



**RA-UK 2021 ASM**

**Wednesday 5<sup>th</sup> – Thursday 6<sup>th</sup> May**

**Virtual Event**

**Abstract Booklet**

## Immunomodulation of innate immunity by brachial plexus blockade: crossover study

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### Abstract

**Introduction:** The autonomic nervous system regulates innate immune function in response to afferent pain signals from injured tissue<sup>1</sup>. During acute inflammation, vagal release of acetylcholine suppresses CD11b expression, a surface integrin regulating neutrophil transmigration to injured tissue<sup>1</sup>. Whether regional anaesthesia modulates innate neuroimmune control has not been tested. We tested the hypothesis that brachial plexus block modulates the innate immune response to ischaemic tissue injury.

**Methods:** Following ethics review ((16/LO/0634) and written consent, under Holter heart rate monitoring 17 subjects (age:50+/-19; 53% female) underwent ultrasound-guided supraclavicular block (20ml 0.5% bupivacaine). Once motor block developed, subjects underwent 3x5 minute cycles of arm ischaemia induced by supra-systolic occlusion of the brachial artery using a sphygmomanometer. Brachial artery occlusion was repeated 6 weeks later, without supraclavicular block. Flow cytometric quantification (median fluorescence intensity units) of ex-vivo neutrophil CD11b<sup>+</sup> incubated with E. coli lipopolysaccharide (endotoxin-10ng/ml) or saline (control) was compared in the same subjects with/without supraclavicular block.

**Results:** Lipopolysaccharide-induced neutrophil CD11b<sup>+</sup> was reduced by 3615 units (95%CI:475-6754;  $P=0.03$ ) after arm ischaemia alone, but remained unchanged with arm ischaemia under supraclavicular block (mean difference:2331 units (95%CI:-3921 to 8582);  $P=0.73$ ). RR-interval increased (reduced heart rate) after arm ischaemia by 40ms (95%CI:13-66;  $P=0.003$ ) indicating increased vagal activity. RR-interval remained unaltered after arm ischaemia under supraclavicular block (mean difference:20 ms (95%CI:-11-50;  $P=0.19$ ).

**Discussion:** Arm ischaemia reduces neutrophil activation, an anti-inflammatory effect that is associated with increased vagal activity but prevented by supraclavicular block. Despite definitive pain relief, regional analgesia may adversely affect neuroimmune regulation after tissue injury.

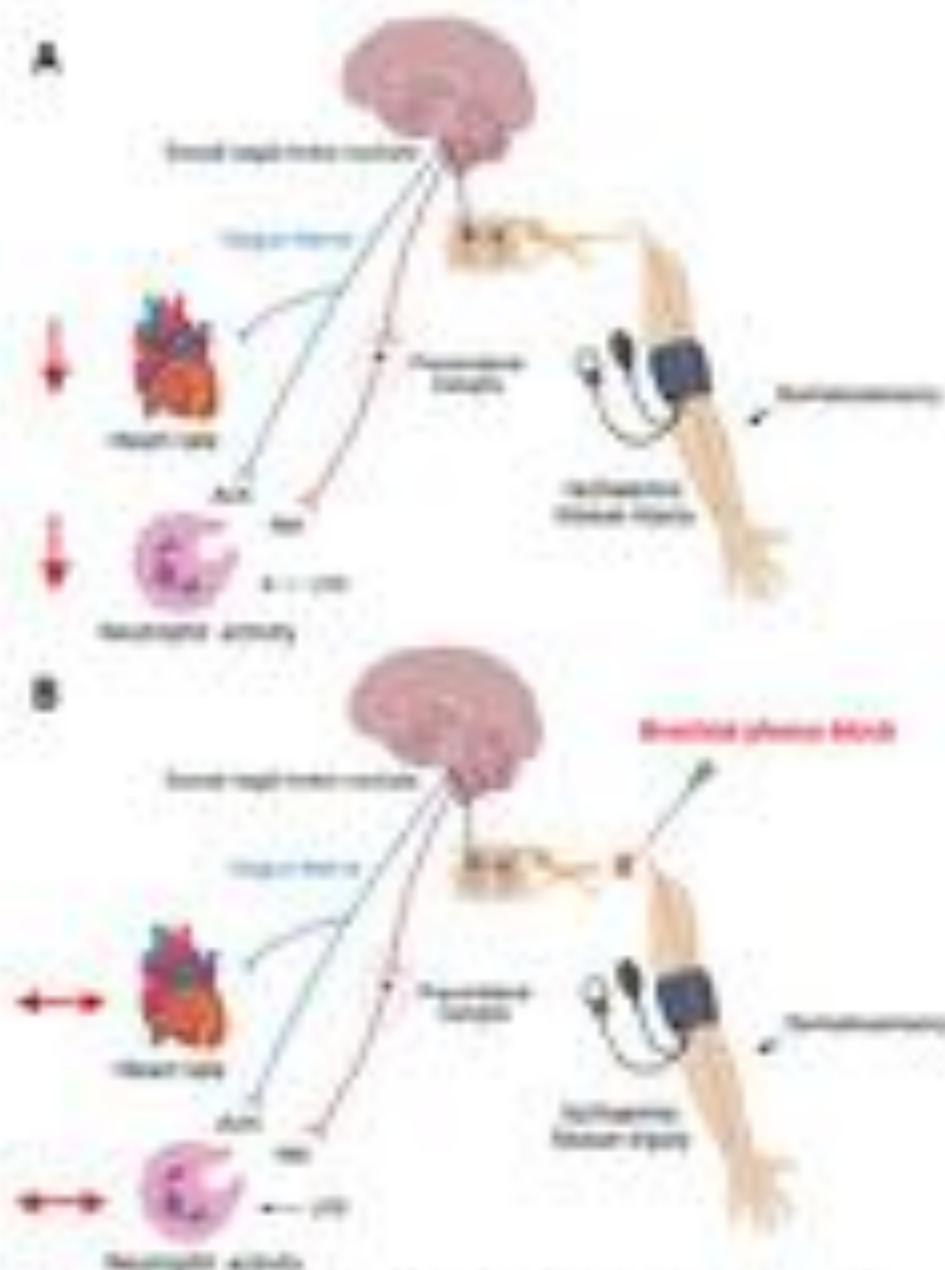


Figure 1. Neuro-immunomodulation of acute coronary inflammation refers to: **A** Neurological activity is reduced in response to subcutaneous tissue injury, or subcutaneous response associated with increased vagal activity (decreased heart rate). **B** Showing effects associated with signaling that site (subcutaneous tissue) of subcutaneous tissue injury, which is the anti-inflammatory effects of subcutaneous LPS. (lipopolysaccharide; ANS, autonomic nervous system; IL-6, interleukin-6).

## References

1. Pavlov VA, Tracey KJ. Neural regulation of immunity: molecular mechanisms and clinical translation. *Nat Neurosci* 2017; **20**: 156-66

## **Ultrasound-assisted versus landmark-based spinal block performance in emergency caesarean delivery in obese patients – a randomised controlled trial**

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### **Abstract**

**Background:** An ultrasound-assisted spinal block technique for obstetric anaesthesia has not been studied in an African population or during emergency caesarean delivery. The aim of the study was to assess the effect of preprocedural neuraxial ultrasound on the performance of spinal blockade in obese parturients undergoing spinal block for emergency caesarean delivery in a central hospital in South Africa.

**Methods:** Adult women booked for emergency caesarean delivery under spinal block had preprocedural ultrasound performed during the preoperative period. They were randomised to either a landmark-based group (LMG) or an ultrasound-assisted group (USG). The USG had identified landmarks marked to assist the anaesthetist. The primary end-points were first-pass success rate, difficult spinal block rate, procedure time, number of needle punctures and needle passes. Secondary end-points include the intervertebral spaces attempted, the predicted ultrasound distance and actual needle depth.

**Results:** Thirty-six participants were recruited between January and February 2020. The USG was associated with a shorter procedure time (48s versus 97s,  $p=0.049$ ) and fewer needle passes (3 versus 5.5,  $p=0.026$ ). The LMG had a higher rate of blocks performed at high risk intervertebral spaces (L1/2 or L2/3) compared to the USG (66.7% versus 11.1%,  $p=0.002$ ). The predicted ultrasound distance correlated well with the actual needle depth ( $r = 0.86$ , 95% CI 0.65 – 0.95) with a mean difference of 10 mm (range 0 – 25 mm).

**Conclusion:** Preprocedural ultrasound improved the technical performance and safety profile of spinal block during emergency caesarean delivery in an African population.

**Table 1 – Technical measures of apraxic block performance**

UBG = benchmark-based group, UBG = ultrasound-assisted group,  
 IQR = interquartile range, QR = interquartile range

	UBG	UBG	p-value
	0 (1-10)	0 (1-10)	
Maximum correct rate (%)	2 (71.4)	4 (22.2)	0.004
Difficult apraxic block rate (%)	4 (22.2)	0 (0)	0.104
Number of needle punctures (median (range))	1 (1-3)	1 (1-3)	0.104
Number of needle passes (median (range))	4.5 (1-20)	0 (1-10)	0.007*
Procedure time (s, median (IQR))	67 (42-100)	66 (28.5-76.5)	0.007*
<b>No attempts attempted (n (%))</b>			
0	17 (94.4)	17 (94.4)	
1	1 (5.6)	1 (5.6)	1.000
<b>Other attempts attempted (n (%))</b>			
High risk	11 (61.1)	0 (0)	
CVC/catheter	0 (0.0)	0 (0)	
LUM	0 (0.0)	0 (0)	
Low risk	7 (38.9)	10 (55.6)	0.007*
LUM	7 (38.9)	10 (55.6)	
LUM	0 (0)	1 (5.6)	
<b>Final attempts (n (%))</b>			
High risk	10 (55.6)	0 (0)	
CVC/catheter	0 (0.0)	0 (0)	
LUM	0 (0)	0 (0)	
Low risk	0 (0.0)	10 (55.6)	0.007*
LUM	0 (0.0)	10 (55.6)	
LUM	0 (0)	1 (5.6)	

Values statistically significant difference

## **Patient Satisfaction With Wide-Awake Forefoot Surgery Under Ultrasound Guided Ankle Block**

Thomas Parsons, Cezary Kocialkowski, Christopher Trew, Richard Edwards, Tristan Barton

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### **Abstract**

#### Introduction

Regional ankle blockade with targeted local anaesthetic for wide-awake forefoot surgery has been described but not widely used in the United Kingdom. This study investigates patient experience of wide-awake forefoot surgery with a regional anaesthetic protocol.

#### Methods

Forty-six patients (19 male, 27 female) aged 28 to 90 (mean 64) who underwent wide-awake forefoot surgery were reviewed. Regional anaesthesia was performed by a senior anaesthetist, under ultrasound guidance, following an established protocol. Patients were contacted post-operatively to assess levels of pain peri-operatively, satisfaction and overall experience. Approval for the project was given by the local research and development department.

#### Results

Response rate was 87% leaving 41 cases for analysis. 95% of patients reported no pain during surgery, 76% of patients experienced no or mild pain post-operatively and 65% of patients experienced no or mild pain during administration of anaesthesia. 98% of patients reported they were very satisfied or satisfied with the wide-awake forefoot surgery process and 98% of patients reported they would undergo the same process again. Perceived positive benefits of wide-awake surgery by patients were improved safety, more patient involvement, increased reassurance and faster recovery.

#### Conclusions

Patient experience of wide-awake forefoot surgery under regional anaesthesia is very positive. Although some patients find administration of the regional anaesthetic uncomfortable, this provides excellent analgesia peri- and post-operatively. Patients also described many perceived benefits.

### 3

## Prolongation of interscalene brachial plexus block with intravenous dexamethasone for awake, arthroscopic shoulder surgery

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### Abstract

#### Introduction

A dose of intravenous dexamethasone in combination with interscalene brachial plexus block (ISB) for shoulder surgery under general anaesthesia is known to increase the analgesic duration of ISB.<sup>1, 2</sup>

ISB with 0.75% ropivacaine is used for awake shoulder surgery at Queen Elizabeth Hospital, Gateshead (QEH) because it can be used in high concentrations providing a rapid onset of action, which is of benefit in a hospital without a block room setup. However, due to ropivacaine's analgesic duration, intravenous dexamethasone (6.6mg) has been added at QEH since 2019, aiming to prolong its action.

We compared the analgesic duration of ISB for awake, arthroscopic shoulder surgery, before and after the addition of intravenous dexamethasone.

#### Methods

Retrospective review of pain follow up forms for patients who underwent awake, arthroscopic shoulder surgery. Data were analysed for 10 cases pre- and 10 cases post the addition of dexamethasone.

