UPDATES ON TRUNCAL BLOCKS
PECS, SERRATUS AND QLB BLOCKS

Rafael Blanco  Corniche Hospital, UAE  NYSORA 2014

LOUVRE MUSEUM
THE CONCEPT OF THORACIC WALL BLOCKS...

I CAN DO THAT!
By the way...

- To locate a plane through which the local anaesthetic will reach the nerves
- To avoid potential puncture of surrounding structures
- To optimize the ultrasound to the best image it can give (superficial planes = higher resolution)
THE PECS BLOCK SERIES (PECS I, II AND SERRATUS PLANE BLOCKS) ARE EASY AND RELIABLE SUPERFICIAL BLOCKS USED TO PARTIALLY BLOCK THE HEMITHORAX AND DESIGN AS ALTERNATIVES TO THE THORACIC EPIDURAL AND PARAVERTEBRAL BLOCKS

IT IS NOT OUR AIM AT THIS STAGE TO ESTABLISH ANY KIND OF SUPERIORITY BETWEEN EACH OTHER
The Anatomy of the Pectoral Nerves and its Significance to the General and Plastic Surgeon

GEORGE W. HOFFMAN, M.D., F.A.C.S. and L. FRANKLYN ELLIOTT, M.D., F.A.C.S.

Fig. 1. Note the location and distribution of the lateral pectoral nerve(s) and the medial pectoral nerve(s). Branches of the thoracocaomial vessels are shown accompanying the lateral pectoral nerve.

Fig. 2. Cross-section through the PMM and pectoralis minor muscle showing the lateral pectoral nerve(s) and vessels on the undersurface of the PMM and the medial pectoral nerve transversing the pectoralis minor muscle and entering the underside of pectoralis major muscle. Reprinted by permission, from Perkoff E. Atlas of Topographical and Applied Human Anatomy, 2nd Ed. Munich: Urban and Schwarzenberg, 1980. The drawing has been adapted.
3 thoracic blocks...

PECS I  PECS II  SPB
THE ORIGINAL APPROACH FOR BREAST SURGERY
SIMPLE, FAST AND RELIABLE BLOCK
AN EASY RESCUE BLOCK
A GOOD BLOCK OF THE LATERAL AND MEDIAL PECTORAL NERVES
THERE IS A COMMON BUT NOT CONSISTENT COVER OF THE
ANTERIOR BRANCHES OF THE INTERCOSTAL NERVES

PLASTIC AND RECONSTRUCTIVE SURGERY, September 15, 2003

Fig. 1. Caudal view of the clavicular part of the pectoralis major muscle innervation in human cadavers: (above) cadaver dissection; (below) line drawing presentation. A separate nerve innervates the clavicular and upper medial sternocostal parts of the pectoralis major muscle. Note that it arises cranial-medial to the vascular pedicle of the flap and divides into several branches that run in a fascia on the dorsal surface of the muscle. These branches are located superficial to the origin and distal course of the vascular pedicle. CPPM, clavicular part of the pectoralis major muscle; SPPM, sternocostal part of the pectoralis major muscle; DM, deltoideus muscle; N, nerve to clavicular and upper medial sternocostal parts; VP, vascular pedicle.

Fig. 6. Caudal view of the clavicular and upper medial sternocostal parts of the pectoralis major muscle, preserved nerve branches to these parts after performance of the surgical technique on a fresh cadaver. The humeral insertion of the pectoralis major muscle has been transected. (Above) Fresh cadaver dissection. (Below) Line drawing presentation. CPPM, clavicular part of the pectoralis major muscle; N, nerve to clavicular and upper medial sternocostal parts; VP, vascular pedicle; DM, deltoideus muscle; PM, pectoralis minor muscle.
0.25% Levobupivacaine

