Case Report

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Anaesthesia Section

Thoracic Segmental Spinal Anaesthesia for Emergency Palliative Mastectomy with Moderate Pericardial Effusion: A Case Report

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ABSTRACT

Breast cancer may rarely present as Locally Advanced Breast Cancer (LABC) with acute severe bleeding. In some cases, breast haemorrhage can be a life-threatening condition for patients, and its treatment includes compressive dressing, the use of topical or intravascular haemostatic agents, radiotherapy, and surgery. Additionally, breast cancer patients in the geriatric population are commonly associated with coexisting major medical illnesses, which makes anaesthetic management challenging. In such cases, regional anaesthesia is a preferable option over General Anaesthesia (GA). Hereby, the authors present a case report in which Thoracic Segmental Spinal Anaesthesia (TSSA) is used as the sole anaesthetic plan for a palliative simple mastectomy in an elderly female patient (74-year-old) with a bleeding carcinoma of the breast, poor cardiopulmonary reserve, and moderate pericardial effusion. The present findings support that TSSA can be effectively utilised as the sole anaesthetic technique in a breast cancer patient with moderate pericardial effusion when breast haemorrhage is life-threatening.

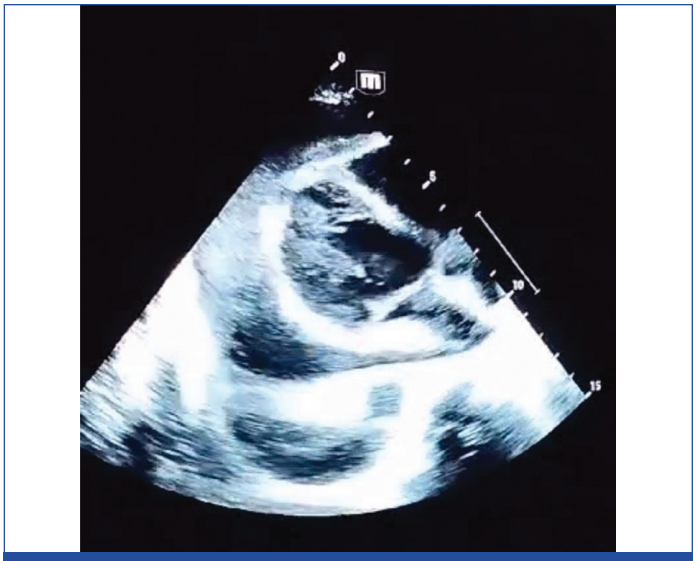
Keywords: Breast carcinoma, Palliative surgery, Simple mastectomy

CASE REPORT

A 74-year-old female weighing 38 kg, with a known case of left locally advanced breast cancer (T4aN1Mx), who had been lost to follow-up for two months, presented to the Emergency Department at midnight with the chief complaint of a bleeding wound located in the left upper quadrant of her breast. As a primary measure, sterile gauze pads soaked in injection tranexamic acid were applied along with chest compression dressings secured with a crepe elastic bandage to achieve haemostasis. Simultaneously, intravenous fluid resuscitation and 1 g of injection tranexamic acid, along with metronidazole, were infused into the patient, and a complete haemogram, blood grouping, coagulation profile, and viral markers were sent for analysis.

The surgical oncology team planned for an emergency palliative mastectomy after optimisation. During the preanaesthetic evaluation, no significant co-morbidities were found. The patient's medical record indicated that she had received eight cycles of neoadjuvant chemotherapy (trastuzumab and paclitaxel injections) two months prior. Upon assessment, the patient's heart rate was 122 beats per minute, and her blood pressure was 94/72 mmHg in the supine position. Moderate pallor and bilateral pitting pedal oedema (grade 2, upto the ankles) were noted. The patient did not complain of back pain, numbness, or tingling sensations either upper limbs and lower limbs. Her Body Mass Index (BMI) was 18.1 kg/m^2, and her effort tolerance was poor, with metabolic equivalents less than four.

Local site examination revealed a gauze pad soaked with blood at the wound site, indicating ongoing bleeding from the tumour. Baseline investigations showed a haemoglobin level of 5.5 g/dL, after which two units of Packed Red Blood Cells (PRBC) were transfused in the onco-emergency unit, raising the haemoglobin level to 7.3 g/dL. A four-month-old Positron Emission Tomography/Computed Tomography (PET/CT) scan showed locally advanced disease with no distant metastasis, including the spine. The anaesthetist performed a 2-dimensional echocardiogram as a routine procedure for emergency surgeries. The echocardiogram indicated no regional wall motion abnormalities, an ejection fraction of 55%, no clot in the left atrium, and moderate pericardial effusion [Table/Fig-1].



[Table/Fig-1]: Patient's 2D Echo showing moderate pericardial effusion.

Due to the semi-emergency nature of the surgery, no further optimisation could be performed, so a regional anaesthesia plan was established for the palliative simple mastectomy. After obtaining written and informed consent, the patient was shifted to the operating theater. The American Society of Anaesthesiologists (ASA) standard monitors were attached to the patient. Under local anaesthesia, an invasive arterial and central venous line was inserted. Subsequently, the patient was co-loaded with 250 milliliters (mL) of Ringer's lactate solution.