#### Results

Table 1: Duration of analgesia from ISB

Average duration of ISB	Pain score day 1*		Pain score day 3*	
	At rest	With movement	At rest	With movement

Dexamethasone	24h 8m	3	5	4	6
Without dexamethasone	14h 41m	4	6	4	6

\*Assessed with numerical rating scale (0-10)

## Discussion

The addition of intravenous dexamethasone to ISB was associated with an increase in analgesic duration. This is of particular benefit for use in day-case, awake shoulder surgery when using fast acting, shorter lasting local anaesthetics because the benefits from rapid onset remain, such as maintaining efficient running of a theatre list, without compromising duration of analgesia.

## References

1. Desmet M, Vanneste B, Reynvoet M, Van Cauwelaert J, Verhelst L, Pottel H, et al. A randomised controlled trial of intravenous dexamethasone combined with interscalene brachial plexus blockade for shoulder surgery. *Anaesthesia*. 2015 Oct 1;70(10):1180–5. Available from: <https://doi.org/10.1111/anae.13156>
2. Cummings KC, Napierkowski DE, Parra-Sanchez I, Kurz A, Dalton JE, Brems JJ, et al. Effect of dexamethasone on the duration of interscalene nerve blocks with ropivacaine or bupivacaine. *British Journal of Anaesthesia*. 2011;107(3):446–53. Available from: <http://www.sciencedirect.com/science/article/pii/S0007091217330854>

## **Efficacy and side-effects of erector spinae plane block for thoracic wall and abdominal surgery: a systematic review and meta-analysis**

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### **Abstract**

**Introduction:** Erector spinae plane block (ESPB) provides long acting analgesia by spread of local anaesthetic in the fascial plane deep to the erector spinae muscle group (1). We hypothesised that ESPB provided: better pain relief than systemic opioid analgesia: equivalent pain relief to other fascial plane blocks, peripheral nerve blocks and neuraxial blocks; and reduced side effects.

**Methods:** We conducted a systematic review and meta-analysis of randomised control trials (RCT) published between 2015 and 2020. PROSPERO registration no: CRD42021236441. Our primary outcomes were: cumulative equivalent morphine consumption (mg) in the first 24 hours post-operatively; and pain score at 24 hours post-operatively. We compared ESPB against control; peripheral nerve block; fascial plane block or neuraxial block (2). Side effect incidence was recorded.

**Results:** We identified 37 RCTs that embraced 43 comparisons and a total of 2441 patients. ESPB reduced cumulative 24-hour morphine consumption (mg) post-operatively, mean difference (CI) -5.67(-7.33, -4.02), compared to systemic opioid; but not compared to peripheral nerve block, 0.86 (-5.35, 7.06), or intrathecal morphine, 6.29 (5.06,7.53) (Fig.1). Postoperative pain score at 24 hours after surgery was lower in ESPB groups compared to systemic opioid therapy, mean difference (CI) -0.57 (-0.77, -0.38) and peripheral nerve block, -0.61(-1.98, 0.76). Post-operative nausea incidence was reduced in ESPB groups.

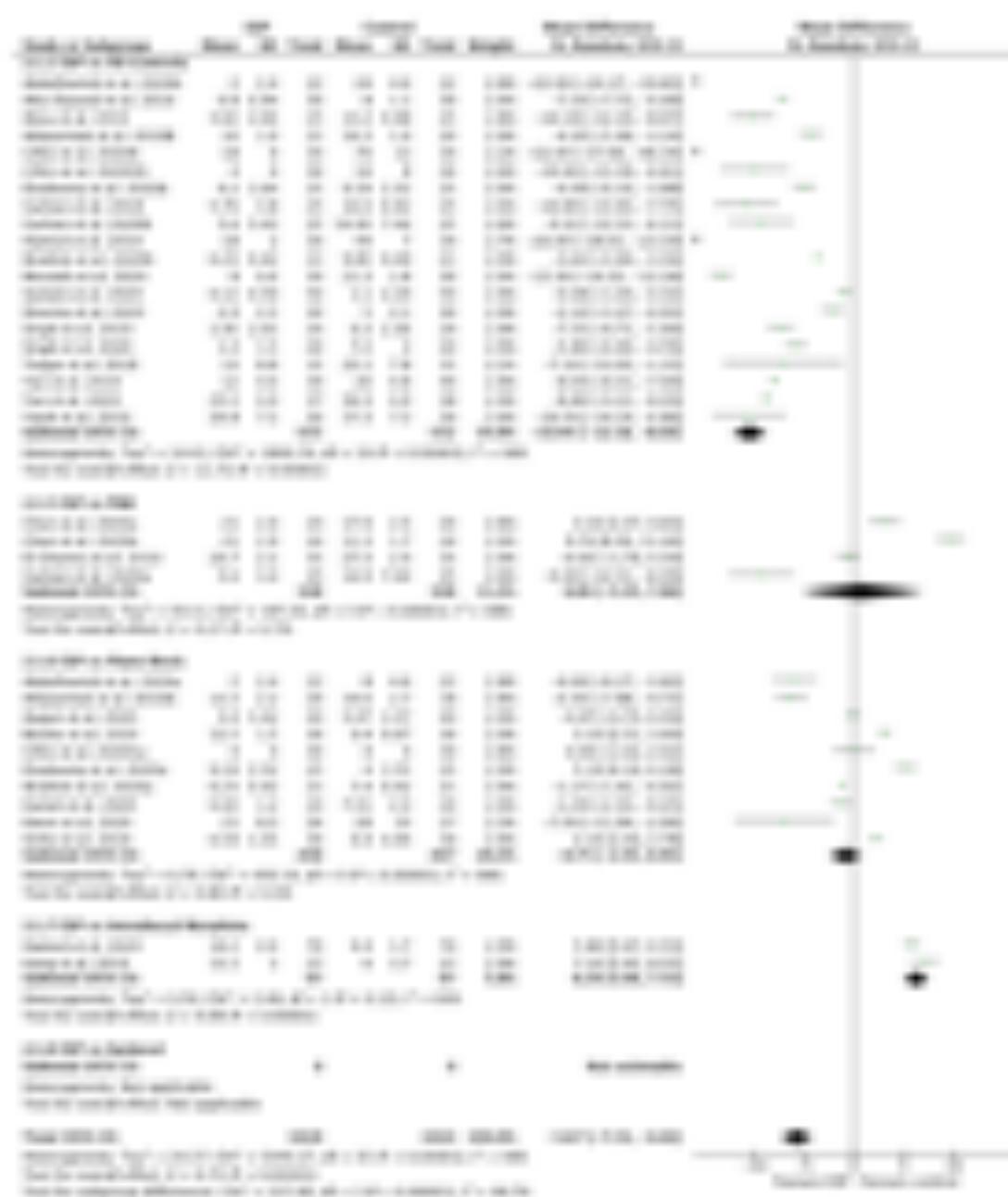


Figure 1. Forest plot of cumulative equivalent methane consumption (kg) in 24 hours, grouped by conversion factor (CF) at all control parameters and test (PH), face piece test, mechanical methane, and respiratory test.

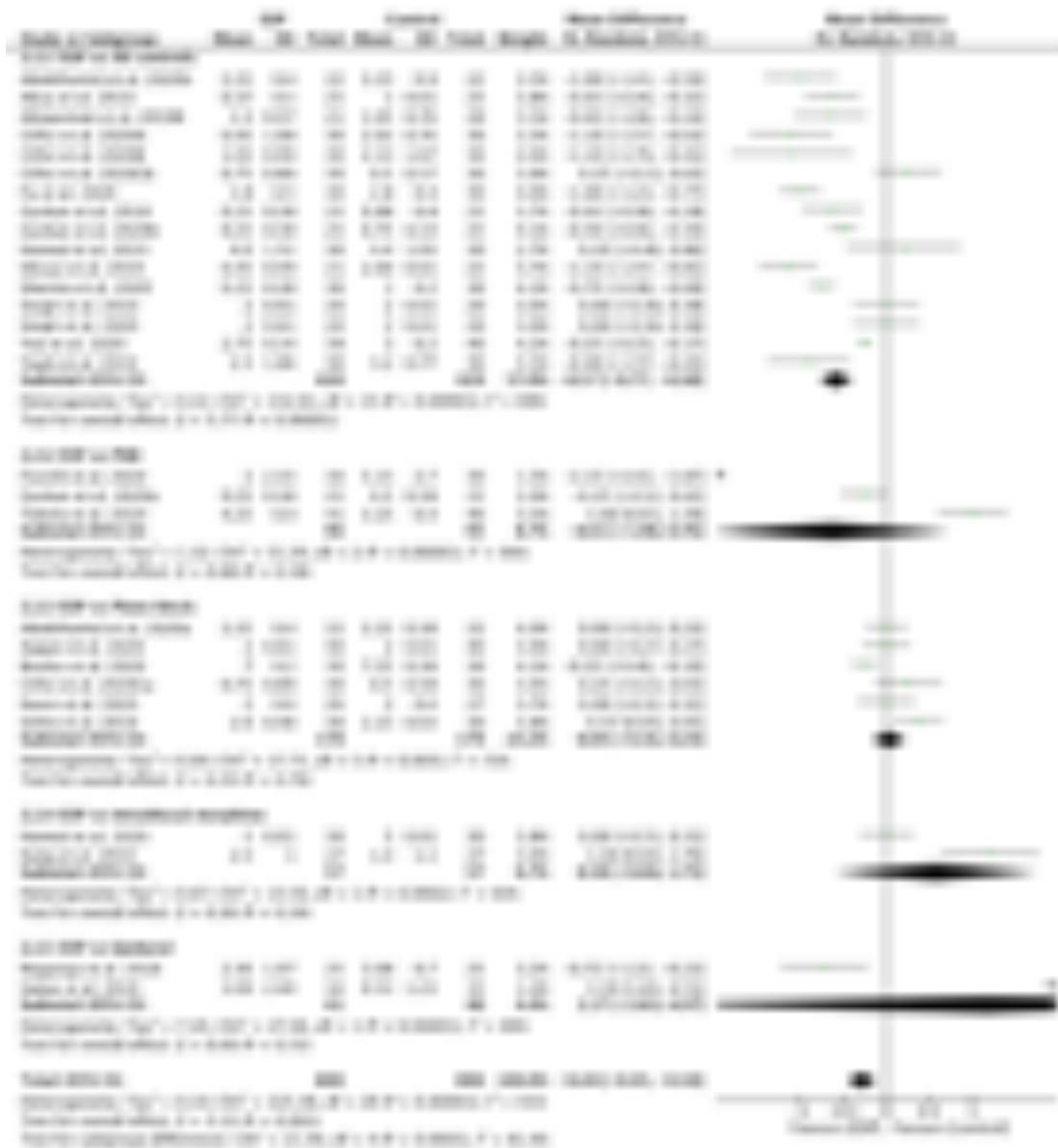


Figure 3 Forest plot of pain score at 24 hours (24-point scale), grouped by comparison

ESP is all controls, peripheral nerve block (PNB), TAPAC, paravertebral blockade, intrathecal morphine, and epidural block.

Discussion:

ESPB reduced cumulative post-operative 24h morphine consumption, pain scores and side effects compared to systemic analgesia. We recommend that future trials focus on high risk groups so that a realistic picture of the applicability of this technique can be gained.

References

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2. RevMan version 5.4; Copenhagen, the Nordic Cochrane Centre, the Cochrane Collaboration

## 5

### **Making the case for day-case spinal anaesthesia**

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#### **Abstract**

##### Introduction

Spinal anaesthesia has a number of properties which make it an attractive prospect for day-case procedures, including reduced post-operative nausea and vomiting and reduced post-operative pain<sup>1</sup>. However, the use of traditional agents for spinal anaesthesia may lead to increased admission rates due to their duration of action. This audit aimed to collect data on the use of spinal anaesthesia for day-case procedures using long-acting agents such as bupivacaine.

##### Methods

In a DGH day-case unit, data were collected for cases planned to go home the same day performed under spinal anaesthesia over a 2 month period, by reviewing patient notes and electronic theatre records.

##### Results

In the period reviewed, 19 cases were performed under spinal anaesthesia. These were predominantly urological, but also included gynaecological, orthopaedic and general surgical cases. The median age was 70 (45-92). 63% of cases required an overnight stay, and this was even higher in cases performed in the afternoon. In a matched cohort of patients with similar procedures performed under GA, admission rates were much lower (25%).

##### Discussion

In this audit, admission rates for patients having spinal anaesthesia were very high, and while this may represent a more frail cohort in whom spinal anaesthesia was deemed to be safer, still greatly exceeded those performed under GA. The use of short-acting spinal drugs such as prilocaine and 2-chloroprocaine may provide the benefits of spinal anaesthesia while still allowing same-day discharge<sup>2</sup>. These data are being used to put together a business case for the use of these drugs.

