fatal ischaemic events and uncontrolled blood loss in these patients. In the presented case, the patient had multiple thrombotic risk factors for perioperative myocardial injury, such as multiple stents, stent thrombosis history and hypercoagulability (due to malignancy + surgical procedure). The patient's history of DES presented a dilemma for the anesthesiology, surgery and cardiology teams in considering the optimal method to minimize the risk of perioperative stent rethrombosis. Collaboratively, the teams contemplated whether perioperative DAPT should be managed using the recent 2018 European Society of Cardiology/European Association for Cardio-Thoracic Surgery guideline.^[3] According to the recommendations, continuous DAPT should be used for at least six months. The last stent was implanted 11 months ago, i.e., more than six months, but the patient had a high risk of thrombosis due to a history of intimidating thrombosis. Distal pancreatectomy+splenectomy is a procedure that can be performed with aspirin in some cases, has a moderate to high risk of bleeding.^[4] Bridge therapy is recommended for patients with a high risk of thrombosis and a moderate to high risk of bleeding.^[4] Nevertheless, surgeons did not consider surgery with DAPT or bridge therapy and continued with aspirin monotherapy. Although there were no problems during the operation, depending on splenectomy, the rapid increase of platelets in the postoperative period caused concern, so DAPT with prasugrel was restarted on 7th day postoperatively. However, major hemorrhage occurred in the patient following the withdrawal of the drains. As soon as the patient was stable, the anesthesiologist and cardiologist insisted on re-initiation of DAPT, but surgeons decided to continue with aspirin.

Performing the operation without postponing was the right approach. This patient with a high thrombotic risk might have had bridge therapy, but the decision to stop using prasugrel and continue to aspirin is also reasonable. We considered that bleeding caused by drains is related to DAPT treatment. In this patient, a less potent drug, such as clopidogrel, could be preferred instead of a very potent antiplatelet, which is prasugrel.

The contribution of reactive platelet elevation after splenectomy to thrombotic events in such patients is not explicitly stated. Elevation of platelets due to a benign cause, such as frequent blood donation, may cause MI.^[5] The degree and duration of platelet elevation vary from patient to patient. Although it was not definite, elevated platelets might predispose to thrombosis.

Thromboprophylaxis is another important issue in surgical patients at risk for venous thromboembolism (VTE). The risk of thrombosis is particularly elevated by adenocarcinoma type malignancies.^[6] Anticoagulant prophylaxis should be considered in such a long hospitalized oncologic surgery patient. However, surgeons preferred mechanical prophylaxis instead of pharmacological prophylaxis. Although this patient is likely to come with VTE, both the indication and the choice of thromboprophylaxis should be individualized and adapted to each patient's specific situation. Thromboprophylaxis with LMWH/heparin is recommended in patients undergoing major surgery.^[7] LMWH or heparin treatment is not an alternative to antiplatelet therapy and is not involved in antiplatelet bridge therapy. LMWH-heparin can only be an alternative treatment in patients under warfarin therapy, which is a limited group of patients with prosthetic heart valves or atrial fibrillations.

In this case, a multidisciplinary consensus could not be reached in many subjects. Although our concern with thrombosis was more pronounced in this patient, we experienced severe postoperative bleeding. Perioperative management of a patient with such a stent history, attitude for reactive platelet increase, and approach to DVT prophylaxis has not yet

been fully elucidated. We hope that the discussion of such cases in the literature will clarify the subject.

Informed Consent: Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

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OLGU SUNUMU - ÖZET

Hepsi bir arada: Çoklu koroner stent, stent trombozu öyküsü, pankreatik karsinoma, ameliyat sonrası kanama, trombositoz

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Stenli hastaların yönetimi, her ne kadar kılavuzlarda anlatılsa da, bazı hastalar benzersiz ve sınıf dışı olabilir. Bu sunumda, hastanın perioperatif miyokart hasarına sebep olabilecek birçok trombotik risk faktörü vardır. Bu faktörler; çoklu ilaç salımlı stent öyküsü ile birlikte koroner arter hastalığı, stent trombozu öyküsü, 11 ay önce yerleştirilmiş yeni stent ve malignensi ve cerrahi işleme bağlı hiperkoagülopatidir. Hastanın ilaç salımlı stent öyküsü, perioperatif kanama ve stent tromboz riskini en aza indirmek için en uygun yöntemi düşündürerek anestezi, cerrahi ve kardiyoepi ekipleri için bir ikilem oluşturmuştur.

Anahtar sözcükler: İkili antiplatelet terapi; ilaç salımlı stent; miyokart infarktüsü; perioperatif kanama; stent trombozu.

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