

Perioperative Anaesthetic Management in a Patient with IHD And Drug Eluting Stent Undergoing Tibia Plating

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Abstract: *This case report describes the perioperative management of a 47 - year - old male patient with ischemic heart disease (IHD) and a drug - eluting stent (DES) who underwent tibial plating. The complexity of this case lies in the need to balance the risks of stent thrombosis and myocardial infarction (MI) due to the recent placement of the DES, against the risk of bleeding associated with the use of dual antiplatelet therapy (DAPT). Bridging therapy with enoxaparin was administered to mitigate the thrombotic risk, while a combined epidural and spinal anaesthetic technique was employed to ensure adequate pain control and hemodynamic stability. The case underscores the importance of a multidisciplinary approach, meticulous anaesthetic planning, and careful postoperative management to improve patient outcomes in the perioperative setting for individuals with a recent DES - PCI.*

Keywords: Ischaemic heart disease, Drug eluting stent, Dual antiplatelet therapy, perioperative management, regional anaesthesia

1. Introduction

Patients with ischemic heart disease (IHD), particularly those who have undergone percutaneous coronary intervention (PCI) with drug - eluting stent (DES) placement, are at an elevated risk during non - cardiac surgeries (NCS). These patients present a complex perioperative challenge, as anaesthetic management must balance the risks of myocardial ischemia, myocardial infarction (MI), and stent thrombosis against the potential for excessive bleeding, particularly in the context of dual antiplatelet therapy (DAPT). DAPT, commonly consisting of aspirin and a P2Y12 inhibitor such as ticagrelor, is employed to minimize the risk of thrombotic events post - DES placement. However, while DAPT significantly reduces thrombotic events such as stent thrombosis and MI, it also increases the risk of bleeding during surgery, making it a critical consideration in perioperative planning.

Interrupting DAPT therapy exposes patients to the risk of stent thrombosis and MI, whereas continuing the therapy increases the potential for surgical bleeding. The timing of surgery in relation to the placement of the DES is also an important factor in determining the thrombotic and bleeding risks. The American College of Cardiology (ACC) and American Heart Association (AHA) guidelines suggest that non - cardiac surgery should generally be delayed for at least 6 months following DES implantation to allow for proper stent re - endothelialisation and reduce the risk of stent thrombosis³. However, in cases where surgery is unavoidable or emergent, perioperative management must be individualized, with strategies such as bridging therapy to address the thrombotic risk while managing the bleeding risk associated with continuing DAPT^{1, 2}

Conversely, continuing DAPT may increase the risk of bleeding. This decision requires a collaborative, team - based approach to patient care. This case study aims to detail the anaesthetic challenges and perioperative management strategies for a patient with recent DES - PCI undergoing non - cardiac surgery

2. Case Report

A 47 - year - old male with ASA 3 physical status presented with a history of a self - fall at home 8 days ago, resulting in an injury to the left lower limb. He is a known case of IHD and underwent PTCA with DES placement 5 months ago. He is currently on Tab. Ticagrelor 90mg OD, Tab. Metoprolol 23.5mg OD, Tab. Spironolactone 50mg OD, Tab. Aspirin 75mg OD, Tab. Rosuvastatin 20mg OD. He also gave history of hypertension (HTN) for 10 years and was on Tab. Telmisartan 40mg OD. The patient was instructed to stop Tab. Ticagrelor 7 days before surgery and was started on Inj. Enoxaparin 40mg for 3 days, which was stopped 24 hours before surgery. The patient's height is 165 cm, and weight is 60 kg. Airway examination: Mallampati class IV, mouth opening > 2 fingers. The complete blood count and other investigations were within normal limits. 2D Echo: IHD S/P PTCA, adequate LV function (50%).
Anaesthetic Technique:

The patient was prepared for surgery under general and regional anaesthesia. After appropriate baseline monitoring (ECG, non - invasive blood pressure, pulse oximetry), and under sterile conditions, the following steps were undertaken:

1) Regional Anaesthesia with combined spinal and epidural Anaesthesia

The patient was positioned in a sitting posture. An 18G Tuohy catheter was inserted into the L2 - 3 epidural space using the Loss of Resistance (LOR) technique. Epidural anaesthesia was planned to provide effective intraoperative pain management, along with the potential to adjust the block if necessary.

