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A novel regional approach for anaesthesia in major abdominal oncosurgeries: The EPIMENTAL case series

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Abstract

The incidence of cancer and need for cancer surgeries has increased in recent times probably due to widespread prevention campaigns and availability of modern diagnostic tools. General anaesthesia is currently the most extensively used technique but is not only associated with many adverse outcomes but also have deleterious effect on cancer survival. With the modernisation of anaesthetic strategy, focus is slowly shifting towards the regional techniques because of potential in maintaining better physiological functions perioperatively. We have phased in a novel technique of regional anaesthesia i.e. the EPIMENTAL approach, and conducted a case series on five cancer patients who underwent major abdominal oncosurgeries, with the hypothesis of maintaining a streamlined level of non-overlapping segment of dermatome block. Introduction of Epimental approach, might pave a newer dimension in the world of regional anaesthesia in terms of maintaining a better haemodynamic profile of the cancer patients.

Keywords: EPIMENTAL approach; Segmental spinal; Epidural; Postoperative Analgesia; Regional Anaesthesia; Onco-Surgeries

1. Introduction

The incidence of cancer and need for cancer surgeries has increased in recent times probably due to widespread prevention campaigns and availability of modern diagnostic tools. General anaesthesia is currently the most extensive technique used for surgical treatment of cancers. But as we all know general anaesthesia is associated with higher incidence of nausea vomiting, higher stress response, load of mitigating the side effects of a large number of drugs, and thus increasing the length of ICU as well as hospital stay, thus, adding to the already weakened burden of physical and psychological health of onco patients.[1]

On the other hand, regional anaesthesia technique can help tackle and help reduce all these side effects of general anaesthesia and might provide better analgesia with reduced dependence of parental opioids in postoperative period.[2,3] Moreover lesser use of general anaesthetic drugs (except propofol) and proven protective action of local anaesthetics on cancer cell migration makes it more beneficial for patients undergoing onco surgeries.[4,5]

There is a hesitation to give spinal anaesthesia above the termination of conus medullaris with a fear of injuring spinal cord. However, there are many studies that demonstrated that segmental spinal anaesthesia, using isobaric drugs is safe and effective method.[6] Adding the potency of the epidural anaesthesia to the segmental spinal anaesthesia (the

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EPIMENTAL approach) can not only promote a non-overlapping segments of motor block, but also help in reducing postoperative morbidities.

Based upon this hypothesis, we conducted a case series of EPIMENTAL anaesthesia on five patients who underwent major abdominal oncosurgeries.

2. Case presentation

2.1. Case I

A 58-year-old female with no history of comorbidities, diagnosed with bilateral ovarian mass, was planned for exploratory laparotomy and mass excision. PAC was done and informed consent was taken, patient was thereafter shifted to OT. After obtaining two wide-bored intravenous access, monitors were attached. Epidural catheter was inserted at the level of T8-9 interspace using LOR technique, confirmation of which was done by positive meniscus sign. Segmental spinal anaesthesia was given at L1-2 interspace with 25G Quincke's needle using 2.8ml of 0.5% isobaric Levobupivacaine and 150mcg morphine. Pain sensation i.e. sensory block was checked using blunt needle tip. The sensory block was found to be present from the level of T11 to L5. Infusion Ropivacaine 0.5% isobaric was started through epidural catheter immediately after establishing the sensory block. After 10 mins, the level of sensory block was re-evaluated and was found to be present from T6 to L5. After establishing the adequacy of the block, the surgeon was asked to proceed with the incision (Fig 1). The duration of the surgery was 180 minutes. The haemodynamic stability was maintained throughout, required only 6 mg of intravenous Mephentermine.