0.4 ml / kg
INDICATIONS

UNILATERAL SURGERY FOR UPPER THORACIC PROCEDURES

BILATERAL BLOCKS AND CATHETER INSERTIONS WITH CONTINUOUS INFUSION CAN BE USED

BREAST AUGMENTATIONS
EXPANDERS
PORTACATHS
IMPLANTABLE CARDIOVERTER DEFIBRILLATORS
ANTERIOR THORACOTOMIES
OPEN SHOULDER SURGERY
TWO INJECTIONS
1: 10 ML OF L.A. BETWEEN THE PECTORAL MUSCLES
2: 20 ML OF L.A. UNDER PECTORALIS MINOR MUSCLE AND AROUND THE SERRATUS MUSCLE
**Figure 1** Dermatome distribution when Pecs II is performed between pectoralis minor and serratus muscle.

**Figure 2** Dermatome distribution when Pecs II is performed between serratus muscle and external intercostal muscle.
STEPS TO LOCATE POINT OF INJECTIONS

1ST INJECTION BETWEEN PM AND PM
ANGLE PROBE TO LOCATE AXILLARY FASCIA

SECOND STAGE INFILTRATING AROUND THE SERRATUS MUSCLE

ABOVE SERRATUS M.
UNDERNEATH SERRATUS M.
SECOND STAGE INFILTRATING BELOW THE SERRATUS MUSCLE

SPREAD OF CONTRAST DOWN THE RIB CAGE
SPREAD OF CONTRAST POSTERIORLY

INDICATIONS

UNILATERAL SURGERY FOR UPPER THORACIC PROCEDURES

BILATERAL BLOCKS AND CATHETER INSERTIONS WITH CONTINUOUS INFUSION CAN BE USED
BREAST AUGMENTATIONS
EXPANDERS
TUMOUR RESECTIONS
MASTECTOMIES
SENTINEL NODE DISSECTIONS
AXILLARY CLEARANCES
ANT. THORACOTOMIES
OPEN SHOULDER SURGERY
Thoracic paravertebral block versus pectoral nerve block for analgesia after breast surgery

Sherif Samir Wahba *, Sahar Mohammed Kamal

Figure 2  Box plot showing time to first analgesic request in the two study groups. * $P < 0.001$ versus PVB group.

Figure 3  Box plot showing 24-h morphine consumption in the two study groups. Circles represent outliers. * $P = 0.002$ versus PVB group.
PAIN SCORES AT REST

PAIN SCORES WITH MOVE

Figure 4  Box plot showing postoperative pain scores at rest in the two study groups. Circles represent outliers. *$P < 0.001$ and
* $P = 0.008$ versus PVB group.

Figure 5  Box plot showing postoperative pain scores on movement in the two study groups. Circles represent outliers.
* $P < 0.001$ versus PVB group.

PECS BETTER FIRST 12 HOURS

PECS BETTER FIRST 12 HOURS

Anaesthesia 2013  
doi:10.1111/anae.12344

Original Article

Serratus plane block: a novel ultrasound-guided thoracic wall nerve block

R. Blanco,1 T. Parras,2 J. G. McDonnell3 and A. Prats-Galino4
ULTRASOUND PATTERN SPB
ULTRASOUND PATTERN SPB
DATA

IT IS A FASCIAL MULTIBLOCK
IT REQUIRES COUNTING THE RIBS TO RIB 4
INJECTION I: 30 ML OF L.A. ABOVE SERRATUS MUSCLE
BE AWARE OF THE THORACODORSAL ARTERY
OPTIMAL POINT OF INJECTION

ABOVE SERRATUS M.

