

Case Report

Emergency Surgery on Patients Receiving Dual Antiplatelet Therapy — Review of a Challenging Surgical Problem

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Patients on Dual Antiplatelet therapy often suffer from surgical problems that necessitate urgent surgery. Platelet dysfunction induced by the medications exposes them to the risk of major perioperative haemorrhage. Cessation of antiplatelet agents on the other hand increases the risk of adverse outcome due to their concomitant medical illnesses.

We report our experience of performing major surgeries in two patients receiving dual antiplatelet therapy whose medications had to be continued perioperatively. The multidisciplinary care involved in optimisation and monitoring of the patients ensured a successful immediate recovery. We lost one of the patients who contracted COVID-19 later and succumbed from his medical problems but could discharge the other patient successfully.

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Dual antiplatelet therapy (DAPT) is currently prescribed for a wide array of indications starting from selected patients with Acute Coronary Syndrome, Myocardial Infarction, Strokes or Transient Ischaemic Attack (TIA)¹⁻³. It is also prescribed for patients who have undergone Coronary Artery Bypass Grafting⁴.

With the advancements made in medical knowledge and technology over the years, the current society has seen an increase in the lifespan as well as quality of life. Therefore, a significant number of patients on Dual Antiplatelet therapy manage to return to an active lifestyle and importantly get stepped down to Aspirin Monotherapy after a mandatory period of DAPT usage. Unfortunately, quite a few of these patients are found to need a surgical procedure to treat their non-coronary problems.

The decision-making algorithm is simple when an elective surgical procedure e.g. a hernia repair of a hernia, is concerned – the period of mandatory DAPT may be tided over before offering surgery. The situation turns complex if such a patient needs emergency, life-saving surgery. The problem of graft occlusion must be titrated against the possibility of exsanguinating perioperative haemorrhage and multidisciplinary care becomes necessary.

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Editor's Comment :

- Emergency surgery on patients receiving DAPT is challenging but needs to be performed occasionally.
- More surgeons are expected to face this situation with widening scope of DAPT.
- A thorough teamwork and peri operative care is essential for a satisfactory outcome.

We bring forward our experience of treating two patients who underwent major abdominal surgeries while on DAPT.

CASE REPORT

Case 1 :

A fifty nine year old female patient was admitted under the care of the Gastroenterologists with the complaints of abdominal pain, bloating and worsening diarrhoea for the last four years. She was now forced to go at least four times on a better day and the frequency could go much higher on a bad day. The motions were often mixed with blood - Her situation had worsened over the last four months. Unfortunately, she had suffered a Myocardial Infarction a month back and was on ticagrelor and Aspirin dual therapy at admission.

She had been treated with Radiotherapy ten years back for anal cancer. As a sequel, she developed rectovaginal fistula that had healed spontaneously. A colonoscopy performed as part of follow up care had detected diverticulosis. A smoker who drank sparingly, she had undergone previous cholecystectomy. She had no personal or family history of Inflammatory Bowel Disease.

At admission she was found to be tachycardiac with raised inflammatory markers. She was admitted under the Gastroenterologists and after an initial assessment was started on intravenous steroids. Her inflammatory

markers improved but she continued to be suffering from loose motions and episodic crampy abdominal pain. She was started on Infliximab as rescue therapy and a CT scan was requested. The initial scan detected mural thickening of the transverse and descending colon with pericolic fat stranding. Terminal ileum was reported to be intact. She was continued on medical therapy and remained stable. Her symptoms did not abate completely. A repeat CT scan performed two weeks later revealed increased periadventitial fat stranding and a surgical review was requested. She had no evidence of rigidity or peritonism – a decision was made to continue medical treatment but monitor her with regular abdominal x rays (AXR) to detect any evidence toxic dilatation. Her situation was discussed with the Haematology, Cardiology, Gastroenterology and Critical Care teams in anticipation. Marked colonic dilatation was noted on AXR the following day and confirmed with an urgent CT scan which also detected intrahepatic portal venous air. She had, by this time, turned tachycardiac with diffuse abdominal tenderness.