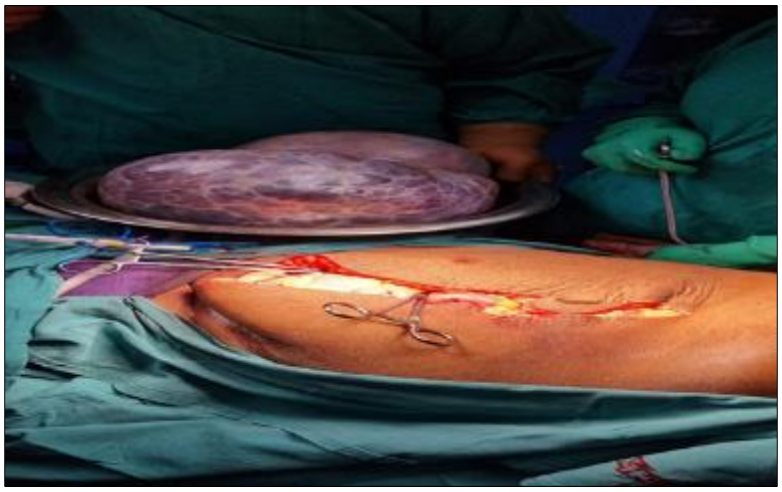

Figure 1 Exploratory Laparotomy for ovarian mass excision

2.2. Case II

A 66-year-old male with history of hypertension, diagnosed with carcinoma of urinary bladder, was planned for Radical cystectomy with ileal conduit. PAC was done and informed consent was taken, patient was thereafter shifted to OT. After obtaining two wide-bored intravenous access, monitors were attached. Epidural catheter was inserted at the level of T9-10 interspace using LOR technique, confirmation of which was done by positive meniscus sign. Segmental spinal anaesthesia was given at L1-2 interspace with 25G Quincke's needle using 2.8ml of 0.5% isobaric Levobupivacaine and 150mcg morphine. Pain sensation i.e. sensory block was checked using blunt needle tip. The sensory block was found to be present from the level of T11 to L5. Infusion Ropivacaine 0.5% isobaric was started through epidural catheter immediately after establishing the sensory block. After 10 mins, the level of sensory block was re-evaluated and was found to be present from T7 to L5. After establishing the adequacy of the block, the surgeon was asked to proceed with the incision (Fig 2). The duration of the surgery was 220 minutes. The haemodynamic stability was maintained throughout, requiring 12mg of intravenous Mephentermine.

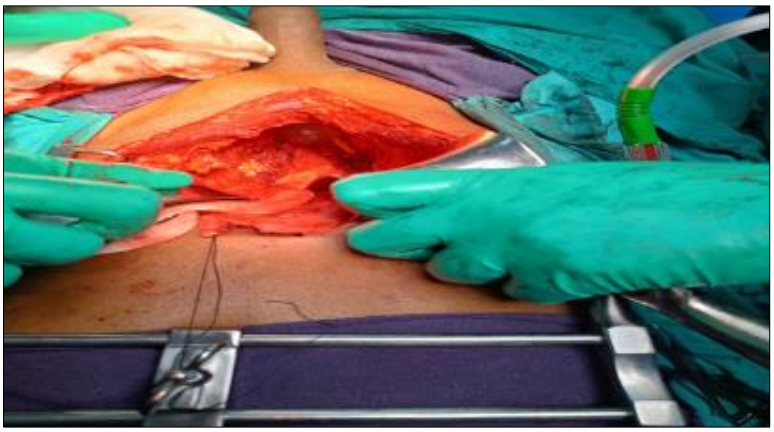

Figure 2 Radical Cystectomy with ileal conduit

2.3. Case III

A 60-year-old female with history of hypertension and Type II diabetes mellitus, diagnosed with endometrial carcinoma, was planned for Interval Debulking Surgery with bilateral pelvic and aortic lymph node dissection. PAC was done and informed consent was taken, patient was thereafter shifted to OT. After obtaining two wide-bored intravenous access, monitors were attached. Epidural catheter was inserted at the level of T8-9 interspace using LOR technique, confirmation of which was done by positive meniscus sign. Segmental spinal anaesthesia was given at L1-2 interspace with 25G Quincke's needle using 2.8ml of 0.5% isobaric Levobupivacaine and 150mcg morphine. Pain sensation i.e. sensory block was checked using blunt needle tip. The sensory block was found to be present from the level of T11 to L5. Infusion Ropivacaine 0.5% isobaric was started through epidural catheter immediately after establishing the sensory block. After 10 mins, the level of sensory block was re-evaluated and was found to be present from T6 to L5. After establishing the adequacy of the block, the surgeon was asked to proceed with the incision (Fig 3). The duration of the surgery was 260 minutes. The haemodynamic stability was maintained throughout, requiring 6mg of intravenous Mephentermine.