Taking aseptic precautions and performing skin infiltration, Thoracic Segmental Spinal Anaesthesia (TSSA) was administered at the thoracic level 5-6 intervertebral space using the median approach in a sitting position with a 27-G Quincke spinal needle (B Braun) [Table/Fig-2]. Isobaric levobupivacaine 0.5% (1.0 mL) and fentanyl

(10 mcg) were injected intrathecally. The onset time of the spinal anaesthesia was two minutes, and the level of sensory block was assessed using the pin-prick method. The motor block was evaluated using the Epidural Scoring Scale by Arm Movement (ESSAM) score for the upper limb, which comprises four grades (0-3) assessing hand grip (T1/C8), wrist flexion (C8/C7), and elbow flexion (C6/C5). A sensory level from T2 to T10 was achieved, which was deemed adequate.

[Table/Fig-2]: Thoracic Segmental Spinal Anaesthesia (TSSA) at T5-T6 level in sitting position.

The patient's vital signs were monitored at five-minute intervals. Intraoperatively, two units of PRBCs, along with 500 mL of Ringer's lactate, were transfused. At the end of the surgery, an intravenous injection of paracetamol (1 gram) was administered. The surgery lasted 90 minutes, with an approximate blood loss of 250 mL. The surgery (palliative simple mastectomy) was uneventful, and the patient was transferred to the Post-anaesthesia Care Unit (PACU) for hourly vital sign monitoring and input-output charting as part of postoperative care. The patient remained conscious throughout the procedure and did not experience any discomfort during the intraoperative period. Patient satisfaction with the spinal anaesthesia was assessed using a 5-point Likert patient satisfaction scale (1-5) after the completion of the surgery, resulting in a score of 5/5. The surgeons appreciated the relaxation and noted no technical difficulties during the surgical procedure. In the PACU, the patient recovered quickly and was discharged.

DISCUSSION

Breast cancers rarely present as LABC, with an incidence of about 5% among newly diagnosed breast cancers. Acute breast bleeding is seldom reported, although it may occur, primarily in cases of LABC. This condition can be life-threatening, and treatment options include compressive dressing, the use of topical or intravascular haemostatic agents, radiotherapy, and surgery [1,2].

Breast cancer in geriatric patients is commonly associated with co-existing significant medical conditions, making anaesthetic management challenging. The present patient presented with bleeding LABC and demonstrated poor cardiopulmonary reserve, along with an incidental finding of moderate pericardial effusion, which adds further challenges for the anaesthesiologists. Malignant causes of pericardial effusion are quite common, occurring in 12% to 23% of cases, and are associated with various malignancies such as lung cancer, ovarian tumours, and breast cancer. The diagnosis may be clinical or incidental but typically relies on Transthoracic Echocardiography (TTE) and/or CT scans of the thorax. Pericardial effusion accounts for nearly one-third of all cases of cardiac tamponade [3,4].

In present patient, signs of cardiac tamponade were ruled out. The management of the pericardial effusion remains conservative until cardiac tamponade is manifested.

Palliative mastectomy is performed to treat advanced breast cancer, including cases of fungating tumours, bleeding, ulceration, and malodorous discharge from the breast tumour [5]. This surgical procedure involves the removal of the entire breast tissue along with the skin. Since, it does not require axillary dissection, a higher level of sensory block (T1) and an additional dose of systemic analgesic are usually not necessary.

The literature indicates that Paliwal N et al., conducted a prospective randomised controlled open-label trial involving 56 female patients scheduled for breast cancer surgery. They injected a total volume of 1.4 mL of medication intrathecally, which comprised 1 mL of 0.5% isobaric levobupivacaine and 20 mcg of fentanyl and suggested that TSSA may be considered a sole anaesthetic technique in breast cancer surgeries combined with axillary lymph node clearance, such as modified radical mastectomy or breast-conserving surgeries [6]. Karthik GS et al., conducted a study on 30 patients with breast cancer who were scheduled for short-duration (less than 90 minutes) breast surgeries and concluded that thoracic spinal anaesthesia is an excellent alternative to GA [7]. Therefore, TSSA was planned for the proposed surgery, particularly in cases of cardiac compromise where GA is associated with greater complications. TSSA has made it feasible for patients to undergo certain major emergency surgeries. However, the use of TSSA requires significant experience and caution.

In a case series by Deshpande JP et al., TSSA demonstrated an effective role in managing patients with multiple co-morbidities undergoing hernioplasty [8]. Similarly, in present case, where the patient had poor effort tolerance, compromised cardiac status, and advanced disease, TSSA proved to be an effective technique.

In present situation, the patient's haemodynamics were maintained without the use of any vasoactive drugs, and no complications associated with TSSA were observed. Other studies have also reported no hemodynamic instability or significant adverse effects [9-11]. The surgeon expressed satisfaction with TSSA, noting that it provided adequate muscle relaxation during the surgery and facilitated early ambulation of the patient in the PACU. In parallel, Borah M et al., described TSSA as a safe and feasible technique that offers good perioperative analgesia and muscle relaxation [11].

Our case will be the first to report a palliative simple mastectomy performed in an exsanguinating haemorrhagic breast tumour in a patient with moderate pericardial effusion using the TSSA technique. The effective planning of the anaesthesia technique for the proposed surgery improved the patient's quality of life, which should be prioritised.

CONCLUSION(S)

The present case report provides preliminary evidence to support the feasibility and efficacy of TSSA in patients with cardiac compromise undergoing emergency palliative mastectomy. TSSA offers a viable alternative to GA for such patients. The advantages of TSSA over GA include early mobilisation of patients, shorter hospital stays, and reduced postoperative pain and opioid consumption during the perioperative period. However, every patient is unique, and the present case report can assist anaesthesiologists in expanding their knowledge and skills while managing such challenging cases.

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