بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

INTRODUCTION

According to the American Cancer Society (ACS), breast cancer makes up 25 percent of all new cancer diagnoses in women globally. In 2012, nearly 1.7 million new cases were diagnosed worldwide. Survival rates vary worldwide but are improving overall. In countries with advanced care, the rate is 80 to 90 percent for those with a first-stage diagnosis, and 24 percent if diagnosis occurs at a later stage ***(American Cancer Society, Cancer Facts & Figures 2018).***

Breast Surgery is becoming more and more common. Patients are often middle-aged women and with high public awareness around issues of breast cancer. Breast surgery is an exceedingly common procedure and associated with an increased incidence of acute and chronic pain.Regional anesthesia techniques may improve post-operative analgesia for patients undergoing breast surgery ***(Bolin et al., 2015).***

In describing how patients feel after surgery, **Armitage** stated that "slapping the patient on the face and telling him or her that it's all over is a complete inversion of the truth" because as far as the patient is concerned, "it is often just the beginning." Although the current analgesic drugs and techniques is impressive, effective management of

postoperative pain still poses some unique challenges in theambulatory setting. The increasing number and complexity of operations being performed on an outpatient basis has presented anesthesia practitioners with new challenges with respect to acute pain management.

Outpatients undergoing day-care procedures require a perioperative analgesic technique that is effective, has minimal side effects, is intrinsically safe, and can be easily managed away from the hospital or surgery center ***(Armitage, 1989).***

Inadequate postoperative analgesia has harmful physiologic and psychological consequences that increase morbidity and mortality which subsequently delay recovery and the return to daily living ***(Wu et al., 2003).***

Postoperative pain for surgeries involving chest wall is mostly managed using multimodal analgesia i.e. by using combination of non-steroidal anti-inflammatory drugs (NSAIDS), paracetamol, opioids and local anesthetic infiltration ***(Andersen and Kehlet, 2011).***

Intravenous opioids are mainly administered for acute post mastectomy pain. Using opioid drugs solely may develop many side effects such as sedation, nausea, vomiting and respiratory depression ***(Wikler, 2013).***

Regional anaesthiain the form of thoracic epidural, paravertebral block or plane blocks are a part of the Enhanced Recovery After Surgery (ERAS) pathway, as they reduce the patients` surgical stress response, optimize the physiological function and facilitate recovery ***(Chiu,2018).***

Chiu and her colleagues in 2018 had come to the conclusion that the implementation of an enhanced recovery after surgery pathway for total mastectomy that emphasizes multimodal analgesia and PECS blocks was associated with a reduction in perioperativeopioid consumption and post-operative nausea and vomiting**.**

After the application of ultrasound in anesthetic practice, several interfascial plane blocks have been described recently. Pectoral nerve blocks (Pecs) and thoracic inter-fascial plane block (SAPB,PIFB) are novel interfascial plane blocks, which can provide analgesia for breast surgery ***(Blanco, 2011),(Yeojung K,2019).***

AIM OF THE WORK

This study aims at comparing the intraoperative and postoperative analgesic effect of serratus anterior plane block combined with pecto-intercostal fascial plane block versus pectoral nerve blocks in patients undergoing non-reconstructive breast surgery.

Chapter 1

ANATOMY OF THE THORACIC WALL AND BREAST

1- Anatomy of the thoracic wall (Gray, 2006):

Skeleton of the thoracic wall is formed by the twelve thoracic vertebrae posteriorly, the sternum anteriorly and, on each side, by the twelve ribs and the respective costal cartilage (Fig 1).

