

EFFICACY OF SURGERY FOR RECTAL CANCER UNDER REGIONAL ANAESTHESIA DURING COVID TIMES

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Abstract

Background: Management of intra-operative as well as post operative pain is still one the great concerns for anaesthesiologists as well as Surgeons. Various adjuvants have been used with local anaesthetics in regional anaesthesia to provide good operating conditions and an excellent intra operative and prolonged postoperative analgesia. In patient with co-morbidity; combined spinal epidural anaesthesia reduces respiratory failure. The aim of this study was to evaluate the ease of performing surgery, effectiveness of post operative analgesia using VAS score, patient satisfaction score, total rescue analgesic consumption when fentanyl or dexmedetomidine were given as an additive to ropivacaine for epidural anaesthesia. **Materials and Methods:** 100 adult patients of either sex, aged between 18-65 years posted for elective lower abdominal surgeries (mainly Surgery for Rectal Cancer that was completed within three hours of duration) were enrolled for the study. The post operative analgesia scores, rescue analgesic consumption and patient satisfaction scores & ease of doing surgery by surgeon were observed. **Result:** A total of 100 patients were included. Average time to first dose of rescue analgesia was 6.96 hours. 62% patients showed good to excellent level of satisfaction under regional anesthesia. 83% surgeons were quite satisfied (good to excellent). **Conclusion:** It was of great ease for both surgeons as well as patients who received epidural dexmedetomidine and fentanyl as an adjuvant to ropivacaine providing an excellent operating conditions, lower post operative VAS score and a good patient satisfaction score.

INTRODUCTION

Regional Anaesthesia has been widely used in variety of surgical procedures since a long time, but somewhat gained more impetus during the COVID-19 pandemic.

In the times of COVID-19 outbreak when the whole healthcare system crashed in the entire world, patients suffered from every end including the patients suffering from COVID illness, as well as other patients reaching to hospital with other non-covid ailments. When the world was hit hard by COVID 19, the patients in the surgical domain suffered considerably more than others, where many of the cases were being deferred in view of the shortage of the ventilator/ICU beds and oxygen supply.

The management of surgical patient, confirmed or suspected of this disease became a challenge for the health care workers including anaesthesiologist, who were always at the airway end, as well as the surgeon operating and also to the non-covid patients, who at a given moment could become a carrier or had a risk of getting infected with the disease. General anaesthesia contributed an additional risk during the pandemic times, making the patient as well as the health care worker more skeptical with the use of general anaesthesia and the need of postoperative ventilation. During the global crisis of COVID-19 pandemic, the management of surgical patient especially for those in whom waiting for longer periods as in malignancy could be detrimental, continuously posed a challenge for the health care system, but with the use of regional anaesthesia technique(s) during these tiring times provided a much-needed relief to both patients as

well as anaesthesiologists and surgeon, and leading to overall decrease in mortality and disease burden. Regional anaesthesia including both spinal and epidural anaesthesia have shown to provide an excellent operative condition for the operating surgeons as well as the patients. The benefits of both the regional techniques have been combined together to perform a Combined Spinal Epidural Anaesthesia (CSEA). Epidural analgesia has become the most commonly used technique for effective postoperative pain relief following open abdominal surgery.^[1] The addition of opioids such as fentanyl lowers the dose of local anaesthetic required and also provides superior analgesia by its action on a separate pain pathway, namely, μ -opioid receptors. Dexmedetomidine is a highly selective alpha-2A receptor agonist that decreases the sympathetic outflow and nor-epinephrine release and mediates analgesic effects.^[2] Epidural anaesthesia and analgesia has commonly been used for the management of postoperative pain after abdominal surgery and shown to decrease the hospital stay, morbidity and overall mortality.^[3] This technique of anaesthesia and post-operative analgesia, especially became useful during pandemic due to over utilization of ICU beds and oxygen supplies.

MATERIALS AND METHODS

This was a prospective, observational study conducted after approval by the Institutional Ethical Committee. An informed written consent was obtained from all the patients for participation in this study. A total number of 100 adult patients of either sex, aged between 18-65 years posted for elective lower abdominal surgeries (mainly Anterior Resection & Low Anterior Resection for Rectal Cancer, that was completed within three hours of duration) were enrolled for the study. The patients received isobaric ropivacaine with fentanyl or isobaric ropivacaine with dexmedetomidine for postoperative analgesia. The dose was given in 5ml boluses at 30 and 60 minutes after the initial intrathecal administration. Patients were briefed about the procedure to be done and the technique of spinal and epidural anaesthesia

in their local language and explained the standard visual analogue pain scale for pain evaluation in postoperative period. The lumbar area was prepared aseptically and draped and inter-vertebral space at L3-4 and L2-3 was identified and combined spinal epidural anaesthesia was performed using a two-level approach. Another space, one level below the epidural insertion was identified and the standard spinal procedure was performed using 27G Whitacre spinal needle. Onset of sensory blockade at T10 level was checked with loss of temperature sensation to ice packs and motor block of lower limbs was assessed by using Bromage Scale. The target sensory level was T4 segmental dermatome.

