Ultrasound-Guided Single Shot Peripheral Nerve Block (ESP and PECS-2 Blocks) as a Sole Surgical Anesthesia on a 73-year-old female with Phyllodes Tumor Undergoing Mastectomy in a Tertiary Hospital in Marawi City: A Case Report

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ABSTRACT: Ultrasound-guided single shot peripheral nerve blocks (PNB) such as erector spinae plane block (ESPB) and pectoral nerve block (PECS I and II) are emerging anesthetic techniques used to provide complete surgical anesthesia without general anesthesia and adequate postoperative analgesia for breast surgeries. Peripheral nerve blocks with sedation could be a better option for breast surgery than general anesthesia in patients with multiple preexisting comorbidities and those refusing general anesthesia. However, an anesthesiologist with optimum knowledge on regional anesthesia and ultrasound experience plays a key factor to the success of doing PNB.

Keywords: ESPB, *Erector spinae plane block; PECS I and II, pectoral nerve block; breast surgery; mastectomy; breast cancer*

OBJECTIVE: The two primary purposes of this case report are to present the first mastectomy on an elderly ASA 3 patient inducted under PNB without being converted to general anesthesia in a tertiary hospital and to enlighten the reader on the efficacy of PNB as a sole surgical anesthesia and its use as postoperative analgesia.

INTRODUCTION: Breast cancer is known to be the most common cancer in women and surgical management remains a key component of treatment and cure. However, the surgical procedure is often associated with varying degrees of postoperative pain [2].

Postmastectomy pain syndrome (PMPS) is a complex disorder associated with breast surgeries which limits the normal functionality and affect the overall quality of life [1]. Thus, ultrasound-guided peripheral nerve blocks namely ESPB and PECS I and II blocks emergently play a crucial role in providing complete surgical anesthesia undergoing breast cancer surgery and a favorable postoperative pain control.

CASE DISCUSSION: A 73 y.o. 57kg, ASA 3 female admitted for gradually enlarging right breast mass advised for mastectomy. She is known hypertensive for more than 10 years and on a maintenance medication, but noncompliant. Patient had cerebrovascular accident (March 2020) with no residual neurologic deficits.

Upon assessment, patient had essentially normal physical examination findings except for the large, hard, mobile, nontender right breast mass with ulcerated posterior portion. Neither nipple discharges nor axillary lymphanadenopathy were noted.

Core needle biopsy was done which revealed phyllodes tumor, right. Chest x-ray film showed an enlarged right breast shadow, atherosclerotic aorta and thoracic spondylosis. The rest of the baseline laboratory results are all within normal limit.

Patient was successfully inducted under peripheral nerve block in a form of ESPB and PECS I and II blocks supplemented with moderate sedation in a form of propofol (<75ug/kg/min) and remifentanil (0.5-1 ng/ml) Minto model infusion. Mastectomy was completed without the need of general anesthesia. Postoperatively, the patient had no complain of pain on the surgical area. There were no opioid rescue doses given while admitted and was discharged after 3 days.

DISCUSSION

Breast cancer is the most commonly diagnosed cancer and the leading cause of cancer-related mortality among females with surgical resection considered to be the primary and most effective therapy[3]. Patients for breast surgery are generally performed by general anesthesia, however with the evolving practice of anesthesia, various anesthetic techniques were described as a substitute for general anesthesia. Various regional anaesthesia techniques have been described that offered satisfactory pain relief after mastectomy such as thoracic epidural anaesthesia, intercostal nerve block, paravertebral block, serratus anterior plane block, and pectoral nerve I and II blocks[1] and the relatively new regional blocking technique erector spinae plane block. Nevertheless, the anesthesia provider must also consider the safety of the patient and think of the contraindications before performing these techniques such as infection at the site of injection, patient refusal and severe coagulopathy. Possible complications may arise when performing these blocks, hence vigilance is crucial trait when deciding to choose PNB as a sole anesthesia technique. Moreover, PNB procedure can be supplemented with moderate sedation (a state where patients were responding to verbal commands, either alone or accompanied by light tactile stimulation) with oxygen supplementation[1]. In this state of sedation, the airway remains patent with adequate spontaneous ventilation and stable cardiovascular function. This level of sedation can be achieved using anesthetic drugs such as propofol and remifentanil at a sedating dose.

Erector spinae plane block (ESPB) is an ultrasound-guided novel interfascial plane block where local anesthetic is injected to the plane between thoracic transverse process and erector spinae muscle[2]. This technique blocks the dorsal and ventral rami of the

spinal nerves that helps achieve a multi-dermatomal sensory block of the anterior, posterior, and lateral thoracic and abdominal walls[4] making it a desirable sole surgical anesthesia for providing effective visceral as well as somatic analgesia after the breast surgeries [1].

The pectoral nerve (PECS) blocks I and II are a novel technique to block the pectoral nerves, intercostal nerves 3 to 6, intercostobrachial nerves and the long thoracic nerve[3] which can provide analgesia for a variety of anterior thoracic wall surgeries, namely breast surgery[3]. PECs I block is an interfascial injection between the pectoralis major muscle and pectoralis minor muscle at the level of the third rib to block both the medial pectoral nerve and lateral pectoral nerve. The PECs II block, a modified PECs I block; anesthetizes the thoracodorsal and long thoracic nerve, as well as the lateral branches of the intercostal nerves from T2-T6[5]. Local anesthetic agent is injected between the pectoralis major and pectoralis minor as for a PECs I block and then between pectoralis minor and serratus anterior[3]. Use of PECs block as the sole surgical anesthesia in patients with multiple comorbidities may provide better analgesia, lesser side effects, reduced hemodynamic instability, and would be a safer option when compared to GA [5].

Thus, combined ESPB and PECS I and II blocks can pave the way in making simple, safe and effective regional anesthesia technique as sole surgical anesthesia as well as postoperative analgesia in breast surgery[1]. However, the skills, knowledge and expertise of the anesthesia provider on PNB is paramount to achieve an effective surgical anesthesia and adequate postoperative analgesia.

CONCLUSION

Ultrasound-guided ESPB and PECS blocks with sedation can be an effective complete surgical anesthesia for breast surgeries and a wise approach for reducing opioid consumption, pain intensity and length of hospital stay after the surgery.

REFERENCES

1. Malawat A, Verma K, Jethava D, Jethava DD. **Erector spinae plane block for complete surgical anaesthesia and postoperative analgesia for breast surgeries: A prospective feasibility study of 30 cases**. Indian J Anaesth 2020; 64:118-24.
2. He, W., Wu, Z., Zu, L., Sun, H. and Yang, X. (2020**), Application of erector spinae plane block guided by ultrasound for postoperative analgesia in breast cancer surgery: A randomized controlled trial. Cancer Community,** 40: 122-125. https://doi.org/10.1002/cac2.12013
3. Battista C, Krishnan S. **Pectoralis Nerve Block.** [Updated 2022 Jul 25]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK547691/
4. Krishnan S, Cascella M. **Erector Spinae Plane Block.** [Updated 2022 Apr 30]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK545305/
5. Debbag, Sehend & Sarıcaoglu, Fatma. (2019). **Pectoral nerve block as the sole anesthetic technique for a modified radical mastectomy in a comorbid patient.** Saudi Medical Journal. 40. 1285-1289. 10.15537/smj.2019.12.24644.