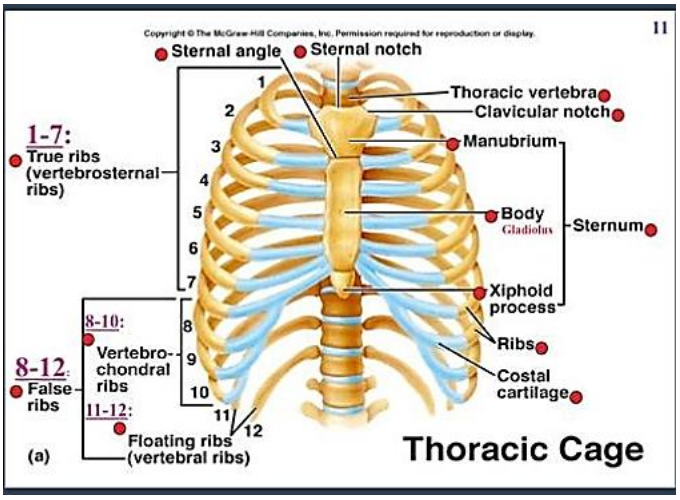

Figure (1): Skeleton of the thoracic wall ***(Vidić, 1984).***

Muscles of the Thoracic Wall (De la Pared, 2006):

There are five muscles that make up the thoracic cage; a) *the intercostals (external, internal and innermost)* which fill the spaces between the ribs organized in three layers, b) *subcostals*, and c) *transversus thoracis.*

These muscles act to change the volumeof the thoracic cavity during respiration. (Featured in figs.2 and 3).

There are some other muscles that do not comprise the thoracic wall, but do attach to it. These include a) *the pectoralis major, b) pectoralis minor, c) serratus anterior and d) the scalene muscles (fig.2)*

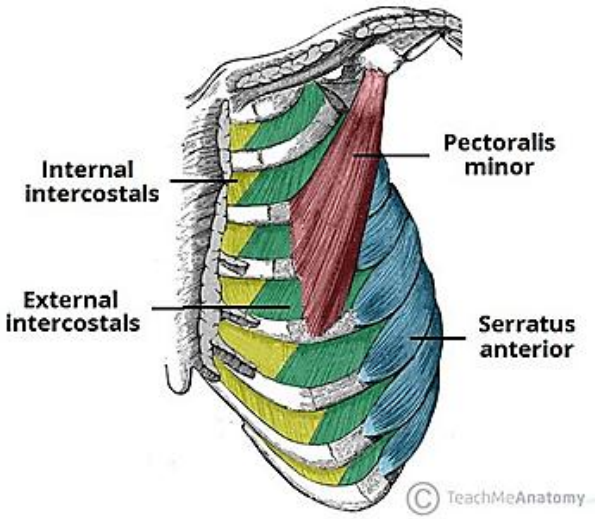

Figure (2): The external and internal intercostal muscles of the thoracic wall ***(Vidić, 1984).***

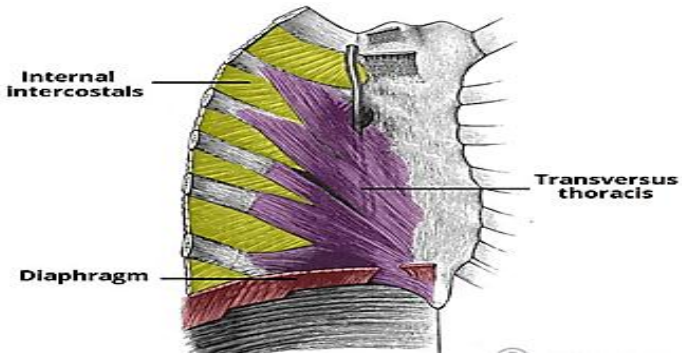

Figure (3): View of the inner aspect of the thoracic wall, featuring internal intercostals, transversus thoracis and diaphragm ***(Vidić, 1984).***

Arterial Blood Supply to the Thoracic Wall *(De la Pared, 2006)*:

The thoracic wall is supplied by three sources of blood supply: (fig.4)

- Axillary
  - Suprior thoracic (2)
  - Lateral thoracic (3)
- Subclavian
  - Internal thoracic (or Internal mammary) artery, gives anterior intercostal branches.
- Aorta