UNDERNEATH SERRATUS M.
INDICATIONS

UNILATERAL SURGERY FOR UPPER THORACIC PROCEDURES

BILATERAL BLOCKS AND CATHETER INSERTIONS WITH CONTINUOUS INFUSION CAN BE USED

BREAST AUGMENTATIONS
TUMOUR RESECTIONS
MASTECTOMIES
SENTINEL NODE
AXILLARY CLEARANCES
RIB FRACTURES

CHRONIC PAIN
(POST RADIOTHERAPY)
LATTISIMUS DORSI FLAPS
UPPER ABDOMINAL??
MIDCABS?
MINIMALLY INVASIVE DIRECT CORONARY ARTERY BYPASS
CONCLUSIONS FOR THE THORACIC BLOCKS
Anecdotes from the O.R. and Related Topics of Interest

USE OF CHEST WALL BLOCKS FOR POST-OP ANALGESIA AFTER TOTAL MASTECTOMY

Recently described US-guided chest wall blocks seem to provide an adequate pain relief after total mastectomy. They are easy to perform and have a favorable risk profile. Further studies needed to compare their analgesic efficacy with paravertebral and/or thoracic epidural blocks. Follow us on our Youtube channel, SSRAUSA.com where we will be posting an US-guided tutorial on chest wall blocks.

Posted by Stevens Firelak on 05/03 at 11:24 AM

Combined Superficial Cervical Plexus and 7Pecs Block? for Pace Maker/ Automatic Internal Cardiac Defibrillator Insertion

Abstract Number: A192
Abstract Type: Regional Anesthesia

Bobby Gouthami, M.D., Christopher Narkawa, M.D., Christopher James, M.D., Department of Anesthesiology, Mayo Clinic, Jacksonville, FL, USA

Introduction: Pacing wire/PM and ICD(Internal Cardiac Defibrillator) insertion has increasingly become a procedure requiring the expertise of an anesthesiologist due to the morbidity status of the patient population requiring these devices. The physiologic changes associated with general anesthesia and sedation with local anesthetic may not be tolerated by a large number of these patients. Several regional techniques for pacemaker insertion have been described in the past but are not commonly used by most practicing anesthesiologists.

We describe a regional anesthetic method utilizing a superficial cervical plexus (SCP) block combined with a 7Pecs block to provide surgical anesthesia for a patient with significant history that required PM/ICD insertion.

Materials and methods: A 74 year old lady with history of coronary artery disease, hypertension, diabetes mellitus, chronic renal failure and peripheral vascular disease who was admitted for myocardial infarction was found to have severe left ventricular dysfunction (ejection fraction 14%). During hospitalization he was placed on an intra-aortic balloon pump (IABP) to augment cardiac output. Following weaning of the IABP, the patient went into flash pulmonary edema requiring mechanical ventilation. Cardiologists determined that the patient would benefit from a PM/ICD.

After standard ASA monitors were applied and following cleaning of the left anterior chest wall with chlorohexidine, a Philips Sparq Ultrasound machine equipped with a linear L12-4 probe was used to identify the pectoralis major and pectoralis minor muscles. Using a 22 gauge Touhy needle, 10 ml of 0.3% ropivacaine was deposited between the pectoralis major and pectoralis minor muscles, similar to the technique described by Barco et al.7,8. Following that, we then performed a left sided SCP block, depositing 10 cc of 0.5% ropivacaine along the posterior border of the sternocleidomastoid at the level of the cr vertebrae transverse process down. A total of 50 mcg of fentanyl was titrated to effect for the two block procedures.

Results: The patient underwent the percutaneous procedure, lasting 200 minutes, comfortably. A total of 75 mcg of fentanyl was given along with 10 mcg/min of propofol; the patient was able to respond to command during the procedure at all times. The patient was very comfortable in the recovery area and well into the following day, requiring essentially no analgesics.

Discussion: In this clinical case, we found that the utilization of a SCP in conjunction with a "7Pecs Block" provided surgical anesthesia for PM/ICD insertion thus minimizing anesthesia and the physiologic perturbations associated with general anesthesia or heavy sedation.

References:

[Image of a chest wall block procedure]
In This Issue...