## References

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2) Camponovo C, Wulf H, Ghisi D, Fanelli A, Riva T, Cristina D, Vassiliou T, Leschka K, Fanelli G. Intrathecal 1% 2-chloroprocaine vs. 0.5% bupivacaine in ambulatory surgery: a prospective, observer-blinded, randomised, controlled trial. *Acta Anaesthesiol Scand.* 2014 May;58(5):560-6.

## Regional anaesthesia practice for arteriovenous fistula formation surgery

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### Abstract

#### Introduction

Data on the mode of anaesthesia used for arteriovenous fistula (AVF) formation surgery in the UK is sparse and practice is believed to vary significantly across UK hospitals. There is also limited understanding of the reasons underpinning current practice.

#### Methods

We conducted a survey and semi-structured qualitative interviews in parallel. Completion of the survey was taken as a proxy for informed consent. All interview participants provided oral or written consent.

#### Results

Responses were received from 39 of 59 centres, a response rate of 66%. Thirty-five centres reported routine use of brachial plexus blocks, but variation in anaesthesia skill mix and practice were observed. Interviews were conducted with 19 clinicians from 10 NHS Trusts including anaesthetists, vascular access and renal nurses, surgeons and nephrologists. Thematic analysis identified five key themes and eleven sub-themes (Figure 1).

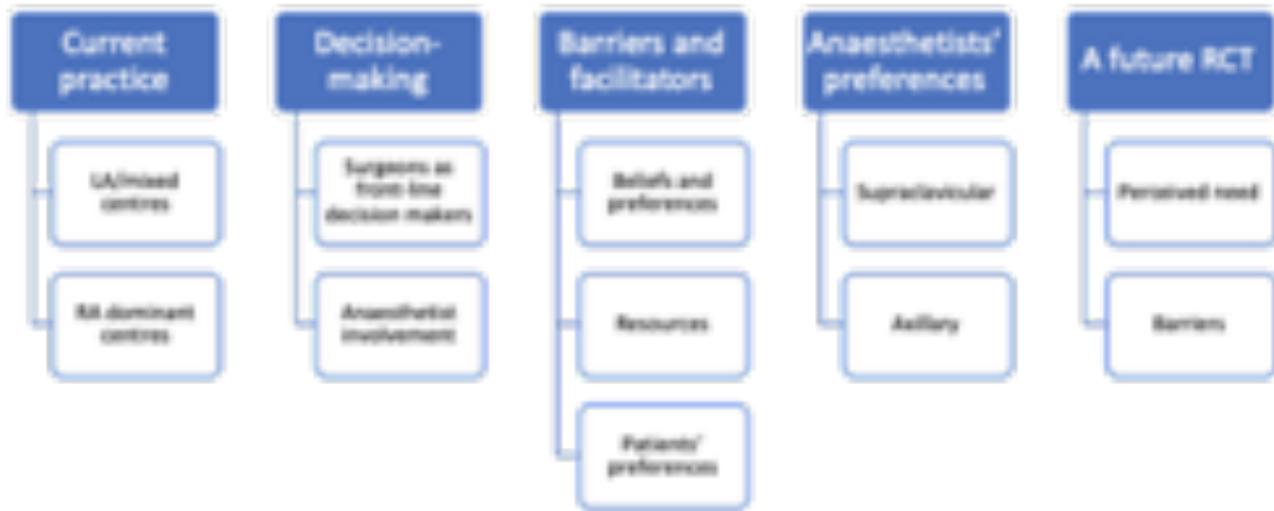


Figure 1: Thematic map from qualitative interviews

## Discussion

The use of regional anaesthesia for AVF formation in the UK is varied and influenced by a multitude of factors. Despite the availability of anaesthetists capable in performing regional blocks, there are other limiting factors that influence the routine use of this technique including surgical preference and resource implications. The study also highlighted the perceived need for a large multi-centred, randomised, controlled trial to improve patient care and provide an evidence base to inform current practice.

## Competing interests

Supported by the David Telling Charitable Trust and the NIHR Bristol Biomedical Research Centre. Article published in *Anaesthesia* (doi:10.1111/anae.14983).

## **Adapting to the COVID-19 Pandemic – Provision of an Acute Ambulatory Trauma Orthopaedic Service Under Regional Anaesthesia During the First Wave**

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National Orthopaedic Hospital Cappagh, Dublin, Ireland

### **Abstract**

#### **Introduction**

The COVID-19 pandemic has resulted in cancellations and delays to elective theatre lists, requiring hospitals to adapt procedures to continue providing patient care. During the first wave, the National Orthopaedic Hospital Cappagh, Dublin, Ireland developed an acute ambulatory trauma service, accepting COVID-negative patients from tertiary hospitals to treat orthopaedic trauma in a timely manner in a COVID-free environment. Regional anaesthesia was employed where possible, reducing the number of aerosol-generating procedures and risk of post-operative respiratory dysfunction for patients. This study involves an analysis of the procedures performed, regional techniques employed and outcomes experienced.

#### **Methods**

Patients who underwent orthopaedic trauma surgery under regional anaesthesia between March 18<sup>th</sup> and May 18<sup>th</sup> 2020 were identified. Procedure, regional technique, level of sedation and complications including rebound pain were recorded. Patients were contacted post-operatively and satisfaction scores were recorded.

#### **Results**

119 patients were identified, with 85 successfully contacted and surveyed. 54 underwent lower limb surgery, with an average satisfaction score of 4.8/5 and 94% happy to undergo the same technique again. 31 underwent upper limb surgery, with satisfaction score of 4.4/5 and 87% happy to undergo the same technique again. Incidence of rebound pain was 16.1% (upper limb) and 24.1% (lower limb).

#### **Conclusion**

This study provides an insight into a principally elective orthopaedic hospital adapting to successfully provide an ambulatory trauma service under regional anaesthesia during the COVID-19 pandemic.

Incidence of rebound pain was 16% and 24% for upper and lower limb surgery, respectively, considerably lower than the >55% reported in recent literature(1).

## **References**

1. Barry GS, Bailey JG, Sardinha J, Brousseau P, Uppal V. Factors associated with rebound pain after peripheral nerve block for ambulatory surgery. *British Journal of Anaesthesia*. 2020 Dec 31.

## **Audit of Compliance with Procedure for Collection of Consent for patients undergoing Epidural for Labour Analgesia**

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### **Abstract**

#### **Introduction**

Epidural analgesia is the gold standard for labour analgesia. We found non-compliance with our procedure for collection of consent for epidural analgesia. In view of the pain and distress in labour, some women were eager to sign the consent despite not knowing fully the risks and complications of epidural analgesia. Provision of information should be given as early as possible, ideally before the arrival of the anaesthetists as part of the consenting process.<sup>1</sup>

#### **Methods**

Based on our census and calculations, we included the cases within our study period from 23/12/2020 till 23/01/2021.

The data was collected using:

1. **Pre** Questionnaire before each epidural for labour analgesia
2. **Post** Questionnaire in postnatal period

#### **Results**

Despite **96%** of our patients receiving the epidural consent before anaesthetists' arrival, only **47%** read it. From our analysis, **22%** had no prior knowledge regarding epidural analgesia and also did not read the consent.

Upon further questioning, only **16%** of them were able to recollect all the information given. **All** of them prefer to receive the consent earlier.

## Discussion

We have a good practice where most of our patients received the epidural consent prior to anaesthetists' arrival. Despite full explanation from the anaesthetists before epidural, it was reflected in the Post Questionnaire that **32%** could not recall any of the risks and complications associated with epidural analgesia.

Our recommendation and action plan is to provide the patients with the informative epidural consent **as soon as** they are admitted into the hospital, either antenatal or labour ward.

## References

1. Plaat F, Bogod D, Bythell V, Mushambi M, Clyburn P, Lucas N, Johnston I, et al. Obstetric Anaesthetists' Association/Association of Anaesthetists Guidelines for Obstetric Anaesthetic Services 2013.

## Regional Anaesthetic follow up in Queen Alexandra Hospital (QAH), Portsmouth

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### Abstract

#### *Introduction*

Assessing patient satisfaction and safety should be a pillar of Regional Anaesthesia services<sup>[1]</sup>. Anaesthetic post-operative review is challenging with increasing number of procedures being undertaken as day cases<sup>[2]</sup>. We introduced a programme of systematic post-operative follow up.

#### *Methods*

Telephone follow up was undertaken following upper limb (interscalene, supraclavicular or infraclavicular) or lower limb (popliteal or adductor canal) regional anaesthesia in preceding 48 hours. Patients identified utilising theatre man programme. A formal questionnaire was completed, information collated into a databank including demographics, block type, neurological function, patient satisfaction and complications (systemic and block related). Comments regarding perioperative processes were recorded. Concerns were escalated to the Acute Pain Team (APT).

#### *Results*

195 patients included. Follow up response rate of 50% (98 patients) aged 21 – 88 years. 97% of patients had no residual blockade. Three cases experienced residual blockade, two resulting from popliteal blocks (full return of function at 48 hours) and one following adductor canal block, suffering a prolonged sensory deficit without long term sequelae. Important post – operative complications included constipation (17%) and PONV (16%). Overall only 4/98 patients complained of severe pain at follow up. Satisfaction rates were high.

#### *Discussion*

Systematic follow up identified patients at risk of nerve injury requiring further review. It helped us to improve our analgesic regimens for after the block wears off, supported the addition of laxatives/antiemetics and improved prescribing and teaching processes. It is sustainable and cost effective compared to commercial follow up applications and allows continuous quality improvement.

## References

- The 3rd National audit Project of the Royal College of anaesthetists. Major complications of central neuraxial block in the United Kingdom. January 2009. Report and Findings. Available at: [http://www.rcoa.ac.uk/docs/nap3\\_web-large.pdf](http://www.rcoa.ac.uk/docs/nap3_web-large.pdf).
- Chazapis M, Kaur N, Kamming D Improving the Peri-operative care of Patients by instituting a 'Block Room' for Regional Anaesthesia *BMJ Open Quality* 2014;**3**:u204061.w1769. doi: 10.1136/bmjquality.u204061.w1769

## Pre-operative pectoral nerve block versus usual care for breast surgery.

Andrew Beck<sup>1,2</sup>, Jennifer Edwards<sup>1</sup>

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### Abstract

#### Background:

Breast surgery is associated with considerable acute and chronic post-operative pain with up to 15% of patients reporting severe post-operative pain and 20-30% reporting chronic pain. Pectoralis nerve (PEC) block is a technique described to reduce post-operative pain following breast surgery. This study compared PEC block with local anaesthetic wound infiltration (standard care) looking at post-operative pain scores, opioid requirements and unscheduled stay.

#### Methods:

This was a single centre retrospective review of patients receiving PEC block or usual care. Primary outcome was opioid (oral morphine equivalents) requirement prior to discharge in morphine equivalents (ME). Secondary outcome measures included pain score in the recovery room (1-10 scale), nausea and delayed hospital discharge.

#### Results:

Data was collected for 42 patients (n=42), 50% (21) received PEC block and 21 (50%) usual care. Intra-operative opioid use was similar (5.91mg vs 5.94mg ME) however post-operative opioid use was significantly less in the block group (0.86mg vs 2.11mg ME,  $p < 0.05$ ).

Pain scores in recovery were less (0.38 vs 1.3) as was nausea (1 vs 3 patients). Block patients spent less time in recovery (38 vs 47 mins) and were less likely to require unexpected overnight stay.

#### Conclusions:

We have shown that PEC block is a useful technique for analgesia in breast surgery and that it is superior to local anaesthetic infiltration. PEC blocks reduce opioid requirements and associated complications and reduce the likelihood of unexpected, prolonged stay. PEC block has now become the standard of care for breast patients in this unit.

## References

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## ANESTHESIA OR ANALGESIA? NEW BLOCK FOR SHOULDER SURGERY: PENG

ILKE KUPELI, MERVE YAZICI KARA

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### Abstract

**Introduction:** In this case report, the pericapsular nerve group (PENG) block was performed for both postoperative analgesia and surgical anesthesia in two patients who underwent shoulder surgery, but for whom the other alternative blocks could not be performed for various reasons, is described.

**Cases:** A forty-four-year-old male patient had right femoral neck fracture, right upper humerus fracture, and multiple rib fractures between the 3-10 ribs at seven levels on the left side due to a traffic accident. For surgical anesthesia, we preferred the regional anesthesia method, such as the PENG block, which has a low probability of pulmonary complications. A 56-year-old female patient who was operated due to chronic shoulder pain, who could not provide optimum appearance for safe block in neither supraclavicular region nor interscalene region due to short and thick neck structure.

