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CASE REPORT

Transversus abdominis plane block as a sole anesthetic technique for open appendectomy in patient with Treacher Collins syndrome: a case report

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Abstract

Patients with Treacher Collins syndrome (TCS) present serious challenges to anesthetist in securing of airway; upper airway obstruction and difficult tracheal intubation are considered complex entity in these patients. This case report describes the significance of transversus abdominis plane (TAP) block as a sole anesthetic choice in appendectomy where airway management can be avoided. A 17-year-old boy, known case of TCS, presented with acute appendicitis underwent emergency laparotomy. Surgery was successfully performed by TAP block with dexmedetomidine infusion. Open appendectomy can be performed successfully in certain circumstances under TAP block with adjunctive use of dexmedetomidine infusion where airway handling is avoided. Further studies are warranted to distinct its use as sole anesthetic choice in lower abdominal surgeries.

INTRODUCTION

Transversus abdominis plane (TAP) block is technologically modest and safer to conduct with the development of the ultrasound. Thus, there is a surge of interest in TAP block as adjunct especially for analgesia following abdominal surgery. There is growing evidence to support the effectiveness of TAP block as postoperative analgesia in range of abdominal surgeries [1].

CASE REPORT

A 17-year-old male, known case of Treacher Collins syndrome (TCS), was admitted to the emergency room with complain

of abdominal pain. The initial diagnosis was acute appendicitis; later, confirmed by computerized tomography (CT) scan of abdomen. Then, open appendectomy was planned.

In preoperative anesthesia evaluation, patient had unique features of TCS with facial dysmorphism including microcephaly, micrognathia and hypoplastic mandible. Patient also had conductive hearing loss and was using hearing aids, and had everted ears. (Fig. 1). The airway assessment showed adequate mouth opening and Mallampatti class IV score. Neck movements and cervical spine were normal. Preoperative blood hemoglobin (Hb) was 11g/dl. Chest X-ray and electrocardiogram (ECG) were remarkable.

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Figure 1: Picture showing features of Treacher Collins syndrome.

Informed consent was taken from patient and his legal guardian; due to anticipated difficult airway, tracheostomy option was also discussed in extreme situation.

Considering patient's threatened airway, TAP block was planned with local anesthetics, adjuvant infiltration of local infiltration as rescue measure and targeted sedation to proceed the surgery. Emergency fiber optic intubation or tracheostomy was backup plan in case of failed technique.

In the operating room, standard monitors were applied including (noninvasive blood pressure (NIBP), oxygen saturation, end tidal CO₂ and ECG), a 20 Gauge intravenous cannula was inserted on his left hand, and TAP block was performed using linear probe ultrasound with complete sterile measures. The patient was lying supine with exposed abdomen. His abdomen was prepared by chlorohexidine gluconate and isopropyl alcohol. A 38 mm linear array ultrasound probe (13-6 MHz) (Model: 14-6N55N#PCG22001516 Shenzhen Mindray Bio-Medical Electronics Co. Ltd China) was covered by sterile cover and the probe was put over the right side directed from medial to lateral until the three muscle planes were recognized midway between the costal margin and iliac crest. A (Quincke 22G) spinal needle was advanced in the plane under the direction of ultrasound until it reached the TAP. Bupivacaine 0.5% 30 ml was injected in real time and the hypo echoic shades of local anesthetic spread were observed and confirmed.

The anterolateral abdominal wall is innervated by the anterior rami of the thoracolumbar spinal nerves (T6-L1), subcostal (T12), and ilioinguinal/iliohypogastric nerves (L1). After 15 min, the block area was tested and it was found numb. Meanwhile, we started intravenous (IV) sedation with dexmedetomidine, loading dose of 1 µg/kg over 10 min and maintenance 0.5 µg/kg/hr. Fentanyl 50 µg IV was also given as an adjuvant. The surgeon was asked to infiltrate local anesthetic lignocaine 2% when required. Providentially, the appendix was exposed in the right iliac fossa and the surgery was stress-free and lasted for 20 min. No infiltration of local anesthetic was needed during the procedure. During surgery, at times when patient complained of pain during traction, it was relieved by dexmedetomidine.

Patient's hemodynamics remained stable throughout the procedure with no major complain of pain during traction, or vomiting during the surgery. In the postoperative care unit, the patient was lying calm and pain free with early mobility.

DISCUSSION

TCS shows variable expressivity from almost discreet face changes to severe facial and ear defects, cleft palate and constricted airway [2]. Deafness, hypoplasia of facial bones (mandible, maxilla and cheek bone), anti-mongoloid slant of palpebral fissures, coloboma of the lower lid and bilateral anomalies of auricle are also present in TCS. TCS occurs with an incidence of 1 in 50 000 live births [3].

TCS is critical to anesthetist since maxillary, zygomatic, mandibular hypoplasia, combined with little oral orifice and temporo-mandibular joint anomalies, cause difficulties to perform laryngoscopy and endotracheal intubation [4]. Ironically, intubation in TCS has become more difficult with increasing age [5].

TAP block has been widely used as a part of multimodal analgesic regime in general anesthesia and covers somatic pain effectively. TAP block plays an appreciated role in wide range of abdominal surgeries, such as cesarean section, hysterectomy, cholecystectomy, colectomy, prostatectomy and hernia repair [6]. Many studies have used adjuvants such as clonidine, dexmedetomidine and dexamethasone along with local anesthetics to prolong or augment its effect [7–9].

Previously ultrasound-guided TAP block has been used in open appendectomy [10]. But it has never been reported as sole anesthetic technique especially in difficult airway syndrome. This patient was a typical case of TCS with nearly all the characteristics including severe distortion of the airway. The anesthesia team used the TAP block unaided, and found exceptional results, and it also added the core value of this block.

CONCLUSION

Anticipated difficult airway is a great challenge for anesthesiologist especially when options are limited especially in emergency abdominal surgeries. Regional blocks can be an excellent alternative in extreme cases especially mentioned in this case detail. This case report underscores the significance of TAP block as a sole anesthetic technique for appendectomy especially in patients with a difficult airway by any means.

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CONFLICT OF INTEREST STATEMENT

None declared.

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