

Are interscalene nerve blocks an effective means of delivering pain relief to patients following shoulder surgery?

Clinical Bottom Line

There is evidence to show that continuous interscalene blocks are an effective method of pain relief following shoulder surgery.

There is evidence that continuous interscalene blocks with pt controlled bolus administration can assist pain control during physiotherapy.

One trial reported that interscalene blocks come with an associated side effect of motor and sensory block in the upper limb, which can have implications for rehabilitation.

The evidence showed that suprascapular nerve blocks were as effective as one off interscalene blocks at relieving pain following shoulder arthroscopy.

Criteria for Critically Appraised Topic

Population:

Male and female adults – 18 years and over

Intervention:

Interscalene nerve blocks delivered as in or outpatients
Any open or arthroscopic shoulder procedure

Comparison:

Usual care included:

- Other forms of analgesia

Outcomes:

Primary Outcomes:

- Pain relief
- Function
- Length of in patient stay

Secondary outcomes:

- Improved quality of life
- Improvement in range of movement

Inclusions:

Any open or arthroscopic shoulder procedure

Exclusions:

Non surgical procedures
Fractures

Search Terms used

Databases Searched:

Cochrane	Pedro	PsychINFO	Medline
Clinical Evidence	Bandolier	NELH	Professional Websites
Clinical Guidelines	NICE	HTA	
Rehab Data	CINAHL	Embase	

Types of study included:

- Systematic reviews
- Randomised Controlled Trials (RCTs)
- Qualitative studies
- Patient satisfaction studies
- English language

Key words searched:

Surgery, shoulder replacement, arthroscopic, interscalene nerve block, analgesia, nerve block total shoulder replacement, rotator cuff repair, subacromial decompression, acromioclavicular joint reconstruction, in patient, length of stay, orthopaedic, outpatients

Time Frame:

Search for the past 10 years i.e. 1996 – 2006

Available Evidence

Database Searched (Specific to CAT)	Number of abstracts	Number of Relevant Abstracts
Cochrane		
Pedro		
Medline		
CINAHL		
Embase		
Clinical Evidence		

PyschINFO		
OT Seeker		
Bandolier		
Total		34

Results:

34 abstracts were identified, 14 of these were assessed by the group & 13 articles answered the clinical question

Articles assessed:

Neilson et al 2003 – case report on 4 pts undergoing rotator cuff surgery, measured pain & cognitive function by visual analogue scale (VAS). Evaluated 3 days post op reported improvement in pain & cognitive function.

Not randomised small number.

Wilson et al 2004 – 50 consecutive pts undergoing day case shoulder surgery, pain measured by VAS for 1/52. Success in blocking pain but 20% of pts had severe pain when block wore off. Not randomised.

Cohen et al 2000 – retrospective follow up of 93 pts following manipulation under anaesthetic (MUA) & open or arthroscopic capsular release for persistent stiff shoulders following trauma surgery or idiopathic. Neer criteria used for pain & satisfaction over 6 yrs at final follow up 83% had no or minimal pain but no report on pain relief whilst in hospital or in early stages of rehab.

Kean et al 2006 – Randomised controlled trial (RCT) 16 pts undergoing open shoulder surgery. Compared single shot interscalene block with continuous infusion interscalene block for 24 hrs. Pain evaluated over 24 hrs & measured with VAS - less pain with continuous infusion.

Chao et al 2006 – RCT 41 pts undergoing arthroscopic subacromial decompression (SAD). Compared single interscalene block with regional subacromial patient controlled analgesia (PCA) device for 3 days. The PCA pts reported less pain on a VAS but this was not significant, however they used less oral medication during the 10 days & they were significantly more active over the 10 days.

Wu et al 2002 – compared general anaesthetic (GA) with interscalene block for shoulder surgery in 114 pts but pts chose which anaesthesia they wanted, 88 elected for the GA & 26 elected for the block all pts also used a PCA post op. Pain measured on scale at 4,8,12 & 24 hrs post op. Block pts had significantly less pain at 4 hrs but not at any other time.

Not randomised, not equal numbers & pts chose anaesthetic method.

Lehtipalo et al 1999 – RCT 30 pts undergoing acromioplasty. Compared morphine when VAS > 3, continuous interscalene block and morphine via PCA. Significant pain relief with nerve block. Side effect of associated motor & sensory block with interscalene block.

Laurilia et al 2002 – RCT 45 pts undergoing shoulder arthroscopy. Compared subacromial bursa block, interscalene block and placebo (saline). Outcome measures pain scores and oxycodone consumption. Significantly less oxycodone consumption in interscalene group during first 6 hrs.

Ilfield et al 2006 – RCT 29 pts undergoing total shoulder replacement (TSR). Both groups received perineural ropivacaine from surgery until 6 am following morning then 1 group

continued with this the other group received saline. Both groups discharged with portable infusion pump. Nerve block decreased time for readiness to discharge.

Borgeat et al 1998 – RCT 60 pts undergoing shoulder scope or cuff repair. All pts received an interscalene block 6 hrs after this 1 group had PCA and the other group pt controlled interscalene analgesia (PCIA). Observation was for 48 hrs. Control of pain was significantly better in PICA group from 12 – 48 hrs after surgery.