**PENG block:** The patient's arm was placed in external rotation. A linear ultrasound probe was placed longitudinally between the coracoid and the humeral head. After defining the humeral head, the tendon of the subscapular muscle and the deltoid muscle on it, a 50 mm needle was inserted using 'in plane' technique. When the needle passed through the deltoid muscle and touched the subscapularis tendon, 20 cc 0,5% bupivacaine hydrochloride was injected (Figure 1).

**Conclusion:** In these cases, it was demonstrated that the PENG block can be effectively and safely applied under ultrasound guidance in selected shoulder surgery cases for postoperative analgesia and largely contributed to whole anesthetic management but not as a sole technique.



## **OPIOID-FREE ANESTHESIA (OFA) IN NEUROSURGERY: A RETROSPECTIVE OBSERVATIONAL STUDY**

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Hospital Clínico Universitario, Valladolid, Spain

### **Abstract**

#### **Introduction**

The use of opioids in the management of acute perioperative pain is effective, but their use entails a series of adverse effects. Using OFA we avoid adverse effects (1). There are different studies (2) that indicate that use of opioids in patients with a tumor process could contribute to progression.

#### **Materials and Methods**

A retrospective observational study of patients over 18 years of age who were scheduled for elective craniectomy for a period of 6 months. This study was approved by local Ethics Committee (IP 20-1802). Anesthesia was induced with propofol, midazolam and muscle relaxation with rocuronium. Maintenance anesthesia was established with Propofol. We make a scalp block (frontal, auriculotemporal, zygomaticotemporal, occipitalnerves) with 0,3% ropivacaine and 1% lidocaine, using 2,5 ml for each of the nerves and supplemental intravenous analgesia (paracetamol +/- dexketoprofen). Visual analogic scale values were recorded at the end of the intervention after waking up the patient and morphine doses required during the first 24 postoperative hours.

Frontal nerves (supraorbital and supraotrotic/Alar)



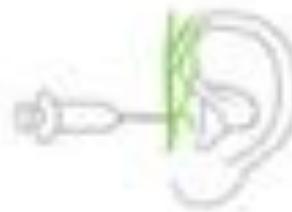
Temporal zygomatic nerve



Occipital nerves (major and minor)

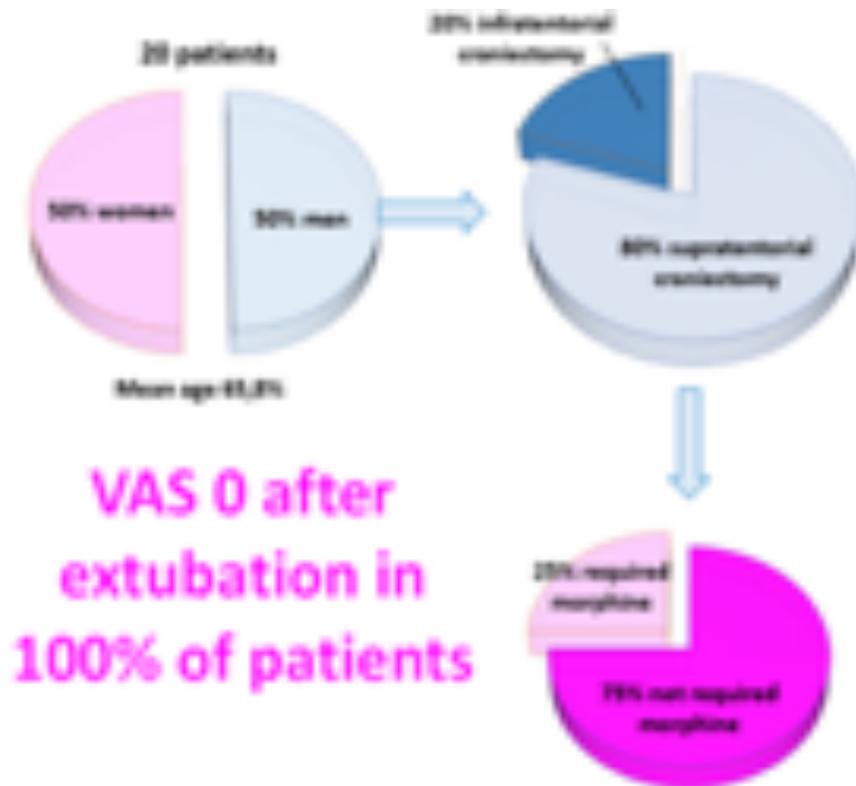


Auriculotemporal nerves



## Results

Pain assessment: VAS 0 after extubation in 100% of patients. 75% of the patients didn't require postoperative morphine and 25% required postoperative morphine (mean dose of 4.4 mg in 24 hours). No patient presented complications secondary to the block.



## Discussion

Although our study has limitations, there were no complications after performing the scalp block. Postoperative pain control was excellent. We can conclude that due to the low rate of complications and the low postoperative consumption of opioids, we can use OFA together with scalp block for neurosurgical interventions.

## References

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## OPTIMAL PATIENT POSITION FOR POPLITEAL SCIATIC NERVE BLOCK

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<sup>1</sup>NHS Greater Glasgow and Clyde, Glasgow, United Kingdom. <sup>2</sup>NHS Lanarkshire, East Kilbride, United Kingdom

### Abstract

**Introduction:** The sciatic nerve in the popliteal fossa can demonstrate degree of anisotropy due to its morphology and anatomical course, which can make it difficult to visualise clearly on ultrasound scanning.<sup>1</sup> This study examines the relationship between patient positioning and ultrasound image quality of the sciatic nerve in the popliteal fossa.

**Methods:** Forty staff volunteers were recruited to this study. Each volunteer was scanned in three positions: (1) Supine with the left knee flexed at ninety degrees and leg rested on a stool, (2) Right lateral with both knees flexed at ninety degrees and a pillow placed between legs, (3) Prone. Two regional anaesthetists were involved simultaneously; one scanned and obtained the best image of the sciatic nerve prior to it dividing in the popliteal fossa, whilst a second confirmed the best images were obtained prior to saving them on the ultrasound machine. The saved images for each volunteer were blinded, randomly allocated, then forwarded to a third anaesthetist in order to select the best, second best and third best image of the sciatic nerve.

**Results:** The lateral position ultrasound image quality was most often the best (n=29/40, 72.5%), followed by the prone position (n=11/40, 27.5%), with no preference for the supine position (n=0/40, 0%) with P value of less than 0.0001 using Chi-square test.

**Discussion:** Within the measured parameters, the lateral position offers the best ultrasound image quality of the sciatic nerve in the popliteal fossa, followed by the prone position, with no preference for the supine position.

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## NARCOTISED, BLOCKED AND BARELY BREATHING

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### Abstract

**Introduction:** Large doses of morphine administered prior to performing nerve block could lead to respiratory depression in the blocked, pain free patient.<sup>1</sup> We report a case of post nerve block respiratory peri-arrest due to morphine and newly implemented patient safety protocol to monitor respiratory depression in the blocked, pain free patient.

**Case:** A written patient consent was obtained for abstract writing and publication. A sixty-year-old female with past medical history of class III obesity and stage III chronic kidney disease underwent total knee replacement under general anaesthesia. Although the patient received a total of 25 mg IV morphine intraoperatively and in the recovery room she was still complaining of severe pain, but once a rescue adductor canal block was performed in the recovery room the patient was comfortable. However, she was found unresponsive on the orthopaedic ward six hours after the nerve block with GCS 3/15, respiratory rate of 8 breaths/minute, SpO<sub>2</sub> 86% on 3L/min nasal cannula oxygen and partial airway obstruction. Her GCS and hypoventilation improved after intravenous naloxone boluses followed by an infusion in the intensive care unit. The patient made full recovery and was discharged home after 48 hours.

**Discussion:** In light of this incident, we have introduced a protocol in the form of a sticker (see image below) for monitoring and early detection of potential post nerve block opioid toxicity in high-risk patients.

## THIS PATIENT IS AT RISK OF DEVELOPING OPIOID TOXICITY

### Inclusion criteria:

- Morphine given  $\leq 4$  hours prior to performing analgesic nerve block and,
- Total morphine dose  $\geq 15$  mg and,
- Patient age  $\geq 65$  (or  $< 65$  year old with history of renal failure — eGFR  $< 45$ ).

### Management:

- Give Oxygen 2-4 L/min for 6 hours post nerve block procedure.
- Check and record on NEWS chart: Respiratory rate, Oxygen saturation, AVPU score at 15 minutes, 30 minutes then, hourly for 6 hours post nerve block procedure
- Call doctor if Respiratory depression is noted: AVPU score  $\leq P$  and/or Respiratory rate  $< 10$ .

**Print nerve block date and time:** \_\_\_\_\_

## References

1. [https://www.judiciary.uk/wp-content/uploads/2018/02/Pamela-Hands-2017-0373\\_Redacted.pdf](https://www.judiciary.uk/wp-content/uploads/2018/02/Pamela-Hands-2017-0373_Redacted.pdf)

## OPIOID-FREE ANESTHESIA AND SCALP BLOCK IN CRANIOTOMY AND TUMOR EXCISION IN A 6-YEAR-OLD GIRL

Rocío López Herrero, Belén Sánchez Quirós, David Velasco Villanueva

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### Abstract

#### Introduction

Postoperative pain after craniotomy has a high incidence in pediatric patients. This pain can cause agitation, intracranial hypertension, epileptic seizures, and postoperative hematoma that lead to increased morbidity and mortality.

#### Case report

6-year-old patient with no relevant history presenting polymyxoid astrocytoma of the third ventricle programmed for craniectomy and tumor removal.

Upon arrival in the operating room, an electrocardiogram, non-invasive blood pressure, and pulse oximetry were monitored. Sevoflurane sedation was performed for venous cannulation. Subsequently, induction and orotracheal intubation were performed. Left radial artery and right internal jugular vein were cannulated and 800 mg of cefazolin and 200 mg of levetiracetam were administered.

We performed a scalp block prior to the placement of the Mayfield craniostat. We blocked the frontal (supraorbital and supratrochlear), auriculotemporal, zygomaticotemporal, and bilateral greater and lesser occipital nerves with 0.3% ropivacaine and 1% lidocaine, depositing 1 ml in each of the nerves.

Anesthetic maintenance was performed with Sevoflurane and rocuronium. Prior to the induction, rescue analgesia was administered with paracetamol. The patient remained hemodynamically stable, even at times of greatest nociception (Mayfield placement, surgical incision, or durotomy). The patient was extubated without incident, presenting VAS 0. She was transferred to the pediatric ICU where she did not require the administration of opioids for pain control in the subsequent 48 hours.

#### Conclusion

Cranial nerve block (scalp block) achieves satisfactory pain relief. Few studies (1) currently exist in pediatric patients undergoing craniotomy. Adequate pain control limits the need for rescue analgesics and an earlier recovery time.

## References

1. Xiong W, Li L, Bao D, Wang Y, Liang Y, Lu P, Zhang D, Liu G, Qiao L, Zheng N, Jin X. Postoperative analgesia of scalp nerve block with ropivacaine in pediatric craniotomy patients: a protocol for a prospective, randomized, placebo-controlled, double-blinded trial. *Trials*. 2020;21(1):580

## Stop before you block eleven years on. Has the situation changed?

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<sup>1</sup>St George's Hospital, London, United Kingdom. <sup>2</sup>St George's Hospital, London, United Kingdom

### Abstract

#### Introduction

A 'Never Event' is defined by NHS England as a serious, largely preventable patient safety incident that should not arise if the available preventative measures have been implemented (1). Wrong-sided nerve blocks were classified by NHS England as 'Never Events', in 2015 as they are recognized as unacceptable, and preventative measures are essential to help decrease their prevalence.

Safe Anaesthesia Liaison Group (SALG) issued an alert emphasising learning points from 67 inadvertent wrong-sided nerve blocks reported via the National Reporting and Learning Service (NRLS) over a 15-month period (2). The recommendation from this alert was to check that the surgical site had been marked by the surgical team before performing a peripheral nerve block, as per the World Health Organization (WHO) checklist (3).

#### Method

We undertook a survey in a tertiary hospital. Anaesthetic consultants and trainees responded over a two week period.

#### Results

Thirty three respondents involved in regional practice replied. All of them were aware of the SBYB campaign. 60 % performed SBYB before needle insertion. 38% performed SBYB more than fifty percent before needle insertion. 3% never performed SBYB. A further question was if they perform SBYB separate to the sign in process of which 90% said they did. 10% said they did not.

#### Discussion

Our results show room for improving checks to reduce never event occurrence and were departmentally communicated. We displayed SBYB posters in our anaesthetic rooms to improve awareness and reduce never events. Regional Anaesthesia teaching sessions reiterated the importance of a SBYB strategy.

### References

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2) Wrong Site Blocks During Surgery . SALG, London 2011 ([www.rcoa.ac.uk/node/631](http://www.rcoa.ac.uk/node/631)).

