

# Continuous Axillary Block For Effective Long-term Postoperative Analgesia

M Matuszczak, R Gebhard, B Schmitz, M Doehn

## Citation

M Matuszczak, R Gebhard, B Schmitz, M Doehn. *Continuous Axillary Block For Effective Long-term Postoperative Analgesia*. The Internet Journal of Anesthesiology. 1999 Volume 4 Number 1.

## Abstract

### INTRODUCTION

In patients undergoing elective or emergency surgery on the upper extremity below the elbow, axillary block is commonly used to provide intraoperative analgesia. Using a single injection technique, duration of the block is limited up to a maximum of approximately 12-14 h, depending on the choice of local anesthetic (1).

Especially if trauma to hand or forearm is severe (Fig 1) and extended microscopical surgery on vessels and nerves is performed, this timeframe is too short to allow adequate coverage of the postoperative period.

### Figure 1

Figure 1: Hand injury



In 1977 Selander et al.(2) introduced catheter placement into the axillary perivascular sheath in anesthesia practise, making continuous axillary blockade (CAB) possible. There is very few literature concerning the outcome of postoperative continuous axillary plexus blockade (3).

The departement of our hospital is performing a large repertoire of procedures ranging from simple excision of

tumors to complex microsurgical recontruction of hand and forarm. Our departement is performing continuous postoperative analgesia with this method for more then ten years. This retrospective study was designed to assess the value of this method for postoperative pain control.

### METHODS

A retrospective study was performed on 160 patients undergoing forearm and hand surgery between June 1995 and December 1998:

### Figure 2

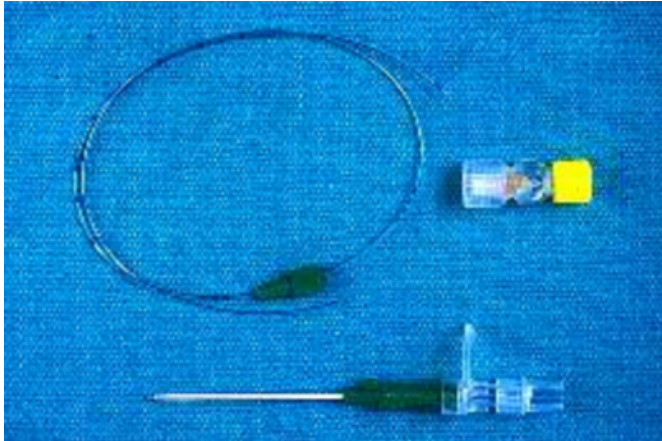
Table 1: Demographics

Demographics	Gender	female: 35	male: 125
	Age	6y – 83y (mean: 43y)	
	Case	elective: 66	emergency: 94

138 Patients received an axillary catheter Contiplex B. Braun (Fig 2) prior to surgery, in 22 patients catheter placement followed immediately after the procedure.

**Figure 3**

Figure 2: Axillary catheter set



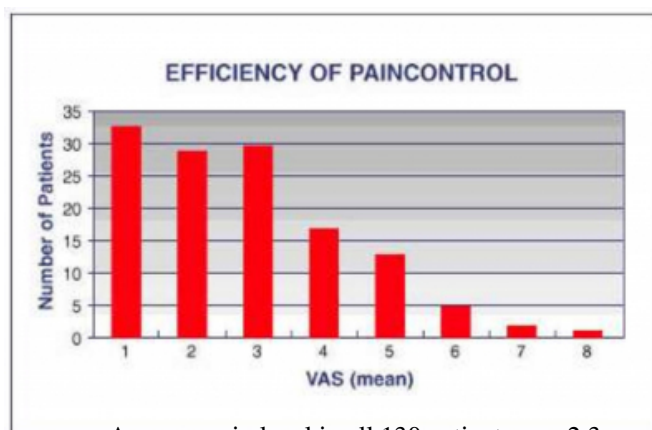
To provide continuous axillary block, all patients received postoperative 0.25 bupivacaine infusion 4 -10 ml/hr via axillary catheter. Pain level and patient satisfaction during the duration of the infusion was evaluated using a visual analog scale (VAS). The dosage was started with 8ml 0.25 bupivacaine and then adapted depending on the visual analog scale

### RESULTS

- Duration of bupivacaine infusion lasted between 2 - 64 days (mean 5.6 days).
- Out of 160 Patients studied, sufficient data regarding their pain level could be obtained in 130 patients.
- 92 Patients (71%) had a pain level of 3 VAS or below, while undergoing treatment with CAB (Fig 3).

**Figure 4**

Figure 3: Efficiency of pain control



- Average pain level in all 130 patients was 2.3 VAS.

- Incomplete analgesia occurred in 18 patients (11%), insufficient pain relief in 6 patients (4%). Inflammation at the catheter site was 4% including one patient who required an incision and drainage.
- No neurological deficits were observed.
- Patients indicated a 92% satisfaction with this method of postoperative pain management.
- 88 Patients had general anesthesia, some patients because of their choice, some because the procedure was too long and the patient couldn't lay still anymore on the operation table and we had to start general anesthesia in the middle of the procedure.
- When pain relief was insufficient, we first injected a bolus of 30ml of a short acting local anesthetic to assess the correct position of the catheter. If this was not successful we pulled the catheter and if necessary placed a new one.
- The dressing was changed every day by an anesthesiologist.

### CONCLUSIONS

1. Continuous axillary block is highly effective for postoperative long-term analgesia.
2. In our opinion this technique should be considered if extended postoperative pain, due to the nature of the injury or the surgical intervention is expected.
3. Although complication rate is low and clearly outweighed by the benefits, careful local care at the catheter placement site is required to minimize risk of infection.

### References

1. McGlade et al.: A comparison of 0.5% ropivacaine and 0.5% bupivacaine for axillary brachial plexus anaesthesia. *Anaesth Intensive Care (Australia)* Oct 1998; 26(5):515-20
2. Selander et al: Catheter Technique in Axillary Plexus Block. *Acta Anaesthesiol Scand* 1977;21(4):324-9
3. Koh et al.: Postoperative Continuous Interscalene Brachial Plexus Blockade for Hand Surgery. *Ann Acad Med Singapore* 1995;24(Suppl):3S-7S

**Author Information**

**M. Matuszczak**

Department of Anesthesiology, Kliniken der Stadt Köln

**R. Gebhard**

Department of Anesthesiology, Kliniken der Stadt Köln

**B. Schmitz**

Department of Anesthesiology, Kliniken der Stadt Köln

**M. Doehn**

Department of Anesthesiology, Kliniken der Stadt Köln