The main aim of this study was to observe the ease of performing the surgery, comfort of patient during the procedure in total regional anaesthesia and assessment of post operative pain using the visual analogue scale (VAS) and patient satisfaction score. Total postoperative analgesic consumption and epidural top-ups were recorded. Rescue analgesia was given postoperatively in the form of injection tramadol 1.5mg/kg in Normal Saline (total volume 10ml) through epidural catheter. Quality of postoperative analgesia was assessed by patient satisfaction score, as judged by patients themselves; 4 (excellent), 3 (good), 2 (fair), 1 (poor). Repeat top-ups of the same dosage were administered as and when necessary to keep VAS <4. All cases were followed up to 24 hours post-surgery.

RESULTS

A total of 100 patients who underwent Open Anterior Resection or Low Anterior Resection. The demographic characteristics are depicted in [Table 1]. The post-operative block characteristics are shown in [Table 2]. Overall patients were quite satisfied under regional anaesthesia; however, some patients didn't enjoy being awake during surgery [Table 3]. The surgeons were quite satisfied with this arrangement [Table 4]. There were no major complications. Post operative nausea and vomiting was most common side effects. 6 patients needed additional manoeuvres including intubation by anaesthesiologist.

Table 1: Demographic profile of patients of both the groups

Demographic characteristics	n=100
Age (in years)	41±12.71(64-19)
Gender (M/F)	59/41
ASA(II/III)	71/29
Mean duration of surgery(mins)	141.2±32.72

Table 2: Postoperative block characteristics in both the groups

Post operative block characteristics	
Time to first rescue analgesia (in hours)	6.96±2.05
Total rescue analgesic doses	2.47±0.67
Total analgesic consumption (in mg)	247±30.30

Table 3: Showing patient satisfaction score in two groups

Patient Satisfaction Score	No.
Excellent	18

Good	44
Fair	20
Poor	18
Total	100

Table 4: Surgeon's ease of doing Surgery

Surgeon Satisfaction Score	No
Excellent	49
Good	34
Fair	11
Poor	6
Total	100

DISCUSSION

Surgery for rectal cancer, whether low anterior resection (LAR) or abdomino-perineal resection (APR) is carried out mainly by minimal invasive surgery which require general anaesthesia. However, a substantial number of surgeons still perform open surgery. Open surgery made a comeback especially during pandemic of covid-19 as there was a fear of aerosol generation with laparoscopic surgeries initially and the added risk of general anaesthesia and airway manipulation.^[4]

Relief of pain during surgery is one major component of balanced anaesthesia and this pain relief should not be limited rather extended to the postoperative period also. The use of neuraxial blockade using local anaesthetic agents via epidural route for post operative analgesia has gained impetus in last few decades.^[5] There is increasing evidence in recent years, suggesting that peri-operative management may affect patient morbidity and mortality after surgery. The clinical events that may lead to altered immune response after surgical trauma includes: tissue injury, hypotension, blood transfusions, ischemia, hyperglycaemia, endocrine mediator release, infection, and pain. The main cause of this immune-compromised response is probably related to the neuro-endocrine stress exerted through activation of the autonomic nervous system and the hypothalamic-pituitary-adrenal axis (HPA axis). Postoperative pain is also known to activate the HPA axis, which is suppressed by regional anaesthetic techniques by sympathetic blockade. Surgery results in tissue injury, which in turn also leads to the activation of the stress response.^[3] Dexmedetomidine is a highly selective α_2 adrenergic agonist. Intrathecal α_2 receptors are found to have an anti-nociceptive action for both somatic and visceral pain. Intrathecal α_2 adrenoceptor agonist act by depressing the release of C-fiber transmitters and by hyperpolarization of postsynaptic dorsal horn neurons.^[6] Ropivacaine is a amide local anaesthetic and reversibly blocks nerve impulse conduction by blocking the sodium ion channels and preferentially blocks nerve fibers responsible for pain transmission ($A\delta$ and C fibers) rather than motor function ($A\beta$ fibers).^[7] The prolongation of the effect may result from synergism between local anaesthetic and α_2 adrenoceptor agonist.^[6]

During the procedure, surgeon was asked to comment on ease of performing surgery in terms of convenience, patients comfort and surgeons ease during the intra-operative period. It was observed that only in 6 patients; Surgeon was not comfortable at all and additional manoeuvres including endotracheal intubation had to be done.

The patient satisfaction score mostly varied between excellent to good. However, rescue analgesia was required after about 6 hours in most cases. The total analgesia requirement was also reduced.

It has been emphasized by Rigg et al,^[8] that respiratory failure rates are reduced in patients with co-morbidities undergoing major abdominal surgeries under combined epidural spinal anaesthesia. This reduces the need for postoperative ventilation and is highly beneficial in such patients in low-income countries where ICU beds are scarce. It was especially very useful during pandemic when the occupancy of ICU beds was full and oxygen supplies were overburdened. Similar observation was made by Romanzi et al.^[9]

Since most of the patients operated using this anaesthesia procedure had co-morbidities; this reduced the requirement of post operative ICU bed requirement which was especially of importance during the Covid-19 pandemic.

CONCLUSION

In this laparoscopic era; there is still relevance for open surgery for rectal cancer under combined spinal epidural anaesthesia especially during pandemic times and in patients with comorbidities, this type of anaesthesia has high patient as well as surgeon satisfaction rate and decreased morbidity and hospital stay, which overall decreased the burden of the already overwhelmed healthcare system.

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