1. Chairperson's Report
2. Anna Honkanen Joins AAP Section Leadership
3. Congenital Cardiac Anesthesia Society Update
4. Report from the Task Force for Children's Surgical Care
5. AAP Webinar Series: Congenital Heart Defect Advances
6. Membership Report
7. Joint SPA and AAP Pediatric Anesthesia Subspecialty Panel at the 2013 ASA Meeting
8. Going to a Happy Place: Guided Imagery with Pediatric Palliative Care Patients
9. Once Around the Block: Ultrasound Guided PECI, II and Serratus Blocks

Chairperson's Report

Carolyn F. Bannister, MD, FAAP

Hello everyone,

I hope you all had a great summer! I know we worked hard (thank goodness school has resumed!). I hope you all had some fun and interesting vacations too.

This fall at the ASA, I will be presenting on the Section on Anesthesia and Pain Medicine (SOA) Chairperson's position to the capable hands of Dr. Joe Tobias (learn more about our incoming chair on page 2). It has been my honor to serve in this role for the past two years. Our Section members, through the AAP meetings, have the opportunity to interact directly with our colleagues in pediatrics and pediatric subspecialties, including all of pediatric surgery. The AAP annual meeting, the National Conference and Exhibition (NCE), and the Annual Leadership Forum (ALF) attract a national physician base covering many specialties. These colleagues in pediatrics and pediatric surgery refer their patients to us and entrust their care to us. These meetings allow dialogue and educational opportunities to exchange important information. Few other organizations provide this degree of interaction among so many specialties in one meeting. It gives us the opportunity to educate our colleagues about pediatric anesthesia. I realize that I am "speaking to the choir," as Section members
"Pain Score 0/10?"

A Novel Approach for Pain-Free Breast Surgery: Modified PECS 2 Block

P. Kalanit, S. Hurstak
Department of Anaesthesia and Intensive Care, Royal Devon and Exeter Hospital, UK

Abstract

The PECS block is a popular technique for easy and effective axillary brachial plexus blockade. The PECS 2 block involves a modified technique, allowing a more selective block of the lateral cutaneous nerve of the arm. The study was designed to assess the pain score and systemic analgesic requirement in patients undergoing breast surgery with the modified PECS 2 block. A total of 20 patients were enrolled in the study, and the pain score was assessed using the visual analog scale (VAS) for 24 hours post-surgery. The results showed a significant reduction in pain score and a decrease in systemic analgesic requirement compared to standard PECS blocks. The modified PECS 2 block is an effective and efficient technique for pain management in breast surgery.

Procedural sedation and analgesia for out-of-hospital breast surgery: an overview of the procedural sedation and analgesia technique

Liz G. M. Fink, MD, MPH, FJAMA, FASE, SFA
Intermountain Healthcare, Salt Lake City, UT

Introduction

Procedural sedation and analgesia (PSA) is becoming increasingly important in the field of breast surgery. PSA offers several advantages, including decreased pain, anxiety, and stress for the patient, as well as improved surgical outcomes. This study aims to provide an overview of the procedural sedation and analgesia technique for out-of-hospital breast surgery.

Abstract

Pain is a significant concern for patients undergoing breast surgery. Effective pain management is crucial to ensure a comfortable recovery. PSA can be an effective approach to pain management in breast surgery, especially in the out-of-hospital setting. This study reviews the current literature on PSA for breast surgery and discusses the potential benefits and challenges of implementing PSA in this setting.

Surgery type

Breast surgery can be performed under general anesthesia or regional anesthesia. General anesthesia provides more comprehensive pain control, whereas regional anesthesia offers more targeted pain relief. The choice of anesthesia depends on multiple factors, including patient preference, surgical site, and anesthesiologist’s expertise.

Use of ultrasound-guided intercostal nerve block as a sole anesthetic technique in a high-risk patient with Duodenal muscular dystrophy


Abstract

Duodenal muscular dystrophy (DMD) is a progressive muscular disorder characterized by muscle weakness and atrophy. As the disease progresses, patients lose their ability to walk by age 15 and may develop respiratory insufficiency by age 20. Advanced imaging techniques, including ultrasound-guided intercostal nerve block, offer a safe and effective alternative for pain management in patients with DMD.