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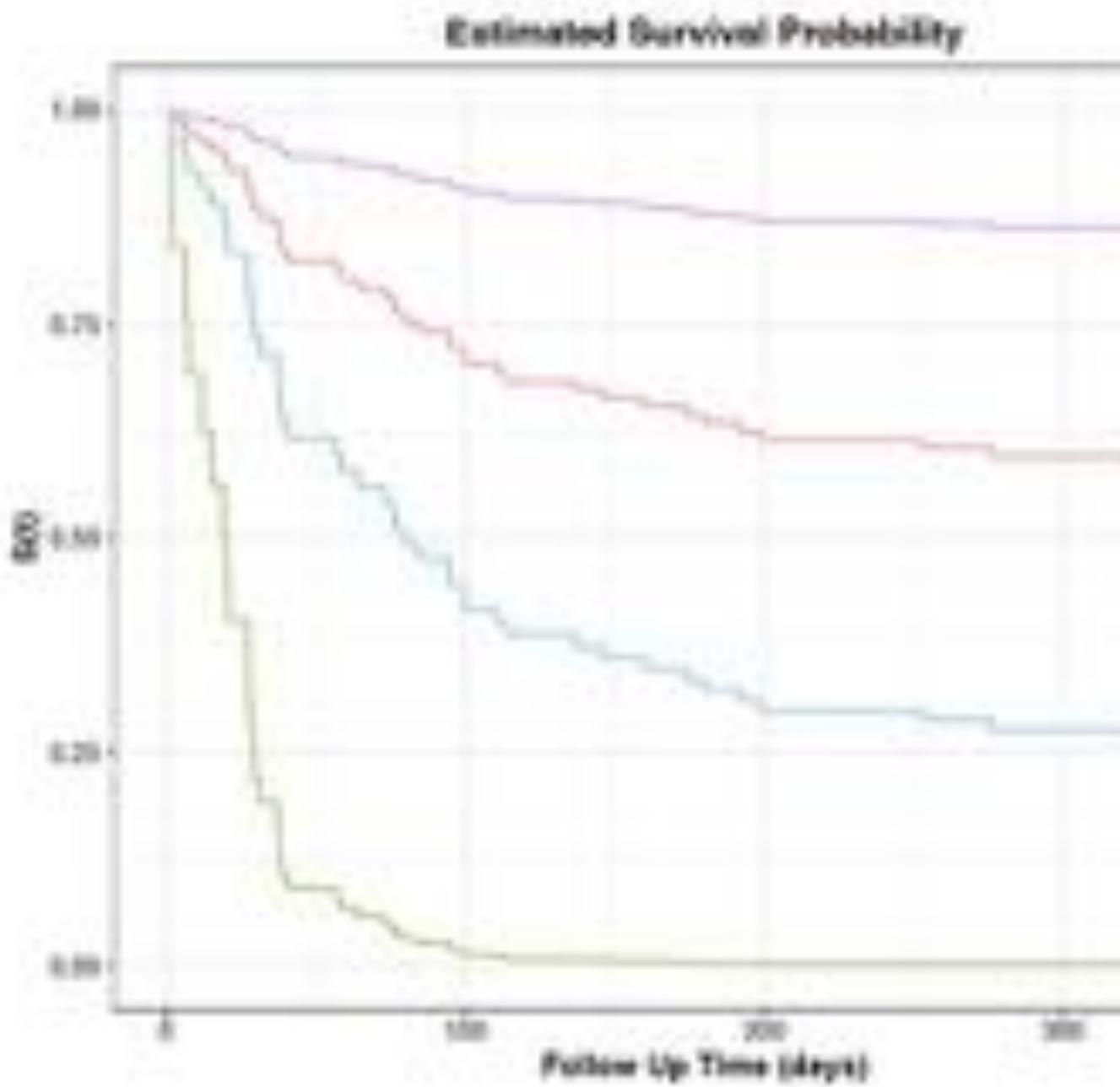
**Development of a dynamic web-based nomogram for prediction of 1-year mortality risk after hip fracture.**

Iain Kennedy<sup>1</sup>, Eilidh Simpson<sup>2</sup>, Katriona Goldmann<sup>3</sup>, Judith Joss<sup>1</sup>, Graeme McLeod<sup>1,4</sup>

<sup>1</sup>Ninewells Hospital and Medical School, Dundee, United Kingdom. <sup>2</sup>Crosshouse Hospital, Kilmarnock, United Kingdom. <sup>3</sup>Queen Mary University of London, London, United Kingdom. <sup>4</sup>University of Dundee, Dundee, United Kingdom

**Abstract**

Fig 1 Examples of survival curves calculated using esp.



Hip fracture is associated with a 30-day mortality of 6.9%<sup>1</sup>. Models focus mainly on 30-day mortality<sup>2,3</sup>. We aimed to develop a mathematical model predicting 365-day survival, and build an easy to interpret app for clinical use. The ability to predict long term survival may significantly affect clinical decision making.

## Methods

After Caldicott Guardian approval, we collected data from all patients having hip fracture surgery in a single centre over 8 months. Variables included: age; sex; BMI; side; fracture type; residence; social deprivation vigintile; routine blood tests; ASA status; anaesthetic technique; surgical implant; timing and duration of surgery; complications (transfusion; AKI; PE; MI), discharge date and discharge destination. Cox proportionality survival and logistic regression models were developed iteratively using RStudio<sup>4</sup>. Model validation and calibration used the bootstrap. A University of Dundee representative advised that ethical approval was not required.

## Results

We analysed data from 329 patients. Non-survivors had a: lower BMI, difference 2.4 (0.9-3.8)kg.m<sup>-2</sup>, P=0.002; higher creatinine, difference 18.2 (8.4-27.8) mmol.L<sup>-1</sup>, P<0.001; and higher lactate, difference 0.24 (0.00-0.48) mmol.L<sup>-1</sup>, P=0.04, on hospital admission. The Cox model (c-index 0.71; calibration 0.88) showed that age, BMI, creatinine (non-linear), lactate and the interaction of creatinine and lactate provide the best model (Fig.1). The logistic regression model also included WCC.

## Discussion

We built, calibrated and validated a dynamic nomogram of mortality (Shinyapps.io) after hip fracture surgery. Availability is pending MHRA approval.

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2. Maxwell MJ, Moran CG, Moppett IK. Development and validation of a preoperative scoring system to predict 30 day mortality in patients undergoing hip fracture surgery. *British Journal of Anaesthesia*. 2008 Oct; 101(4): 511-7.
3. Karres J, Heesackers NA, Ultee JM, Vrouwenraets BC. Predicting 30-day mortality following hip fracture surgery: evaluation of six risk prediction models. *Injury*. 2015 Feb; 46(2): 371-7.
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## **An Automated SMS System To Improve Follow-up After Neuraxial Intervention At The Royal Victoria Infirmary, Newcastle, A Tertiary Obstetrics Centre.**

Nathan Griffiths, Adnaan Qureshi, Jonathan Womack

Royal Victoria Infirmary, Newcastle upon Tyne, United Kingdom

### **Abstract**

#### Introduction

A previous system of bedside follow-up had variable returns due to staffing pressures and patient turnover, it consisted of heterogeneous notes into a follow-up ledger, often with little descriptive data. An in-house clinician-developed automated SMS system was introduced in 2020 aiming to improve patient follow-up rates and collate data on care and satisfaction. Patients receive a standardised questionnaire 24 hours after intervention, initially average response rates were 44%. Here we present data following the introduction of a reminder SMS in January 2021.

#### Method

We reviewed the response rates from January to March 2021 and discuss the benefits and limitations of the automated system.

#### Results

486 eligible patients were entered into the automated system, divided into 218 caesarean sections and 268 epidurals. The overall response rate was 58%.

#### Discussion

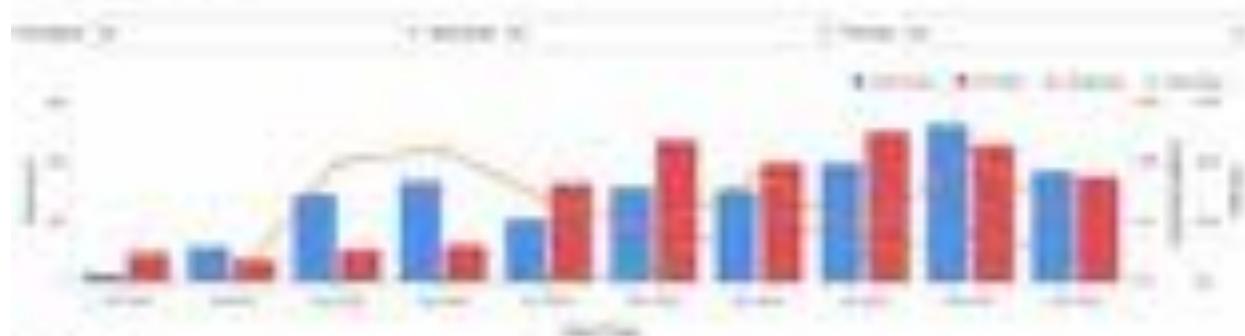
Previous documented engagement with telephone and text follow-up in day-case patients is 49% and 85% respectively<sup>1</sup> but this did not include the obstetric population. Advantages of the Newcastle system include quick screening for complications; obtaining patient satisfaction data; asking uniform questions easily collated for audit/quality improvement; and saving anaesthetists' time. The principal limitation is the variable response rate. The introduction of the reminder text in January significantly improved SMS response rates from a previous rate of 44% and we would recommend this be included in any similar systems.

Illustration 1- Individual patient summary and logbook indicating if further follow-up required/completed.





### Bar chart



### Bar chart



## References

- 1- Cittanova, Chauvier, Combettes, et al. Association of Automated Text Messaging With Patient Response Rate After Same-Day Surgery. *JAMA Network Open* [Online] 2021; 4(1); e2033312. Available from: DOI 10.1001/jamanetworkopen.2020.33312 [Accessed 15<sup>th</sup> March 2021].

## Evaluating patient satisfaction with regional anaesthesia (RA) for upper limb surgery.

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<sup>1</sup>University Hospital Bristol and Western, Bristol, United Kingdom. <sup>2</sup>Royal Gwent Hospital, Newport, United Kingdom. <sup>3</sup>North Bristol NHS Trust, Bristol, United Kingdom. <sup>4</sup>Royal University Hospitals Bath, Bristol, United Kingdom

### Abstract

Introduction:

Patients' attitudes to RA are rarely assessed<sup>1</sup>. We evaluated patient satisfaction, an indicator of quality care, with RA<sup>2,3</sup>.

Methods:

Prospective data collection using anonymised survey.

Results:

Response rate 62% (45 responses)

Table 1 Surgery

Awake surgery	Lightly sedated	GA
78%	13%	9%

Table 2 Patient satisfaction

	Yes	Maybe	No
Was RA <b>discussed</b> with you before the day of surgery?	53%		47%
Were you <b>satisfied</b> with information you received regarding the nerve block pre-operatively?	100%		
Did you feel <b>anxious</b> during the operation?	20%		80%
Did you feel <b>comfortable</b> during the operation?	93%		7%
Were you comfortable <b>seeing/hearing</b> the operation?	93%		7%

Did <b>post-op</b> pain relief meet your <b>expectations</b> ?	97%		3%
Would you <b>recommend</b> our RA service to friends/family?	93%	7%	

#### Feedback:

Advantages: *'Easier than GA.'.....'happier awake'.... 'no problem with block.'.....'Absence of pain'.... 'Quicker recovery.'.....'I didn't want a GA.'...'fewer pain-killers'....'discharged quicker'.....' I was able to decide the anaesthetic'....'reduced pain'...'early discharge'....*

Disadvantages: *'None'...'numbness'...'unable move arm'....*

#### Discussion:

Information regarding anaesthesia should be provided at the earliest opportunity<sup>4</sup>. With informed consent most patients chose RA and 93% would recommend it. All patients received satisfactory information pre-operatively which can result in higher satisfaction scores<sup>5</sup>. Good communication another indicator for satisfaction was reported with the majority of patients 'not anxious' and 'comfortable' throughout the operation. Patients cited post-operative benefits of RA including early discharge and lower analgesic requirements. We plan to consent more patients before the day of surgery through education and updated patient information leaflets.

#### References

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## **Erector spinae plane blocks and multimodal learning - improving patient care in a major trauma centre**

Marysia Cywinski, Jon Machin, Bisanth Batuwitage, Leanne Callaghan, Thomas Miller

University Hospital Aintree, Liverpool, United Kingdom

### **Abstract**

#### **Introduction**

As a major trauma centre, our institution manages significant numbers of patients with multiple rib fractures. In line with the RAUK Plan A blocks initiative we wished to increase the utilisation of the Erector spinae plane (ESP) block in helping to manage such patients where indicated.

