

Robotic-assisted abdominal surgery in post-renal transplant patient-protect the transplanted organ

Sir,

A 49-year-old male with a body mass index of 27.5 kg/m² was posted for robotic-assisted anterior resection of a rectal tumour. He had a history of diabetes mellitus for 8 years and hypertension for the past 3 years. The patient developed chronic kidney disease eventually leading to end-stage renal disease for which he received a renal transplant 2 years ago. The patient was taking tablet prednisolone 5 mg once a day, tablet mycophenolate 720 mg twice a day and tablet tacrolimus 1 mg twice a day for immunosuppression. Pre-operatively, all laboratory investigations were normal including serum creatinine, fasting and post-prandial blood sugar levels. Blood levels of tacrolimus were measured pre-operatively which were found to be normal. The dose of prednisolone given perioperatively was 20 mg. He was enrolled under enhanced recovery after surgery (ERAS) pathway, but was not given carbohydrate loading night before or the morning of surgery in view of his diabetes. Anaesthesia was induced with fentanyl, propofol and atracurium. The left radial artery was cannulated for arterial blood pressure monitoring. Maintenance of anaesthesia was with oxygen, air and isoflurane. Camera port was inserted at the 2 cm from umbilicus on the left side. There was a retroperitoneal bulge of a transplanted kidney in the right iliac fossa. Care was taken not to harm transplanted kidney and its ureter during surgical resection. The patient was placed in Trendelenburg position for robotic-assisted surgery. Abdominal pressure was kept between 8 and 10 mmHg. After mobilization of rectum total mesorectal resection was done ensuring safe margins which were followed by anastomosis.

The total duration of surgery was 6 h during which total fluid infused was 3000 ml of ringer lactate based on pulse pressure variation. Urine output was measured hourly with the total output being 1850 ml. We anticipated a decreased urine output due to surgical stress to kidney and increased abdominal pressure, but urine output was good throughout the surgery, indicating well-functioning kidney, and intraoperative

mean arterial blood pressure was maintained above 70 mmHg at all times. Hourly blood gases and blood sugar were monitored, and strict glycaemic control was done by intravenous insulin infusion to maintain blood sugar below 180 mg/dl. For post-operative pain control, paracetamol 1 g was given 6 hourly for 3 days. The amount of fluid (Ringer lactate) given post-operatively was calculated by equating to urine output plus 50 ml/h.

In the history, particular attention should be given to the maintenance immunosuppressive agents and their adverse effects along with any signs of graft rejection likewise ruling out any sort of infection. It is imperative to realise that the routine signs of infection in the form of fever, leucocytosis may not be present in these patients because of the immunosuppressive agents.

Conventional regimen for immunosuppression such as cyclosporine causes hypertension, leading to a higher propensity of cardiac diseases in these patients who already have many risk factors for coronary artery disease. Azathioprine and mycophenolate may cause bone marrow suppression.^[1] Tacrolimus, cyclosporine and steroid lead to diabetes mellitus.^[2]

An acute rise of serum creatinine levels to more than 20%–30% indicates allograft rejection and should be investigated further to rule out the same in the perioperative period.^[2] These patients have a high propensity of infection because of immunosuppression, and hence, meticulous care should be taken to prevent any infection. Minimally invasive surgery has an advantage by limiting the proinflammatory response to surgical trauma. For maintaining adequate blood flow to the kidney, it is essential to have a good renal perfusion pressure which in turn depends on preserving the cardiac output as well as the systemic blood pressure. Target mean arterial pressure should be 65–75 mmHg and higher target of more than 75 mmHg in hypertensive patient is imperative. Pre-conditioning in the form of 10 min inflation followed by 10 min of deflation followed by prolong inflation period reduces the oxidative stress to the kidney.^[3] Renoprotective measures should be started pre-operatively which includes optimising the volume status, strict glycaemic control, rectifying any metabolic and electrolyte derangements, avoiding any nephrotoxic agents, maintaining cardiac output and systemic arterial pressure and ischaemic pre-conditioning. Volatile anaesthetics have a proven pre-conditioning effect on the kidney.^[4] Implementing ERAS in transplant patient is feasible which reduces the stay in the hospital with

the supplementary advantage of lower rates of infection. Prevention of leak from anastomosis site is essential, as post-transplant patients on immunosuppressants are at high risk of a leak. Protection of anastomosis can be assured by making a temporary diversion stoma. If the patient is on cyclosporine, it predisposes them to deep vein thrombosis.^[2] Hence, prophylaxis in the form of unfractionated heparin or dose-adjusted low molecular weight heparin is advised.^[5]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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