A 26G spinal needle was used to administer Bupivacaine Heavy (10 mg) and Fentanyl (25 mcg) at the L3 - 4 level. After confirming free flow of cerebrospinal fluid (CSF), a sensory level of T8 and a motor level of T12 was achieved.

Given the risks of hypotension associated with central neuraxial blockade, adequate preload was ensured using

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crystalloid fluids. Additionally, vasopressors such as phenylephrine were kept available in case of significant hypotension. Monitoring: Continuous monitoring of ECG, blood pressure, oxygen saturation, was performed. Hemodynamic parameters were carefully maintained within the target range to avoid ischemia and arrhythmias.

The procedure, tibial plating, was carried out under a combined epidural and spinal anaesthesia technique. The patient remained hemodynamically stable throughout the surgery, with no signs of ischemia or arrhythmias. Adequate analgesia was maintained with the epidural catheter, and there were no complications related to the anaesthesia technique.

Postoperative Management:

Postoperatively, the patient was shifted to the Post Anaesthesia Care Unit (PACU) for recovery and observation. The patient was monitored for any signs of ischemia, arrhythmias, or complications related to anticoagulation therapy.

3. Discussion

The primary goal of anaesthetic management in patients with DES - PCI is to avoid myocardial ischemia and MI. The ACC/AHA guidelines recommend a delay of at least 6 weeks between the insertion of a bare metal stent and non - cardiac surgery, and a 6 - month (preferably 1 year) delay for drug - eluting stents³. This allows time for stent re - endothelialisation. If stent placement is necessary before surgery, a bare - metal stent or simple angioplasty is preferred.

Regional anaesthesia was chosen over general Anaesthesia due to its ability to provide adequate pain control while maintaining hemodynamic stability. In patients with ischemic heart disease, regional anaesthesia offers several advantages, including reduced stress response, better pain control, and reduced cardiovascular risks.

In patients with recent coronary angioplasty and stenting, stopping dual antiplatelet therapy (DAPT) increases the risk of stent thrombosis and MI, while continuing DAPT increases the risk of surgical bleeding in the perioperative period². The use of low - dose aspirin (75 mg/day) in patients undergoing non - cardiac surgery should be based on an individualized decision, considering the perioperative bleeding risk versus the risk of thrombotic complications.

This case highlights the delicate balance between thrombotic and bleeding risks in perioperative settings, contributing valuable insights to anaesthetic decision - making in patients with recent coronary interventions

Bridging Therapy:

Bridging therapy is used for selected patients with high thrombotic profile undergoing surgery, who are at risk for haemorrhage and in whom DAPT must be stopped as surgery cannot be delayed¹. Either spinal or epidural anaesthesia can be a good choice in intermediate - low risk surgery. In this case, since it is intermediate - risk surgery, combined epidural anaesthesia and spinal anaesthesia (EA + SAB) is a better choice. Central neuraxial blockade can cause hypotension, which can be treated with adequate preload and vasopressors such as phenylephrine. Surgery performed less than 6 months

after DES - PCI is associated with an increased risk of adverse events compared with surgery performed after 6 months.¹

4. Conclusion

This case report highlights the complexity of managing a patient with recent DES - PCI undergoing non - cardiac surgery. The use of combined regional anaesthesia, bridging therapy, and careful perioperative monitoring are critical to minimizing risks and optimizing outcomes. In patients with ischemic heart disease and DES, a multidisciplinary approach is essential to balance thrombotic and bleeding risks and ensure patient safety during the perioperative period.

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