Figure 3 Interval Debulking Surgery with bilateral pelvic and aortic lymph node dissection

2.4. Case IV

A 43-year-old female with history of hypertension, diagnosed with retroperitoneal tumour, was planned for Exploratory laparotomy and mass excision. PAC was done and informed consent was taken, patient was thereafter shifted to OT. After obtaining two wide-bored intravenous access, monitors were attached. Epidural catheter was inserted at the level of T9-10 interspace using LOR technique, confirmation of which was done by positive meniscus sign. Segmental spinal anaesthesia was given at L1-2 interspace with 25G Quincke's needle using 2.8ml of 0.5% isobaric Levobupivacaine and 150mcg morphine. Pain sensation i.e. sensory block was checked using blunt needle tip. The sensory block was found to be present from the level of T11 to L5. Infusion Ropivacaine 0.5% isobaric was started through epidural catheter immediately after establishing the sensory block. After 10 mins, the level of sensory block was re-evaluated and was found to be present from T7 to L5. After establishing the adequacy of the block, the surgeon was asked to proceed with

the incision (Fig 4). The duration of the surgery was 200 minutes. The haemodynamic stability was maintained throughout, requiring 12mg of intravenous Mephentermine.

Figure 4 Exploratory Laparotomy for retroperitoneal tumour excision

2.5. Case V

A 74-year-old male with history of hypertension, Type II diabetes mellitus and chronic kidney disease, diagnosed with colon carcinoma, was planned for Right Hemicolectomy. PAC was done and informed consent was taken, patient was thereafter shifted to OT. After obtaining two wide-bored intravenous access, monitors were attached. Epidural catheter was inserted at the level of T9-10 interspace using LOR technique, confirmation of which was done by positive meniscus sign. Segmental spinal anaesthesia was given at L1-2 interspace with 25G Quincke's needle using 2.8ml of 0.5% isobaric Levobupivacaine and 150mcg morphine. Pain sensation i.e. sensory block was checked using blunt needle tip. The sensory block was found to be present from the level of T11 to L5. Infusion Ropivacaine 0.5% isobaric was started through epidural catheter immediately after establishing the sensory block. After 10 mins, the level of sensory block was re-evaluated and was found to be present from T7 to L5. After establishing the adequacy of the block, the surgeon was asked to proceed with the incision (Fig 5). The duration of the surgery was 200 minutes. The haemodynamic stability was maintained throughout, requiring 6mg of intravenous Mephentermine.

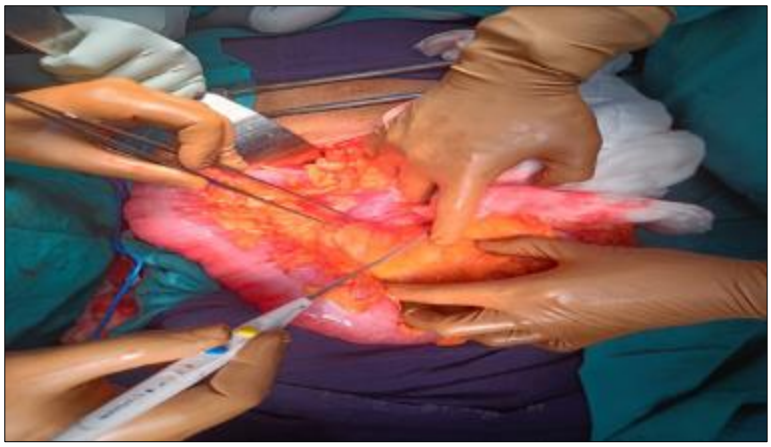

Figure 5 Right Hemicolectomy

3. Discussion

Surgery has long been the mainstay in the treatment of the cancer patients. General anaesthesia being the major mode of anaesthesia in such patients frequently involves a widespread use of opioids in the postoperative phase, which not only depresses the major cardiovascular functions of the patients but also add to the morbidity by delaying mobilization

and prolonging the critical care stay. Majority of the drugs involved in the induction and in the maintenance of general anaesthesia are also known to be associated with grave outcomes on overall survival in cancer patients.[4,5]

Regional anaesthesia on the other hand inhibits the stress response in these patients by preserving the cortisol level and thus provides a sustainable and conducive environment for better preservation of haemodynamic stability. Moreover, the significantly lower duration of ICU stay, after regional anaesthesia, significantly promotes postoperative recovery.

Epimental approach, combines the beneficial effect of both segmental and epidural anaesthesia. Unlike the traditional hyperbaric bupivacaine, isobaric drugs dose not spread cranially with the gravity, and thus creates a better surgical field along with the preservation of a better haemodynamic stability. Moreover, through the addition of epidural catheter and proper epidural drug dosing, we have found to maintain and stretch a distinct field of anaesthestic expansion along with a provision of postoperative analgesic intervention.

4. Conclusion

With the focus, shifting to the field of regional techniques, the addition and adoption of EPIMENTAL approach to the armoury might actually prove to be the gamechanger of modern anaesthetists 'arsenal.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

The study was performed after IEC approval and informed consent

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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