In view of the worsening features a decision to offer surgery without cessation of DAPT was made – the high risk of mortality was explained to the patient and the family. She received 2 units of packed cells and cryoprecipitate prior to induction. Toxic Megacolon with ischaemic patches showing signs of impending perforation was detected at laparotomy – she underwent a total colectomy with ileostomy. A thorough washout was performed after meticulous haemostasis and drains were left in hepatorenal pouch and pelvis. Diffuse ooze from abdominal cavity was noted, unsurprisingly, throughout the operation.

Postoperatively she received Level 2 care and DAPT was continued as advised by cardiologists. 950 ml of drain output with falling haematocrit was noted on serial assessment in the first four hours and she continued to have volume responsive hypotension needing inotropic support. In view of a high risk of mortality, any relaparotomy was ruled out. She received 4 units of packed cells, 2 units of Platelet Rich Concentrate and Cryoprecipitate immediately and significant reduction in drain output was noted by six hours of surgery.

She could be extubated the following day and her ileostomy started functioning by the third day. Though she developed a wound infection that needed vacuum assisted dressing, she continued to improve and after a protracted recovery was discharged by seven weeks.

The histopathology showed features of indeterminate colitis with focal perforations.

Case 2 :

A seventy two year old gentleman presented to the emergency with painful, irreducible and complete right sided inguinoscrotal hernia. He was a known diabetic patient dependent on haemodialysis who could walk only a short distance. He had suffered from a myocardial Infarction five months ago and was on Clopidogrel and Aspirin dual therapy. Coronary Artery Bypass Grafting or

stenting had not been performed as he was suffering from Chronic Heart Failure. He had developed the hernia around six months ago and had been reviewed at the Emergency Department with the same problem two weeks earlier – the hernia had been reduced and the patient discharged.

At assessment, the patient appeared toxic and unwell with a tense, tender and irreducible right inguinoscrotal herniation. The clinical situation was discussed with the Cardiologists, Critical Care team and Renal Physicians before deciding to offer surgery and a review was performed by the Anaesthesiology team. The patient was consented after explaining the high risk of mortality, more so because of the possibility of bowel resection. DAPT was continued on the advice of the Cardiology team.

At exploration, Maydl's Type hernia through a posterior wall defect was noted. The trapped bowel was dusky and stapled resection anastomosis sacrificing 15 cm of small bowel was necessary before a mesh hernioplasty could be performed. A scrotal drain was placed, and the patient received platelet Rich Concentrate during wound closure. After successful extubation, he was offered bedside Haemofiltration and received Level 2 care. He was able to eat and drink by the second postoperative day and was back on regular haemodialysis from the following day. Antiplatelet therapy was temporarily withheld from the second day in view of fresh bleeding from around drain site but could be reinitiated after three days. He opened his bowels on the tenth day but started developing shortness of breath from thirteenth day onwards. Unfortunately, he tested positive for Covid-19 and had to be transferred to a tertiary care institute offering Haemodialysis to similar patients. Though he recovered well from the surgery apart from wound infection, he succumbed to his medical problems later.

DISCUSSION

Operating on patients receiving DAPT is always a challenge. It is known that an increased bleeding risk is associated in these patients even without any surgery⁵. Cessation of antiplatelet agents in post myocardial infarct patients is fraught with the dangers of graft thrombosis or occlusion which may have a negative impact on the outcome of an otherwise successful surgical procedures. For elective surgery, the option to defer the surgery to a safer later period exists. No such advantage exists when a surgeon needs to decide for an urgent lifesaving surgery.

Common surgical ailments and emergencies including trauma are not entirely avoidable in any patient subset and this hold true for patients on DAPT as well. The decision to offer surgery needs to be made in consultation with the Cardiologists, Haematologists and the Critical Care team. Such patients often have other organ dysfunctions as well and are best cared post-operatively in a Level 2 or a Level 3 facility. Our first patient did not have any other medical problems, but the second patient had renal compromise and was dialysis

dependent. Meticulous haemostasis must be considered when undertaking such high-risk surgeries. It is not completely possible to prevent diffuse ooze from dissected surfaces in such patients because of the platelet dysfunction induced by the DAPT but it is to the surgical team to ensure cessation of preventable blood loss to avoid post-operative exsanguination – any attempt at re-exploration would definitely add to the ensuing morbidity and mortality profile.