Intercostal arteries (4)

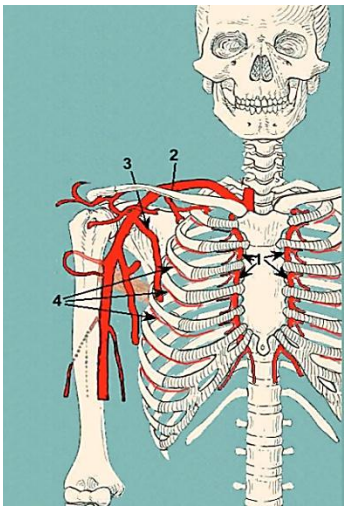

Figure (4): Arterial blood supply of the thoracic wall ***(Trotter, 1961).***

Nerves of the Thoracic Wall *(Gray, 2006):*

The thoracic wall is supplied by the inter-costal nerves which are the anterior primary rami of spinal nerves. A typical spinal nerve is shown in the adjacent diagram. (fig.5)

- Spinal cord (1)
- Dorsal (sensory, afferent) root (3)
- Ventral (motor, efferent) root (2)
- Spinal nerve (4)
- Dorsal primary ramus (mixed) (5)
- Ventral primary ramus (mixed) (6)
- White communicating ramus (8)
- Gray communicating ramus (7)
- Sympathetic ganglion (9)

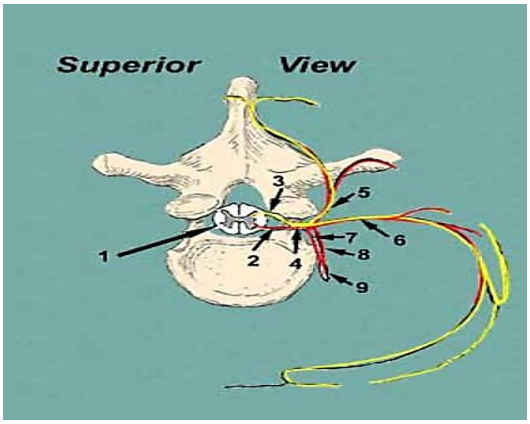

Figure (5): Typical spinal nerve ***(Trotter, 1961).***

Muscles That Position the Pectoral Girdle (Gray, 2006):

Muscles that position the pectoral girdle are located either on the anterior thorax or on the posterior thorax. The anterior muscles include the subclavius, pectoralis minor, and serratus anterior.

The posterior muscles include the trapezius rhomboid major, and rhomboid minor. When the rhomboids are contracted, your scapula moves medially, which can pull the shoulder and upper limb posteriorly(Fig.6).

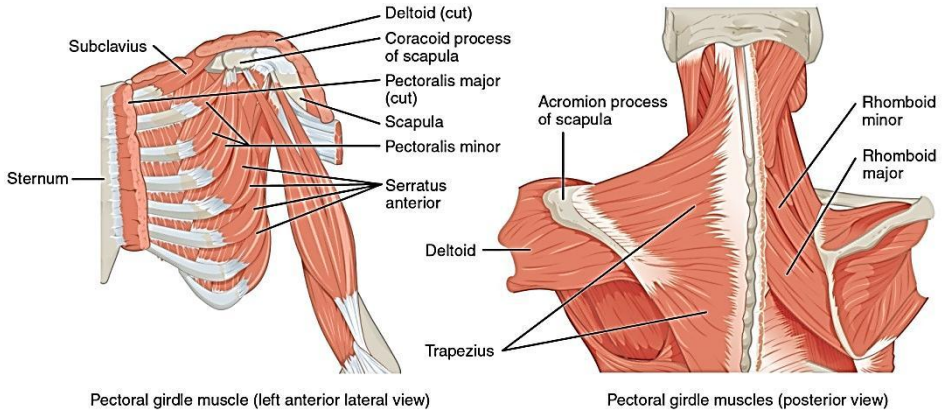

Figure (6): Muscles That Position the Pectoral Girdle. The muscles that stabilize the pectoral girdle make it a steady base on which other muscles can move the arm ***(Trotter, 1961).***

