

Subcostal transversus abdominis plane block is efficient in surgeries such as gastrectomy, laparoscopic bariatric procedure, liver transplant, open hepato-biliary, appendectomy or renal surgery. Only a few studies have been published regarding the STAP block approach in laparoscopic cholecystectomy, being heterogeneous concerning the procedure or the postoperative analgesic regimen [5].

Materials and Methods

After obtaining the ethical clearance from institutional ethical committee the present observational study was conducted in the postgraduate department of anaesthesiology and critical care medicine in collaboration with the department of general surgery, government medical college, Srinagar from October 2017-December 2018. A total of 80 samples for this study with ASA I/II (American Society of Anaesthesiologists physical status classification) scheduled for laparoscopic cholecystectomy were evaluated for the efficacy of port site infiltration with ultrasound guided abdominal field blocks with 30 ml of 0.2% ropivacaine [6]. Patients selected for study were admitted at least 24 hours prior to surgery. Preanaesthetic check-up was done at that stage. A thorough history including history of any comorbid disease, previous history of anaesthetic exposure, medication intake and allergy to any drug was also elicited. General physical examination as well as systemic examination of cardiovascular system, respiratory system, central nervous system was performed. Airway assessment was done to predict the airway status of the patient. Minimum basic investigations were advised. The patients were advised to remain fasting for a period of 8 hours and were explained about the study design and associated risks and benefits [7].

Procedure

All patients were transported to the operating room. On arrival to operating room, written informed consent and fasting was confirmed [8]. All the study patients were instructed about the use of the NRS score (Numeric Rating Score) during the pre-operative visit. (NRS score 0-no pain, NRS score 10-worst possible pain). An 18-gauge Intravenous (IV) cannula was inserted for fluid infusion. Preoperatively monitoring of electrocardiography, non-invasive blood pressure, oxygen saturation (SpO₂) was started and baseline values were recorded. Pre-medication with injection pantoprazole 40 mg and pre-operative analgesia with injection Fentanyl 2 mcg/kg were given. Pre-oxygenation with 100% Oxygen (O₂) was done for 3 min. General anaesthesia was induced with injection propofol 2.0 mg/kg-2.5 mg/kg followed by injection atracurium 0.5 mg/kg to facilitate endotracheal intubation. The trachea was intubated with a cuffed endotracheal tube of appropriate size. Anaesthesia was maintained with 60% N₂O; 40% oxygen with 0.5%-1% isoflurane. Each patient received intraoperative analgesia as injection paracetamol infusion 1 gm. Intermittent boluses of atracurium were used to achieve muscle relaxation. Minute ventilation was adjusted to maintain normocapnia (End Tidal Carbon-Dioxide (EtCO₂) between 34 mmHg and 38 mmHg) and EtCO₂ was monitored. Nasogastric tube of appropriate size was inserted. Standard monitoring included 3 lead

Electrocardiography (ECG), Non-Invasive Blood Pressure (NIBP), Pulse Oximetry (SpO₂), capnography, respiratory rate [9,10].

At the end of the surgery, after ensuring full asepsis the transversus abdominis plane block, and posterior rectus sheath block was administered by an ultra sound guided approach before extubation. Patients were randomised into two groups to receive either local anaesthetic infiltration of the laparoscopy port sites (n=40, Group A/standard group) and USAFBs (n=40, Group B/study group) using a total dose of 30 ml of ropivacaine 0.2% with sterile technique. Randomisation was done by flipping of coin method [11]. In group A preincisional port site infiltration was performed by the surgeon, after the induction of anaesthesia and local anaesthetic were divided equally between port sites. A total of four ports supra umbilical, subxiphoid and two ports in the right subcostal area at mid clavicular and anterior axillary line were made [12]. In group B, the blocks were performed under ultrasound guidance. High frequency linear probe with a 6 MHz-13 MHz frequency (Sonosite M-Turbo) was used. After the induction of anaesthesia, the skin was disinfected with 10% chlorhexidine [13]. Posterior rectus sheath block was administered by placing Ultrasonography (USG) transducer 2 cm below the xiphisternum in transverse position. A 90 mm, 22 G Quincke spinal needle was inserted inplane and advanced until the tip rests on the posterior rectus sheath. After negative aspiration, 2 ml of saline was injected to verify needle tip location. When the correct needle position was achieved, 5 ml of 0.2% ropivacainewas injected bilaterally on each side.

For right STA block, the USG probe was placed in the midline of the abdomen 2 cm below the xiphisternum and moved right laterally along the subcostal margin to the anterior axillary line [14]. The transversus abdominis muscle was identified lying beneath and extending lateral to the rectus abdominis muscle. A 90 mm, 22 gauge Quincke's spinal needle was then guided, in plane, to a point just inferior to the right costal margin at the anterior axillary line such that the tip was between the transversus abdominis and internal oblique muscle within the neurovascular fascial plane. After careful aspiration to exclude vascular puncture, a test dose of 2 ml normal saline was injected to confirm needle tip placement and determined resistance to flow. Following aspiration, 20 mL of 0.2% ropivacaine was deposited within the plane. Anti-emetic medication was made with intravenous ondansetron 0.15 mg/kg as a slow injection 15 minutes prior to extubation [15]. Thereafter, the residual neuromuscular block was reversed with neostigmine 0.05 mg/kg and atropine 0.02 mg/kg or glycopyrrolate 0.01 mg/kg. Extubation was performed with the patient awake with good breathing efforts and muscle tone. Extubation time was noted and the patient was shifted to the PACU [16].

Post-operative management and pain control

Following adequate and complete recovery, patients were transferred to the Post Anaesthesia Care Unit (PACU), where tramadol 50 mg IV infusion over 10 minutes was administered as rescue analgesia if the pain is described as moderate or severe (the pain was considered mild for NRS=1-3, moderate for NRS=4-6, or severe for NRS=7-9) and repeated as per the need. Evaluation intervals being at 1 hr (in the PACU), 2 h, 4 h, 6 h, 12