Singelyn et al 1999 – RCT 60 pts undergoing elective open shoulder surgery, observation for 48 hrs. Compared continuous infusion via interscalene catheter, continuous interscalene infusion plus PCA interscalene bolus and interscalene PCA bolus alone. Pain significantly better in continuous infusion and continuous infusion plus PCA groups, PCA group required significantly more analgesia. The continuous infusion plus bolus allows the pt to reinforce block prior top physio.

Singelyn et al 2004 – RCT 120 pts undergoing arthroscopic shoulder surgery. Compared intra-articular block, suprascapular nerve block, interscalene block and control group (not stated what this group was) over 24 hrs. Suprascapular & interscalene nerve blocks had significantly better pain relief than other 2 groups; interscalene block had better pain relief with movement than suprascapular block.

Ilfield et al 2003 – RCT 20 pts undergoing shoulder surgery. Pre op all pts received interscalene block plus catheter on discharge the groups received a continuous interscalene block with ropivacaine or continuous interscalene normal saline via a portable infusion pump. The ropivacaine group had significantly less post op pain and used less analgesia.

Implications for practice

The majority of randomised trials were small numbers but continuous interscalene blocks and continuous interscalene blocks with a patient controlled top up are effective in relieving pain for postoperative shoulder patients and should be a consideration for patients requiring regular postoperative physiotherapy.

It must be noted that one RCT with small numbers found that interscalene blocks came with associated sensory and motor blocks, which has implications for postoperative rehabilitation. One off interscalene blocks give initial relief of pain, which is a consideration for day surgery, however a follow up of 50 consecutive patients undergoing day case surgery found that 20% of patients had severe pain when the block wore off.

A locally placed PCA device gave more effective pain relief than an interscalene block following subacromial decompression.

Suprascapular nerve blocks were equally effective at relieving pain following arthroscopy as interscalene blocks, but interscalene blocks gave better pain relief with movement.

References

Borgeat A Tewes E Biasca N Gerber C 1998 Patient-controlled interscalene analgesia with ropivacaine after major shoulder surgery: PCIA vs PCA. British Journal of Anaesthesia 81:4 603-605.

Chao D Young S Cawley P 2006 Postoperative pain management for arthroscopic shoulder surgery: interscalene block versus patient-controlled infusion of 0.25% bupivacaine. The American Journal of Orthopedics 35:5 231-234.

Cohen NP Levine WN Marra G Pollock RG Flatlow EL Brown AR Bigliani LU 2000 Indwelling interscalene catheter anaesthesia in the surgical management of the stiff shoulder: a report of 100 consecutive cases. Journal of Shoulder and Elbow Surgery 9:4 268-274.

Ilfield BM Morey TE Wright TW Chidgey LK Enneking FK 2003 Continuous interscalene brachial plexus block for postoperative pain control at home: a randomized, double blinded, placebo-controlled study. Anesthesia and Analgesia 96:4 1089-1095.

Ilfield BM Vandeborne K Duncan PW Sessler DI Enneking FK Shuster JJ Theriaque DW Chmielewski TL Spadoni EH Wright TW 2006 Ambulatory continuous interscalene nerve blocks decrease the time to discharge readiness after total shoulder arthroplasty: a randomized, triple-masked, placebo-controlled study. *Anesthesiology* 105:5 999-1007.

Kean J Wigderowitz CA Coventry DM 2006 Continuous interscalene infusion and single injection using levobupivacaine for analgesia after surgery of the shoulder a double blind randomised controlled trial. *The journal of Bone and Joint surgery* 88B 1173-1177.

Laurilia PA Lopponen A Kangas-Saarela T Flinkkila T Salomaki TE 2002 Interscalene Brachial plexus block is superior to subacromial bursa block after arthroscopic shoulder surgery. *Acta Anaesthesiologica Scandinavica* 46:8 1031-1036.

Lehtipalo S Koskinen LOD Johansson G Kolmodin J Biber B 1999 Continuous interscalene brachial plexus block for postoperative analgesia following shoulder surgery. *Acta Anaesthesiologica Scandinavica* 43:3 258-264.

Neilsen CM Greengrass RA Pietrobon R Klein SM Steele SM 2003 Continuous interscalene brachial plexus blockade provides good analgesia at home after major shoulder surgery – report of four cases. *Canadian Journal of Anaesthesia* 50:1 57-61.

Singelyn FJ Lhotel L Fabre B 2004 Pain relief after arthroscopic shoulder surgery: a comparison of intraarticular analgesia, suprascapular nerve block and interscalene brachial plexus block. *Anesthesia and Analgesia* 99:2 589-592.

Singelyn FJ Seguy S Gouverneur JM 1999 Interscalene brachial plexus analgesia after open shoulder surgery: continuous versus patient-controlled infusion. *Anesthesia and Analgesia* 1999 89:5 1216-1220.

Wilson AT Nicholson E Burton L Wild C 2004 Analgesia for day case surgery. *British Journal of Anaesthesia* 92:3 414-415.

Wu CL Rouse LM Chen JM Miller RJ 2002 Comparison of postoperative pain in patients receiving interscalene block or general anaesthesia for shoulder surgery. *Orthopedics* 25:1 45-48.