Thepectoral region is located on the anterior chest wall. It contains four muscles that exert a force on the upper limb; *a) the pectoralis major, b) pectoralis minor, c) serratus anterior, and d) subclavius.*

Pectoralis nerve (Pecs) and serratus plane blocks are newer ultrasound (US)-guided regional anesthesia techniques of the thorax. The Pecs I block was devised to anesthetize the medial and lateral pectoral nerves, which innervate the pectoralis muscles (Fig.7).

Pecs blocks are applied in the pectoral and axillary regions, This is accomplished by an injection of local anesthetic in the fascial plane between the pectoralis major and minor muscles, with the muscles in both regions innervated by the brachial plexus. The pectoral region overlies the pectoralis major muscle and is limited by the axillary, mammary, and inframammary regions ***(Blanco, 2011)*** (fig.8).

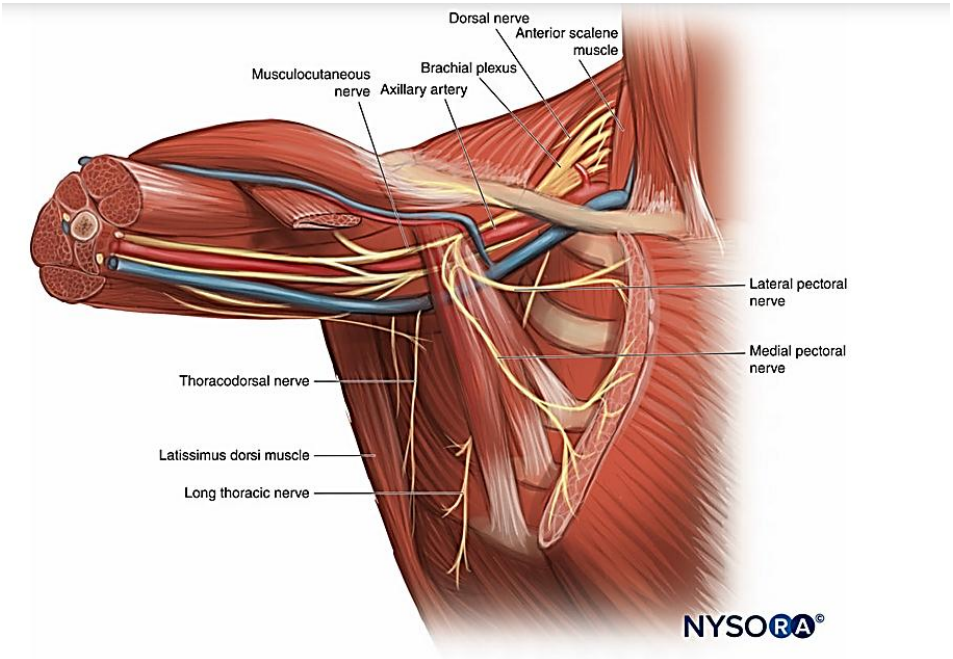

Figure (7): Cut section in the anatomical ladmarks involved in Pecs block. pectoral region ***(Blanco, 2011)***.

Further anatomical description of the area involved in breast surgical procedures requiring anesthetic and analgesic intervention through PECS block, involving musculature, arterial and nerve supply, shall be mentioned.

