

## Emergent Reimplantation of Arm with Interscalene Block

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Received: 09 October 2017; Accepted: 28 October 2017

**Citation:** Erturk E, Kutanis D, Akdogan A, et al. Emergent Reimplantation of Arm with Interscalene Block. *Anesth Pain Res.* 2017; 1(1): 1-2.

### ABSTRACT

*Interscalene block can be used by self or be combined with general anaesthesia for surgery of upper extremity especially for postoperative analgesia and revascularization of the arm. In this article, we present general anaesthesia with interscalene block in a 44-year-old male patient who had cut left upper limb.*

### Keywords

Reimplantation, Upper limb, Interscalene block.

### Introduction

Neuroaxial blocks are routinely used procedure in the anesthetic practice nowadays. Surgical intervention on the upper limb has been performed as a sole technique or along with sedation or general anesthesia. Interscalene block (ISB) is one of the most popular techniques for upper limb surgery [1]. It can be used by self or be combined with general anesthesia for surgery of upper extremity. ISB provides excellent postoperative analgesia besides revascularization of the arm. We present a case of 44 years old patient operated for replantation of completely cut left upper limb.

### Case Report

A 44 years old male patient admitted to our hospital with severe arm injury. The patient's left arm was completely cut down from shoulder. His cut upper extremity was brought along with the patient as a whole and undamaged. The patient was cooperative but agitated. He stated that he had excessive bleeding. His anamnesis reveals any disease previously. When he was transported to emergency hall, his arterial blood pressure is 90/45 mmHg and heart rate is 95/min. His laboratory findings were normal except hemoglobin (Hb: 11g/dl). His physical examination was also normal. His ASA status was evaluated as I.

It was decided that replantation of the cut arm is required. He was sedated with 2 mg of midazolam and was transferred to operating theatre for required surgery. 500 ml of serum physiologic was

given throughout 20 min via 20 gauge intravenous cannula. Electrocardiogram, heart rate (HR), peripheral pulse oximetry (spO<sub>2</sub>) and noninvasive blood pressure (NIBP) were monitored. After the 75 µg of intravenous fentanyl, local anaesthesia was performed with 1 % lidocaine without adrenaline onto left neck region.

The nerve stimulating was initially set to deliver 1 mA with an impulse duration of 0.1 ms and then decreased to 0.5 mA after the required motor response at the related muscles were observed. An interscalene catheter was inserted via the introducer needle for 3 to 4 cm and fixed without complication. After the intravenous 450 mg of thiopental and 8 mg of vecuronium administration the patient was intubated with 8.0 no tube. Anesthesia was maintained with 2-3% of sevoflurane in 40/60% of O<sub>2</sub>/N<sub>2</sub>O mixture. The first analgesic solution was prepared as 5 ml, 0.5% of plain bupivacaine and was injected slowly, with multiple aspirations. And then the same solution was infused 2ml/hours as same concentration for later 72 hours.

The cut extremity was reimplanted at the end of 5.5 hours (Figures a and b). The patient's vital parameters were stable on surgery. The patient's heart rate was 80-100 beat/min, NIBP was 80/40 – 120/60 mmHg and spO<sub>2</sub> was 98-99% throughout the operation. The patient was administered total 2500 ml of isotonic saline, 1000 ml of 5% dextrose ringer lactate and 2 units of plasma. There was no blood transfusion to the patient. The solution of dextran (Rheomacrodex 500 ml) was started for 24 hours intravenous infusion. 8.4% of sodium bicarbonate was infused as a dose of 10ml/h. After the

ending the operation the patient was extubated. He was monitored post anesthesia care unit for 1 hour. And then he was transferred to the ward with stable vital parameters and without pain.



**Figures A and B:** Appearance of reimplanted arm a) from below b) from above.

### Discussion

ISB is used to provide anesthesia and analgesia for upper extremity surgery for a long time [2,3]. But whatever it hasn't been known as a long term of postoperative care. It presents to patients an excellent analgesia. For this purpose we used ISB for our patient and we got sufficient clinical outcome.

Perfusion of the replanted limb is determinant factor for survival of the extremity. Insufficient perfusion leads to hypoxia and cumulation of the toxic metabolite causing destruction of the cell structure. ISB causes vasodilatation on the vessels locating in related region as a result of sympathetic block. As the sympathetic block provides vasodilatation, perfusion and revascularization may be improved. This event is important for replantation surgery. We obtained good analgesia via ISB and also better perfused arm in our case.

One of the challenges in such big part replantation is ischemia-reperfusion injury (IRI). Destructive enzymatic reactions caused by massive release of oxygen free radicals as a result of reentry

of the blood to tissue after the ischemic period are called IRI [4]. Completely cut extremity exposed major ischemia for a long time. After the anastomosis of the arterial and venous vessels, oxygen enriched blood perfuse to the ischemic tissues. IRI may occur in such case according to ischemia time and replanted size. It was stated that neuroaxial block enables a decrease in ischemia-reperfusion injuries in the muscle flaps [5].

### Conclusion

In conclusion, ISB may help perfusion and revascularization of the reimplanted arm by blocking the sympathetic system alongside the providing of excellent analgesia for such cases. Thus ISB may contribute to success rate of extremity replantation.

### References

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