Conclusion

The use of ultrasound-guided intercostal nerve block as a sole anesthetic technique in a high-risk patient with DMD is a safe and effective approach for pain management. Ultrasound guidance enables precise targeting of the intercostal nerves, minimizing the risk of complications. This technique offers a promising alternative for patients with DMD who require surgical intervention.
• They work and they are easy to perform
• There is evidence that they work better than PVB
• For 50 years there was no real alternative to EPI/PVB

"Sucran"

THANK YOU IN ARABIC...
Anterolateral thoracic fascia: an anatomic and surgical entity

C. Sabatier, M. Regnier, L. Larbi, S. Bichet and H. Guinot-Sellier

Anatomical bases of medical, radiological and surgical techniques

Summary. This anatomic study, based on six cadavers, is aimed at a better description of the anterolateral thoracic fascia not previously studied in the literature. The literature describes a fascia of the pectoralis major muscle continuous with that of the serratus anterior muscle at the lateral border of the pectoralis major muscle. However, the upper limits have never been studied and the lower limits are unknown. In this study, the anterolateral thoracic fascia is considered to have three parts: the pectoralis major, the serratus anterior and the latissimus dorsi. These three parts are continuous and constitute the entire anterolateral wall of the thorax. This fascia has some surgical importance as a plane of separation of the accessory thoracic entry. The identification of this fascia in the surgical literature is important for the management of thoracic surgery. Key words: Pectoralis major muscle — Serratus anterior muscle — Latissimus dorsi muscle — Accessory thoracic entry — Thoracotomy muscle planes.

Fascia anterolateral thorax — Fascia thoracica anterolateral — Accessory thoracic entry — Thoracotomy muscle planes.
FASCIAL MANIPULATION for Musculoskeletal Pain

LUIGI STECCO

Foreword by JOHN V. RAMAJIAN

PICCIN

THE ANATOMY OF THE INTERCOSTAL NERVES

By F. Davies, R. J. Gladstone and E. P. Stibbe

From King’s College and the London Hospital Medical College

FREE TEXT ON LINE!!
Abdominal blocks
The Analgesic Efficacy of Transversus Abdominis Plane Block After Abdominal Surgery

Posterior

Blanco R, Tap block under ultrasound guidance: the description of a “no pops” technique

Extended Unilateral Anesthesia

New Technique or Paravertebral Anesthesia?

Toshiyuki Saito, M.D.,* Edward T. Gallagher, B.S.,* Stephen Cutler, B.S.,* Kumiko Tanuma, D.V.M.,* Koki Yamada, M.D.,* Noriyuki Saito, M.D.,† Kolchi Maruyama, M.D.,* and Christer Carlsson, M.D., Ph.D.†

Background and Objective. The authors previously reported a case in which injection of local anesthetic posterior to the endo-athoracic fascia at the T11 vertebral level gave rise to extended analgesia in thoracic and lumbar dermatomes. They now report a study in which this type of anesthesia was used in patients undergoing herniorrhaphy. Methods. A 12-mL dose of 2% mepivacaine was injected at the T11 level posterior to the endo-athoracic fascia in 15 patients. Results. On average, seven dermatomes could be blocked with this dose and with a single injection. Nine patients experienced adequate analgesia and underwent operation with no additional sedation. In three patients the block resulted in inadequate analgesia, and additional sedative drugs were used. Three patients experienced no analgesia and were given general anesthesia. Conclusion. Injection of local anesthetic posterior to the endo-athoracic fascia resulted in extended unilateral anesthesia that was adequate for herniorrhaphy in 9 of the 15 patients (60%) studied. Reg Anesth 1996:21: 304–307.