Muscles *(De la Pared, 2006)*:

The pectoralis major muscle (Figs.9 and 10), which has a triangular shape and is very evident on the anterior thoracic wall and itsinnervations comes from the medial and lateral pectoral nerves, which are branches of medial and lateral cords of the brachial plexus, respectively ***(Drake et al., 2005).***

The pectoralis minor muscle (Figs.10) is located at a deeper level than the pectoralis major muscle, and also has a triangular shape. It is innervated also by the lateral pectoral and medial pectoral nerves ***(Williams et al., 1989)***

The serratus anterior muscle (Fig.9) covers most of the lateral thoracic wall, and also contributing towards forming the medial wall of the axilla. The more caudal fibers interfinger with those of the external oblique muscle of the abdomen. This muscle stabilizes the scapula by exerting traction anteriorly and promoting elevation of the glenoid cavity. The innervation of this muscle is performed by the long thoracic nerve (Bell's nerve) ***(Williams et al., 1989).***

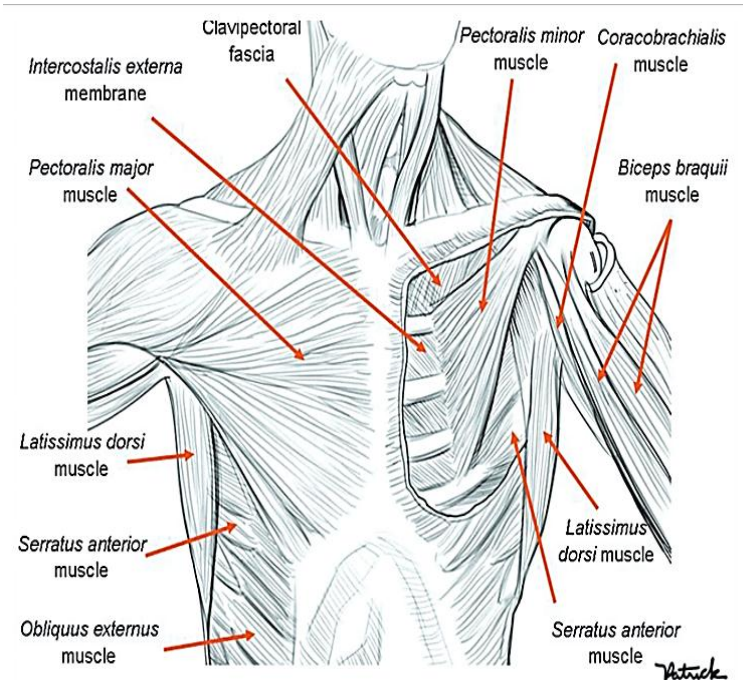

Figure (8): Muscles of the trunk. On the right side of the figre, the pectoralis major muscle has been extracted in order to view the pectoralis minor muscle (anterior view of the trunk) ***(De la Pared, 2006)***.

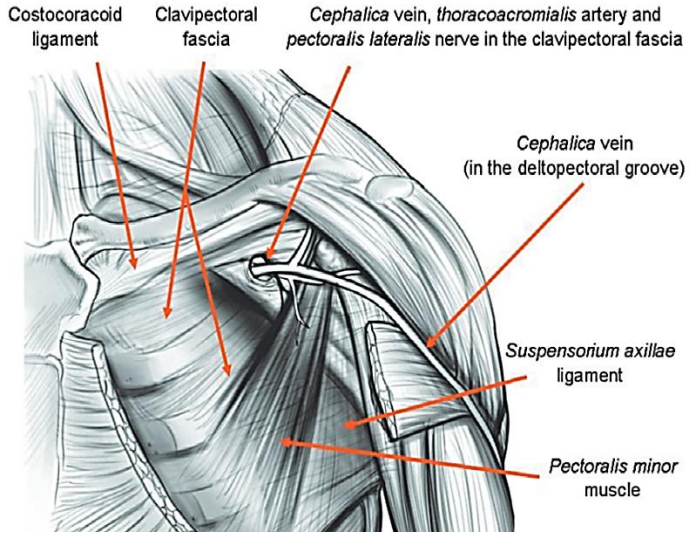

Figure (9): Pectoralis major muscle has been extracted forbetter viewing (anterior view of the thorax) ***(De la Pared, 2006).***