There are definitive recommendations about perioperative DAPT management when the prospect of elective surgery is assessed. It is advisable to delay an elective procedure till the period of re-endothelialization is crossed. The recommended delay is around 2 weeks after a balloon procedure, 30 days after a bare metal stent placement and around three months (preferably 6 months) if a drug eluting stent has been placed⁶. For an elective procedure Clopidogrel, Prasugrel or Ticagrelor may be stopped 5-7 days, 7-10 days and 3-5 days prior to surgery respectively. Aspirin is usually continued except for intracranial operations. However, such planning is not possible when it comes to urgent, life saving procedures. The European College of Cardiologists⁷ provided some directive suggests delaying the surgery if possible, for at least 30 days but preferably 3-6 months after the cardiac event but continue DAPT perioperatively if the bleeding risk is acceptable. If the risk of bleeding is higher, Aspirin Monotherapy may be used perioperatively with initiation of DAPT as soon as possible. If the operation involves loss of a significant amount of blood, stopping DAPT may be attempted but bridging with intravenous Cangrelor or Eptifibatide may be protective.

We had discussed the profile of our patients with the Cardiology team at multiple occasions in the perioperative period and continued with DAPT based on their recommendations which was based on their assessment of the risk of graft thrombosis versus the risk of perioperative bleeding.

CONCLUSION

Emergency surgery on patients receiving DAPT is a major surgical challenge that calls for delicate tissue handling and meticulous haemostasis. A multidisciplinary approach is necessary perioperatively to ensure a favourable outcome. Though challenging, in view of the widening use of DAPT, it is foreseeable that surgeons will be operating on similar situations more frequently in the coming days and will need to be aware of the strategic decisions in peri-operative care.

REFERENCES

- 1 Wilson SJ, Newby DE, Dawson D — *Heart* 2017; **103**: 573-80.
- 2 Degrauwe S, Pilgrim T, Aminian A — Dual antiplatelet therapy for secondary prevention of coronary artery disease. *Open Heart* 2017; **4**: e000651. doi: 10.1136/openhrt-2017-000651.eCollection 2017.
- 3 Johnston SC, Amaranco P, Denison H — Ticagrelor and Aspirin or aspirin Alone in Acute Ischaemic stroke or TIA. *NEJM* 2020; **383**: 207-17. doi: 10.1056/NEJMoa1916870.
- 4 Antithrombotic Treatment after Coronary Artery Bypass Surgery: Systematic Review and Network Meta-Analysis. *BMJ* 2019; **367**: 15476. doi: 10.1136/bmj.l5476.
- 5 Doyle BJ, Rihal CS, Gastineau DA — Bleeding, Blood Transfusion and Increased Mortality after Percutaneous Coronary Intervention: Implications for Contemporary Practice. *J Am Coll Cardiol* 2009; **53(22)**: 2019-27. doi: 10.1016/j.jacc.2008.12.073.
- 6 Song JW, Soh S, Shim JK — Dual Antiplatelet Therapy and Non-Cardiac Surgery: Evolving Issues and Anaesthetic Implications. *Korean Journal of Anaesthesiology* 2017; **70(1)**: 13-21. doi: 10.4097/kjae.2017.70.1.13.Epub 2017 Jan 26.
- 7 Valgimigli M, Bueno H, Byrne RA — 2017 ESC Focused Update on Dual Antiplatelet Therapy in Coronary Artery Disease Developed in Collaboration with EACTS: The Task Force for Dual Antiplatelet Therapy in Coronary Artery Disease of the European Society of Cardiology (ESC) and of the European Association for Cardio-Thoracic Surgery (EACTS).