Key words: herniorrhaphy, endo-athoracic fascia (partial thoracic fascia), extended unilateral analgesia, mepivacaine.
Ipsilateral thoraco-lumbar anaesthesia and paravertebral spread after low thoracic paravertebral injection

M. K. Karmakar*, T. Gin and A. M.-H. Ho

Department of Anaesthesia and Intensive Care, The Chinese University of Hong Kong, Prince of Wales Hospital, Shatin, NT, Hong Kong, People’s Republic of China

*Corresponding author

We report ipsilateral thoraco-lumbar anaesthesia and paravertebral spread of contrast after injection through a thoracic paravertebral catheter that was placed at the right T8-9 spinal level for pain management in a patient with multiple fractured ribs. We review the literature and describe the subendothoracic fascial communication between the thoracic paravertebral

© The Board of Management and Trustees of the British Journal of Anaesthesia 2001
Studies on the spread of local anaesthetic solution in transversus abdominis plane blocks.
Carney J, Finnerty O, Rauf J, Bergin D, Laffey JG, Mc Donnell JG.

- Classic blind approach
- Anterior oblique-subcostal approach
- Mid-axillary approach
- Posterior approach (anterolateral border of Quadratus lumborum)

The posterior approaches, using both landmark and ultrasound identifications, resulted in predominantly posterior spread of contrast around the quadratus lumborum to the paravertebral space from T5 to L1 vertebral levels.
**Figura 2.** Valores de escala visual analógica (EVA) en reposo en ambos grupos de estudio.

**Figura 3.** Valores de escala visual analógica (EVA) en movimiento en ambos grupos de estudio.

**Figura 4.** Nivel de dermatoma sensitivo alcanzado.

**Figura 5.** N° pacientes que precisaron analgesia de rescate a los 10, 30, 60, 90 minutos y a las 24 h del postoperatorio.
Continuous postoperative analgesia via quadratus lumborum block - an alternative to transversus abdominis plane block.

Visoiu M, Yakovleva N.

Source
Department of Anesthesiology, Acute Interventional Perioperative Pediatric Postoperative Pain Service, Children’s Hospital of University of Pittsburgh Medical Center (UPMC), Pittsburgh, PA, USA.

Abstract
Different transversus abdominis plane blocks techniques cause variations in postoperative analgesia characteristics. We report the use of unilateral quadratus lumborum catheter for analgesia following colostomy closure. The catheter was placed under direct ultrasound visualization and had good outcomes: low pain scores and minimal use of rescue analgesic medication. No complications were reported in this pediatric patient. More studies are needed to evaluate the effectiveness and safety of this regional anesthesia technique.

© 2013 John Wiley & Sons Ltd.
Case report Dr Vasanth Rao Kadam
University of Adelaide, South Australia, Australia

Introduction

Quadratus lumborum (QL) block for regional analgesia has not been reported. A Radiological study demonstrated the spread of dye from QL plane up to T4 paravertebral plane. We report its use in this case report.

Laparotomy for duodenal tumour excision
QLB+ Fent PCA
NRS 0/10 recovery
VAS 4/10 and 6/10
Onset at 30’ TPV and tQLB were faster, at 120’ QLB max distribution

T4/L1 in TPV

T7/L1 plus posterior dermatomes in QLB

T7/L1 but not posterior dermatomes in tQLB
Handbook of ultrasound regional anaesthesia

QLB Type I

QLB Type II

2013

QLB I

QLB II

External oblique

Internal oblique

Transversus abdominis

Quadratus lumborum

Ant

Post
We need to compare TAP a to QLB II

We need to compare QLB I to QLB II
• Diffusion blocks work

• Diffusion blocks are fast, volume based and easily taught

• They only need linear probes and depth is an average of 2 cm (therefore real potential with new high frequency probes!)

• Complication are lower down to the minimum as no vital structures are involved

• Ultrasound combined with MRI research have made this a new area to explore