We delivered a teaching programme aligned to the educational theories of Bloom's taxonomy<sup>1</sup> and Miller's pyramid of clinical competence<sup>2</sup>, providing a comprehensive learning experience aiming to enhance patient care.

#### **Methods**

Training was delivered in 3 ways during December 2020:

- A Zoom tutorial focused on RAUK "Plan A" blocks,
- An in-person ESP block/catheter workshop featuring knowledge and skill-based stations including phantom model,
- 3D printed ESP phantom needling model, available ad hoc.

#### **Results**

Pre- and post-workshop training questionnaires, completed by a total of 22 attendees:



**Discussion**

Our multi-format teaching allows the learner to navigate through the full spectrum of Bloom's cognitive processes from lower to higher order thinking, developing clinical skills aligned to Miller's pyramid of clinical competence.

The production and use of a bespoke 3D printed ESP model and needling phantom allows enhanced confidence gained through the training process to be safely carried forward into clinical practice.

Our results show that attendees had increased confidence in all aspects of ESP blockade.

Building on this project, we plan to offer the training on a regular basis. We also intend to audit rib fracture management in order to evaluate the 'does' element of Miller's pyramid, and quality of patient care.

## **References**

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2. Miller GE. The Assessment of Clinical Skills/Competence/Performance, *Academic Medicine*. 1990; 65(9): 63-67. Available from: DOI: 10.1097/00001888-199009000-00045.

## **Can't have a GA, Won't have a GA; The utility of Paravertebral Block for anaesthesia in challenging circumstances**

Colin Hill, Jonathan Womack

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### **Abstract**

#### **Introduction**

The paravertebral block (PVB) is a well-established regional anaesthetic technique thoracic and abdominal procedures [1, 2]. PVB alone could provide surgical anaesthesia but is often provided alongside sedation [3].

#### **Method**

Two cases are presented whereby PVB was used in conjunction with cutaneous infiltration to establish a rapid dense surgical block for patients where general anaesthesia was not possible. Both patients consented to presentation of their case.

#### **Case 1**

Unfasted 80-year-old with poor cardiovascular reserve requiring emergency evacuation of a rapidly expanding breast haematoma following wide local incision. PVB was offered on the basis of aspiration risk and potential hypovolaemia.

#### **Case 2**

71-year-old patient with an abscess overlying the scapular at the lateral edge of the back in T3 dermatome who explicitly refused general anaesthesia.

#### **Results**

Both patients underwent surgery with no additional local or systemic drugs. No discomfort or pain was felt. Observations were stable. Both patients were very satisfied and surgical conditions were noted to be excellent on both occasions.

## **Discussion**

We present the effective use of PVB for awake superficial surgery of the chest in patients whom GA was contraindicated. The technique described resulted in rapid dense surgical anaesthesia, with comparable anaesthetic time to general anaesthesia.

PVB was chosen above alternative chest wall blocks due to the author's proficiency and reliability of technique and uncertainty as to whether ESP would provide surgical anaesthesia. PVB is not a 'Plan A' block so this technique may not be universally achievable.

## **References**

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## INFECTION AFTER KNEE ARTROPLASTY, DO WE KNOW ALL RISK FACTORS?

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### Abstract

**Background and goal of study:** Non-steroidal anti-inflammatory drugs (NSAIDs) inhibit cyclooxygenase (COX). (1) These effects could be found in relation to the increased incidence of infections and higher risk of bleeding (2) Aim of this study was a descriptive analysis of risk factors for total knee arthroplasty, in order to evaluate the relationship between NSAIDs and periarticular infiltration and perioperative infection.

**Methods:** A descriptive observational study in 25 patients medical records who were scheduled for total knee arthroplasty. The following variables were collected. The study was approved

with number (CEIm PI 19/1438). All patients signed the informed consent to enter the study.

The sample was stratified in two cohorts. The baseline clinical epidemiological characteristics of the sample are shown (Table 1) The remaining variables collected were distributed as follows in each of the cohorts. (Table 2)

Table 1. Baseline clinical epidemiological characteristics of the sample

	n/N (%)
Female	1705 (58%)
Diabetes Mellitus	705 (23%)
Hypertension	1105 (44%)
Dyslipidemia	1605 (60%)
Cardiopathy	1605 (60%)
Obesity	405 (16%)
Periarticular infiltration	405 (16%)
Intraoperative administration of tranexamic acid	1605 (64%)
Locoregional anesthesia	2305 (92%)

Table 2 Distribution of risk factors in both groups (weeks 1-6 weeks)

		1-6 weeks		7-6 weeks	
		Percentage		Percentage	
		n		n	
Gender	Male	7	80.0%	7	87.5%
	Female	7	50.0%	10	62.5%
Allergies	NO	11	55.0%	10	62.5%
	YES	8	27.0%	7	42.5%
Diabetes Mellitus	NO	10	77.0%	8	51.7%
	YES	8	28.0%	7	27.3%
Hypertension	NO	8	37.0%	8	50.0%
	YES	8	42.0%	8	48.3%
Dyslipidemia	NO	10	77.0%	7	43.8%
	YES	8	28.0%	8	28.3%
Cardiopathy	NO	8	37.0%	7	43.8%
	YES	8	42.0%	8	50.0%
Smoker	NO	10	66.7%	8	51.3%
	YES	2	14.3%	2	12.5%
Periarticular infection	NO	10	66.7%	8	51.3%
	YES	2	14.3%	2	12.5%
Transcatheter aortic stenosis	NO	8	27.0%	8	50.0%
	YES	11	36.0%	8	48.3%
Anemia	General	8	27.0%	2	12.5%
	Iron deficiency	10	100.0%	8	51.3%

**Results and Discussion:** Statistically significant differences were found in the rate of infection with respect to sex; being more frequent the infections in the feminine sex ( $p=0.042$ ). Marginally significant differences were found between the taking of NSAIDs and infection of the prosthesis ( $p=0.1$ ). This study demonstrates that periarticular infiltration does not increase the risk of infection ( $p < 0.05$ ).

**Conclusions:** The use of NSAIDs has been associated with an immunosuppressive effect that leads to an increased risk of infection in total knee arthroplasty, so its use in the preoperative period should be limited. Female gender is other significant risk factor too. Our retrospective study has shown relationship between AINEs use and infection after knee arthroplasty.

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## Improving Regional Anaesthesia Teaching during the COVID-19 Pandemic; Our One-Year Experience

Adam Old, Maria Leong, Claudie Sellers, Ben Eden-Green

University Hospital Lewisham, London, United Kingdom

### Abstract

#### Introduction

In the past year reduced number of elective theatre lists, increased out-of-theatre workload and restrictions placed on face-to-face teaching have all been detrimental to trainees' regional anaesthesia experience. Our aim was to continue to develop regional anaesthesia skills amongst anaesthetic trainees during the COVID-19 pandemic.

#### Methods

Our initial teaching sessions were focussed on increasing exposure to 7 core blocks which we feel all anaesthetists should be comfortable with whether they consider themselves to be a regional specialist or not. Over 7 weeks we hosted a weekly "Sonoclub" teaching session in theatre which each week focussed on 1 of our 7 core blocks. Quantitative feedback showed improved confidence scores with each block at the end of each session but qualitative analysis showed that most trainees lacked confidence with their needling technique whilst scanning.

In response to this feedback we developed a life-sized ultrasound phantom which we were able to use in practical sessions which trainees could actually scan and practice needling techniques. Most commercial ultrasound phantoms are prohibitively expensive, we created our at a cost of less than £100.



Figure 2: Our Ultrasound Phantom and scanning session

## Results



Figure 1: Collated results of surveys from our Sonoclub sessions showing improved trainee confidence following our sessions

## Discussion

In spite of the challenges of the past year we believe we maintained a high standard of teaching in regional anaesthesia and we believe that our methods and indeed our model would be easily reproducible for any anaesthetic department.

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## **Safety and efficacy of ultrasound guided lower limb nerve blocks for complex foot surgery in patients with Charcot-Marie-Tooth Disease (CMTD).**

Kunal Joshi, MariaPaz Sebastian

Royal National Orthopaedic Hospital, London, United Kingdom

### **Abstract**

#### **Introduction**

CMTD is the most common inherited mixed motor and sensory neuropathy. (1) Patients frequently require complex foot surgery which is associated with severe postoperative pain. However, there are no definitive recommendations on the safe use of regional anaesthesia in these patients. (2)

#### **Methods**

We retrospectively analysed electronic records for CMTD patients undergoing complex foot surgery involving ultrasound guided peripheral nerve blocks for the year 2019. Primary aim was to evaluate incidence of nerve damage at 2 weeks follow up visit and ease of performance. We also analysed postoperative pain scores and analgesia.

#### **Results**

Seventeen CMTD patients had complex foot surgery during that period. 65% (11/17) patients had popliteal sciatic and saphenous nerve block and 35% (6/17) had ankle nerve block. None of the blocks were technically difficult. No patient reported new neurological deficit in the operated limb at 2 weeks follow up. The median post-operative pain score was zero. However, six out of 17 patients complained of moderate to severe pain in the recovery. All six were on long term opioids for chronic pain. Median opioid free time post-surgery was 17 hours.

<b>Complex foot surgery in CMTD patients</b>	<b>Popliteal sciatic + saphenous nerve block N=21</b>	<b>Ankle nerve block N=6</b>	<b>Total N=17</b>
Pre-existing neurological deficit, n (%)	5 (45.5)	2 (33.3)	7 (41.2)
Pre-existing muscle weakness/atrophy, n (%)	4 (36.4)	2 (33.3)	6 (35.3)
Pre-operative chronic pain medications, n (%)	7 (68.6)	3 (50.0)	10 (58.8)
Intra-operative opioids to supplement nerve block, n (%)	3 (27.3)	0 (0)	3 (17.6)
Intra-operative opioids to relieve tourniquet pain, n (%)	5 (45.5)	0 (0)	5 (29.4)
Median thigh tourniquet time in minutes	118	No thigh tourniquet	
Median pain score in recovery on a scale 0-10	5	0	0
Moderate to severe pain in recovery requiring opioids, n (%)	6 (54.5)	0 (0)	6 (35.3)
Patients with new neurological deficit at 2 weeks, n (%)	0 (0)	0 (0)	0 (0)

## Discussion

With a pre-existing neuropathy there is a fear of ‘double crush’ nerve injury which renders practice of nerve blocks contentious in the light of no formal recommendations. Few case reports describe regional anaesthesia in CMTD patients without worsening their condition. (3) Ultrasound guided nerve blocks were safe in CMTD patients in our practice, but the block success rate was less (65% vs 90%) than usual. (4)

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## Pre-theatre fascia iliaca blocks in hip fracture patients – a quality improvement project based on marginal gains

Edward Scott, Adam Old, Ben Eden-Green

University Hospital Lewisham, London, United Kingdom

### Abstract

#### Introduction

National guidelines recommend the use of fascia iliaca block (FIB) as part of the multimodal analgesic approach for patients admitted with fractured neck of femur (NOF)<sup>1</sup>.

Prior to interventions, rates of FIB at our institution were consistently below the national average. The aim of this QIP was to increase the rates of FIB to be consistently above this average.

#### Methods

This QIP followed a 'plan, do, study, act' methodology.

*Plan* – Health care professionals involved in NOF patient care were interviewed to ascertain reasons for low numbers of FIBs.

*Do* – Several interventions were carried out in June 2019 based on findings from the above interviews: teaching sessions to ED doctors revising block techniques; encouraging ED doctors to document their blocks more consistently to improve capture; anaesthetic team encouraged to assist with blocking patients in ED when no trained ED staff available; empowering physiotherapists, senior nurses, orthopaedic and orthogeriatric doctors to contact the anaesthetic team if patients arrived on the ward without a block.

*Study* – rates of blocks were collected as part of the ongoing NHFD.

#### Results

Figure 1 shows rates of FIB before and after interventions along with national averages. Rates of FIB at our institution have consistently risen above the national average following interventions.

## Discussion

We have shown that several simple changes can have a significant impact on rates of FIB, hopefully leading to better patient care and experience.

ACT – to make this change sustainable, our regional fellow is repeating this cycle of interventions every 6-12 months.

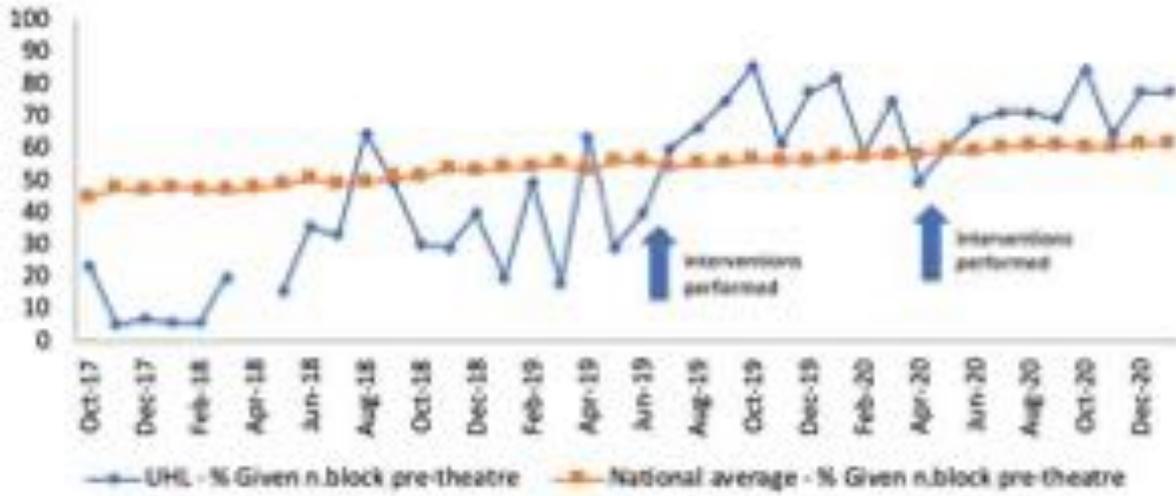


Fig.1

## References

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## The Role of Peripheral Nerve Block Use on Pain and Functional Outcomes Six Months After Foot and Ankle Surgery

Christina Downham<sup>1</sup>, Fraser Harrold<sup>2</sup>, Graeme McLeod<sup>1,2</sup>

<sup>1</sup>University of Dundee, Dundee, United Kingdom. <sup>2</sup>Ninewells Hospital, Dundee, United Kingdom

### Abstract

#### Introduction:

Despite 21% of mid/hindfoot and ankle surgery patients experiencing moderate-to-severe pain one year post-operatively,<sup>(1)</sup> few studies have examined the impact of regional anaesthesia on long term surgical outcomes.<sup>(2)</sup> This study aimed to investigate the association between peripheral nerve block use and pain and functional outcomes six months after foot and ankle surgery.

#### Methods:

771 patients undergoing elective foot and ankle surgery across NHS Tayside were consecutively recruited into a prospective cohort study between 2015 and 2019. Data on anaesthetic technique was retrospectively collected from electronic health records. The Manchester-Oxford Foot Questionnaire (MOXFQ) score assessing pain, mobility and social interaction, was collected prior to surgery and post-operatively at 26 weeks. Change in MOXFQ score between baseline and follow-up was used in a multiple regression model.

#### Results:

Patients who received a peripheral nerve block had significantly worse MOXFQ scores pre-operatively ( $p=0.002$ ). 82.9% of all patients undergoing foot and ankle surgery experienced an improvement in MOXFQ score 26 weeks post-operatively. In the multiple regression model (Table 1), peripheral nerve block use was not associated with a significant difference in MOXFQ score improvement 26 weeks after surgery ( $p=0.5$ ).

#### Discussion:

This study did not identify any association between anaesthetic technique and improved postoperative outcomes at 26 weeks. However, nerve blocks are still recommended due to existing evidence supporting their role in the reduction of acute postoperative pain. Further research will investigate the

impact of factors including the patient’s acute post-operative pain experience and psychological wellbeing on long term post-surgical outcomes.

**Table 1. Multivariable Regression Model.**  
 Dependent Variable: Change in MOPC (score) between baseline and 26 weeks post-operatively

	Effect Estimate (β) (95% Confidence Interval)	T Statistic	P Value
Age (years)	-0.207 (-0.048, 0.242)	1.260	0.217
Male Gender	-4.751 (-6.979, -0.524)	-3.267	0.002
Body Mass Index (kg/m <sup>2</sup> )	0.036 (-0.018, 0.090)	0.267	0.794
Neuro Block	2.208 (-0.219, 4.635)	0.674	0.500
General Anesthesia	2.200 (-4.828, 7.828)	0.462	0.642
Spinal Anesthesia	0.854 (-6.145, 8.043)	0.264	0.792
Diabetic	6.145 (-2.085, 14.369)	1.469	0.142
Smoker	-0.823 (-6.329, 4.683)	-0.202	0.842
Hypertensive	-0.226 (-4.365, 4.112)	-0.060	0.952
Obesity	1.174 (-0.629, 5.977)	0.480	0.632
Males Virgus	-0.865 (-9.280, 1.870)	-1.264	0.219
Lower Taz Pathology	-0.675 (-6.682, 5.332)	-0.100	0.929
Bilateral Procedure	-4.564 (-11.295, 1.347)	-1.236	0.227
Forefoot Procedure	3.480 (-4.887, 10.947)	0.513	0.602
Midfoot Procedure	-0.202 (-6.422, 5.920)	-0.242	0.812
Medial Hindfoot Procedure	1.284 (-0.612, 11.999)	0.225	0.822
Lateral Hindfoot Procedure	-0.224 (-11.584, 11.137)	-0.022	0.982
Ankle Procedure	-0.865 (-9.717, 8.047)	-0.412	0.682
Surgeon 1	-5.487 (-12.554, 1.580)	-1.529	0.127
Surgeon 2	-0.542 (-8.308, 7.224)	-0.239	0.812
Surgeon 3	4.585 (-0.222, 12.287)	1.283	0.217
Surgeon 4	0.887 (-10.522, 14.747)	0.054	0.968
Surgeon 5	1.280 (-6.646, 8.812)	0.225	0.792
Surgeon 6	-1.675 (-11.244, 7.893)	-0.096	0.929
Surgeon 7	0.326 (-4.640, 11.310)	1.217	0.229
Surgeon 8	-2.750 (-9.622, 4.122)	-0.280	0.782
Surgeon 9	Reference Category		

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**Ethical Statement:** Caldicott Guardian approval in place

**Conflict of Interest:** none

## Postoperative analgesia and mobility after Pericapsular Nerve Group (PENG) block in hip surgery

Ruth de Las Casas, Andrew Kermode, Martin Urban, Neal Reynolds, Antonio Perello Sancho

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### Abstract

#### Introduction:

Hip fracture is the commonest reason for emergency surgery amongst older persons [\[i\]](#), and optimising perioperative analgesia reduces morbidity [\[ii\]](#). Fascia iliaca or femoral nerve block (FIB/FNB) is the recommended regional technique [\[iii\]](#), but recent cadaveric studies indicate these may not be the optimal approach [\[iv\]](#). Pericapsular nerve group (PENG) block is an alternative simple technique with case-reports describing rapid, effective analgesia and infrequent motor side-effects [\[v\]](#),[\[vi\]](#). Here, we compare opiate requirements and time to mobilisation in hip fracture or hip replacement patients receiving spinal anaesthesia plus PENG, versus spinal plus FIB/FNB.

#### Methods:

In this single-Trust observational study data from 24 consecutive patients receiving PENG and 22 consecutive patients receiving FIB/FNB was collected retrospectively, via note-review, by non-blinded trainees. Opiate consumption was compared using Morphine Milligram Equivalents (MME) [\[vii\]](#).

#### Results:

Groups were demographically comparable. Post-operative opiate requirements in the PENG group were higher (mean MME 7.2mg (SD 2.4) versus 3.8mg (SD 2.5)) (table 1). Time to mobilisation (table 2) was shorter in the PENG group with 78% versus 32% mobilising on day 0.

#### Discussion:

We found hip fracture patients receiving PENG plus spinal required more post-operative opiate than a control group receiving FIB/FNB, however time to mobilisation was shorter in the PENG group. It is feasible that post-operative pain was from the incision (covered by FIB but not PENG) rather than the hip joint, and that PENG plus incisional infiltration of LA would offer improved post-operative analgesia, whilst retaining advantages of the PENG block.

Table 1: Details of intraoperative and postoperative analgesia in PIRG and control group

	PIRG group	Control group (PIB/PIB)
Mean milligrams of fentanyl in opoid	9.27	9.44
Number of patients opoid free(ng)	16/34 (47%)	1/31 (3%)
Pericapsular given intraoperatively	6/34 (17%)	4/31 (13%)
Region Pericapsular given post-operatively	20 (59%)	21 (68%)
Region Pericapsular given post-operatively	5/34 (15%)	5/31 (16%)
Mean VAS at 24 hours post-operatively	2.7mg (SD 1.8)	3.8mg (SD 1.8)
Mean VAS at 24 hours post-operatively	2.7mg	3mg

VAS = Visual analogue pain assessment

Table 2: Postoperative time to mobilisation in PIRG and control group (day 0 = operative day)

	PIRG group	Control group (PIB/PIB)
Mobilised on day 0	18/34 (53%)	10/31 (32%)
Mean time to mobilisation (days)	0.96 (SD 0.8)	1.34 (SD 1.8)
Mean time to mobilisation (days)	0	1

Mean = Mean time to mobilisation

\*This table shows that not all patients were mobilised within 24 hours of surgery

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## **Overcoming the stumbling block - creating an innovative regional anaesthesia teaching programme for novice trainees.**

Rebecca Marsh

University of Plymouth, Plymouth, United Kingdom

### **Abstract**

#### **Introduction**

Despite ultrasound technology and its availability increasing, the use of anaesthetic blocks has declined. This is multifactorial, however lack of training and confidence have been cited<sup>1-5</sup>. Trainees often feel discouraged as balancing their regional anaesthesia (RA) learning with busy clinical services is difficult.

Currently RA training in the South West is haphazard, based overwhelmingly on the apprentice model of 'see one, do one'. Routine exposure to regional training and confidence remains low. No formal RA teaching using simulation exists.

#### **Methods**

With an innovation grant from Health Education South West, I have established a new and exciting RA training programme, aiming to improve confidence and skill, allowing clinical opportunities to be maximised as they arise.

Using simulation techniques, competency in ultrasound and needling is acquired, which when translated into clinical environments, increases patient safety. This is combined with didactic teaching covering ultrasound principles and anatomy.



## Results

Initial workshops have been well received. Structured sessions based on RAUK's Plan A blocks, are being established. Collection of feedback is ongoing, allowing evaluation and development.



Although currently a standalone intervention, it is being modified to incorporate the wider RA education needs of our department, irrelevant of experience, skill level or seniority. Possibilities exist to expand to deanery level teaching, with potential roll out to all local hospitals promoting USGRA as a speciality.

## Discussion

Locally, I am hopeful that this teaching programme, will create a generation of anaesthetists with increased regional confidence and competency, promoting patient safety and quality care within regional anaesthesia.

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## **Hip, hip, hooray? Investigating the regional anaesthetic management of fractured neck of femur patients in a local DGH**

Rebecca Marsh

Torbay Hospital, Torbay and South Devon NHS Foundation Trust, Torquay, United Kingdom

### **Abstract**

#### Introduction

In 2019, 410 patients presented with a fractured neck of femur to Torbay Hospital<sup>1</sup>. Both NICE and the AAGBI recommend nerve blocks for pain management<sup>2-3</sup>. With the landmark fascia iliaca block (FIB) efficacy being debateable<sup>4</sup>, the question of 'best block practice', remains unanswered.

I present a fifty-two patient snapshot of fractured neck of femur care, comparing intra-operative regional technique with post-operative pain scores.

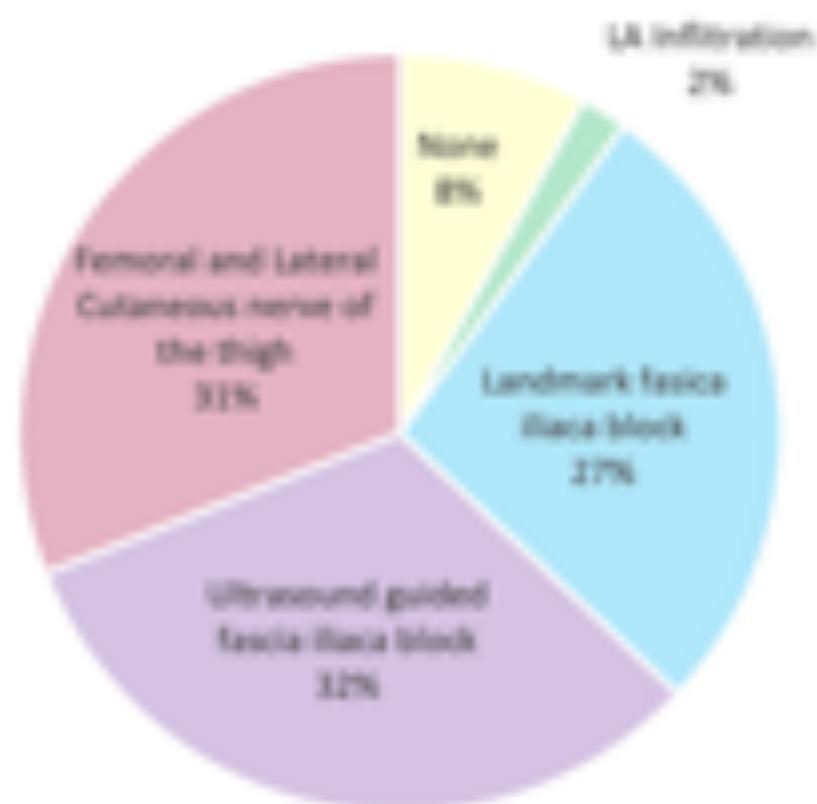
#### Methods

A prospective analysis of notes was performed over several months by collecting daily lists of admissions. Data collected included anaesthetic technique, the type of regional anaesthetic performed (if any), post-operative pain scores, and post-operative opiate analgesia administration.

#### Results

14 GAs were performed (27%), 36 spinals (69%) and 2 patients received both (4%). Two patients had notes lost to follow up and therefore post-operative pain scores were unavailable. Pain is documented on a scale of 0 to 3, and time zero was defined as anaesthetic induction, or insertion of spinal.

## Regional anaesthetic techniques performed



Type of block	Pain score at 6 hours	Maximum pain score between 6 and 12 hours	Pain score
None	1.50	1.50	
LA infiltration	2.00	2.00	
Landmark fascia iliaca block	0.92	1.15	
Ultrasound guided fascia iliaca block	0.75	0.81	
Femoral and Lateral Cutaneous nerve of the thigh	0.69	0.91	

Figure - Table showing pain scores for each block

### Discussion

Ultrasound guided techniques performed favourably with the femoral plus LCNT block performing best (although this may lack statistical significance). This could be for multiple reasons, including ease and familiarity of the technique. Obtaining accurate pain scores is a limitation, as patients cannot often communicate their discomfort. Also nursing staff admit to frequently administering opiates to 'calm' patients. RA technique for hip fracture needs further research but we must continue to encourage our colleagues to perform blocks, with femoral nerve and LCNT performing favourably.

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## Using mastery learning approach to improve and maximize the use of fascia iliaca block in Emergency Department

Su Ying Ong, Kathryn Hill, Myra McAdam

NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

### Abstract

#### Introduction

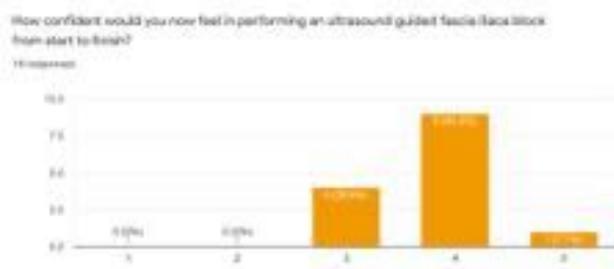
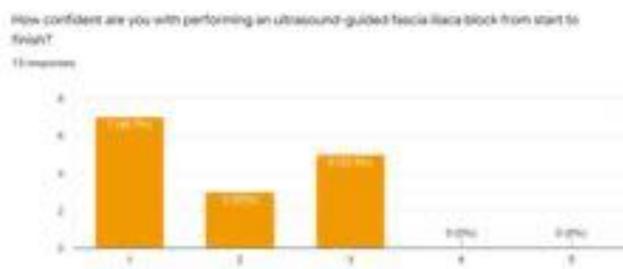
The fascia iliaca block (FIB) is a block that can be used to provide patients with fractured neck of femur (NOF) some opioid sparing analgesia<sup>1</sup>. Nowadays, ultrasound guided technique is preferred<sup>2</sup>. Along with the ED team, we set up a teaching session, adopting the mastery learning approach, to teach FIB to doctors rotating to the ED.

#### Methods

We developed and sent pre-course material and a questionnaire regarding their experience and confidence in using ultrasound and performing FIB. We set-up a two hours small group session in ED to demonstrate the skills, then leave the learners to perform deliberate practice utilizing mannikins. Following the session, we sent out a post-course questionnaire.

#### Results

The ED doctors comprise of various training grades and experience. Globally, confidence level in using the ultrasound as well as performing in-plane FIB after the session improved. 100% of the doctors in ED enjoyed the session, found it relevant to their training and would recommend it.



## Discussion

Ultrasound guided FIB is a block which can be easily taught to new learners regardless of experience. Most participants considered the pre-course material helpful to maximise hands on practice during the teaching session. Most people found the use of ultrasound and how to optimize the image most useful.

## Conclusion

Using mastery learning approach, we managed to improve participants confidence level. Given more opportunity for repeated, deliberate practice as well as using audio-visual aides we are hopeful that we can teach as many ED doctors as possible to perform this block safely.

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## **Bemusing blocks : A pilot survey assessing attitudes, confidence and training in regional anaesthesia**

Rebecca Marsh

Torbay Hospital, Torbay and South Devon NHS Foundation Trust, Torbay, United Kingdom

### **Abstract**

#### Introduction

The RCOA Higher Curriculum states that, anaesthetists should be able to 'perform both lower and upper limb blocks with distant supervision, always considering the option of RA<sup>1</sup>.

Anecdotally however, this is not the case, with many anaesthetists lacking skill, training and confidence; often holding negative attitudes towards RA.

#### Methods

I invited all anaesthetists at Torbay Hospital to complete a ten-question survey assessing regional training, attitudes and confidence in performing common blocks, including five of RAUK's 'Plan A' blocks.

#### Results

Twenty-one people responded (15 consultants, 6 trainees). Eight defined themselves as regional anaesthetists (38%). Seven (33%) had completed higher RA training (two trainees stating they will) and five (24%) advanced. Lack of available training / exposure and finding their passion elsewhere were cited as reasons for not furthering RA interest.

Most respondents (52%) performed on average two blocks a week. 58% didn't feel confident to use RA as a sole technique for surgery. Confidence with individual blocks was assessed on a scale of 1 (no confidence) to 5 (proficient).

	Average confidence in performing block (scale 1-5)
Interscalene	3.45
Axillary / Supraclavicular / Infraclavicular approach to brachial plexus	3.43
Femoral / Fascia Iliaca	4.29
Popliteal	4.24
Ankle	3.9
Erector Spinae	2.95
PECS	2.1

### Discussion

This survey highlights a lack of training and confidence. The RCOA needs to prioritise RA, making higher training mandatory, to address this issue. Training time does not reflect that throughout their career, a general anaesthetist is more likely to encounter a nerve block on a trauma list than put a patient onto bypass. The 2021 curriculum changes are eagerly awaited.

There are plans to roll out this survey, comparing attitudes in different centres, both nationally and internationally.

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## Beyond REMAP-CAP: investigating the potential of adaptive trial designs in regional anaesthesia research

Paul Bramley

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### Abstract

**Introduction:** Adaptive trial design encompass multiple methods which allow alteration of a trial whilst in progress. Adaptive trials typically requires less participants<sup>1</sup> and resources<sup>2</sup> than standard trials to test the same hypotheses. This has been exemplified during Covid-19 by the REMAP-CAP trial<sup>3</sup>, but opportunities for similar approaches also exist in regional anaesthesia research.

**Methods:** I searched the ClinicalTrial.gov registry with terms relevant to regional techniques (erector spinae plane block [ESPB], epidural, paravertebral [PVB], serratus blocks [SB]) for interventional trials in breast surgery. Using this as a motivating example I calculated the sample sizes required for standard and adaptive trial designs to investigate a clinically significant change of 5 units in an outcome with a standard deviation of 10 units (e.g. morphine equivalent consumption in first 24 hours).

**Results:** I found 75 registered interventional trials examining the listed regional techniques in breast surgery. The median sample size was 60 (IQR 50 – 89). These were heterogeneous trials in both outcomes and population. Figure 1 illustrates a network of how registered interventional trials connect within this search. Table 1 shows the range of sample sizes required for possible trial designs given the assumed parameters.

**Discussion:** It is clear that far more patients will be recruited to registered trials worldwide than are required to definitively answer questions about the efficacy of regional techniques. Using multi-arm trials would be more efficient and therefore more ethical, with additional adaptive methods providing further advantages in specific circumstances, though requiring greater statistical expertise.

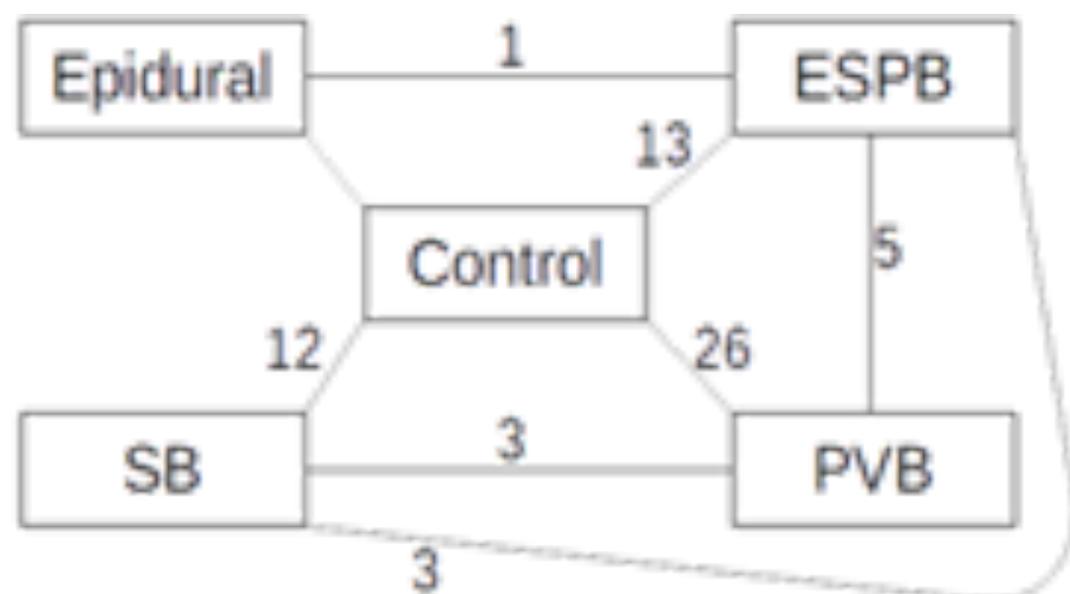


Figure 1: Network of the number of registered interventional trials in breast surgery. Dashed line indicates likely evidence pre-existing common trial registration.

Trial design	Sample size
Single trial, 1 intervention arm	126
Four trials, 1 intervention arm each	504
Multi-arm trial, 4 intervention arms	308
Multi-arm trial, 4 intervention arms, drop the loser (2 interim analyses)	287
Multi-arm, 4 interventional arms, group sequential analyses (2 interim analyses) maximum sample size	422
<i>Expected sample size – one treatment has clinically significant effect</i>	298
<i>Expected sample size – all treatments have clinically significant effect</i>	223
<i>Expected sample size – one treatment has double the clinically significant effect</i>	156

Table 1: Sample sizes for given trial design

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## **SERRATUS ANTERIOR PLANE BLOCK FOR RIB CARTILAGE HARVEST FOR TERTIARY REVISION RHINOPLASTY**

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### **Abstract**



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## Introduction:

Reduction of postoperative pain at the donor site is achieved by several approaches including continuous wound infiltration of local anesthetics, epidural, paravertebral and intercostal nerve blocks (1-5).

## Case:

A 33-year-old man with no medical history was referred for tertiary rhinoplasty who was operated twice at different hospitals for rhinoplasty, including a revision with the harvesting of the 8th rib cartilage of right hemithorax. The surgeon intended to harvest the 6th rib cartilage. The patient was evaluated as ASA I. General anesthesia was applied and continued with O<sub>2</sub>/N<sub>2</sub>O and sevoflurane 2% mixture. Remifentanyl was infused throughout the surgery. The 6th rib cartilage was harvested for allogeneous graft by the surgeon. Tramadol 1mg/kg was applied 30 minutes before the end of the surgery.

An ultrasound-guided serratus anterior plane block was planned for postoperative analgesia. In sterile conditions, a 10 cm 22 gauge echogenic needle was inserted in the mid-axillary line, targeting the plane between the latissimus dorsi and serratus muscles under high-frequency linear probe guidance. 20 ml of 0.25% bupivacaine was injected. After surgery, the patient was transferred to the PACU. After 20 minutes in the PACU, the VAS score was 3 and measured 5 after 24 hours in the ward. No opioids were needed.

## Discussion

The serratus anterior plane block supplies efficient analgesia for hemithorax. We decided to perform a serratus plane block for a rib-harvesting procedure and achieved excellent analgesia which might be used for rib cartilage harvesting in rhinoplasty operations and it can be quickly and safely performed.

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