



**ORIGINAL RESEARCH PAPER**

**Anesthesiology**

**CASE REPORT - ANAESTHETIC IMPLICATION OF A FAILED SUPRACLAVICULAR BLOCK SUPPLEMENTED WITH BIER'S BLOCK**

**KEY WORDS:** Supraclavicular block, Bier's block, Colle's fracture

**Dr. Asif Sayeed**

Junior Resident, Department of Anaesthesia, A.C.P.M. Medical College, Dhule - Corresponding Author

**Dr. Sanjay P. Gadre**

Head of Department, Department of Anaesthesia, A.C.P.M. Medical College, Dhule

**Dr. Sushil Bhadane**

Lecturer, Department of Anaesthesia, A.C.P.M. Medical College, Dhule

**Dr. Manoj C. Kolhe**

Lecturer, Department of Anaesthesia, A.C.P.M. Medical College, Dhule

**ABSTRACT**

We describe a case with partial analgesia after supraclavicular block for colle's fracture (Distal end of radius fracture). The failure of block was caused by the limited spread of local anesthetic agent because of several factors such as : anatomical variation, surgical factors, patient selection, drug factors etc.

The purpose of this presentation is report challenges encountered to reduced the chances of failure of supraclavicular block for upper limb orthopaedic surgeries. Anaesthesiologists should be aware that cervical anatomy is complex and has anatomical variations. However careful we are, failures are bound to occur. In those situations , in stead of feeling depressed, decision has to taken to changeover to general anaesthesia or wheather managed with T.I.V.A. (Total intravenous anaesthesia) or with Bier's block immediately & later to analyze the cause of failure & rectify it by repeated practice.

**INTRODUCTION:-**

Distal end of radius fracture ( colle's fracture) are one of the most common types of fractures, accounting 25% of fracture in paediatric population and up to 18% of all fractures in elderly age group. Although the paediatric and elderly population are at greatest risk for this injury, distal end of radius fracture still have a significant impact on health and well being of young adults. So this should be corrected as soon as possible by different surgical procedures like as close reduction, k wire fixation ,plating etc. by an orthopaedic surgeon. These surgeries can be performed under regional (nerve block or Bier's block) as well as general anaesthesia.. The choice of anaesthesia for upper limb orthopaedic surgeries should be decided as per anaesthetist, operating surgeon as well as patients feasibility. Here we are decided to perform supraclavicular block for correction suegery for distal end of radius fracture after a brief discussion with operating surgeon as well as patient.

We describe a case with partial analgesia after supraclavicular block for colle's fracture ( Distal end of radius fracture). The failure of block was caused by the limited spread of local anesthetic agent because of several factors such as : anatomical variation, surgical factors, patient selection, drug factors etc.The purpose of this presentation is report challenges encountered to reduce the chances of failure of supraclavicular block fo upper limb orthopaedic surgeries. Anaesthesiologists should be aware that cervical anatomy is complex and has anatomical variations. However careful we are, failures are bound to occur. In those situations, in stead of feeling depressed, decision has to taken to changeover to general anaesthesia or wheather managed with T.I.V.A. (Total intravenous anaesthesia) or with Bier's block immediately and later to analyze the cause of failure & rectify it by repeated practice.

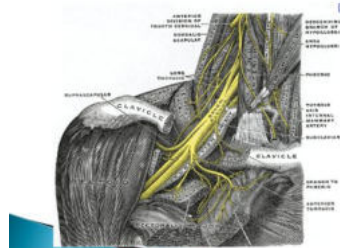
**CASE REPORT**

A twenty four year old thin male patient, diagnosed as a case of left side colle's fracture was posted for plating by department of orthopaedics in our Hospital. His weight is 70 kg and height is 180 cm. All the routine labouratory tests (CBC, LFT, RFT, FBS, S. ELECTROLYTES) and coagulation test gave normal results. Patient assessed preoperatively & planed for supraclavicular block. Alternative preparations for TIVA (Total intravenous anaesthesia), Bier's block (Intravenous Regional Anaesthesia) and general anaesthesia.

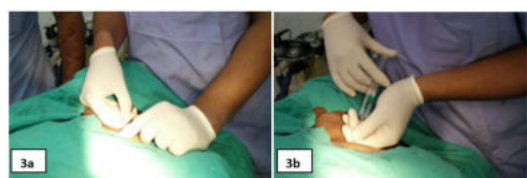


**Figure 2 - PREPERATIONS & DRUGS**

As patient was cooperative, he was counselled and details of procedure explained to him. In the operative room and after placement of standard monitoring ( Pulseoximetry , Noninvasive Blood Pressure Monitoring, ECG Monitoring ) heart rate 78 beats per minute , Blood Pressure 124/76 mmHg and oxygen saturation 100% in room air were observed. IV line secured using 20 G intracath. The patient is placed in supine position, with the head turned away from the side to be blocked. The arm to be anaesthetized should be adducted hand should be extended along the side. In the classic technique, the mid point of clavicle identified and marked. Another point approximately 1.5 cm posterior to mid point of clavicle marked. After injection of a skin wheal, a 26 G ,4 cm needle is directed in a caudad, slightly medial and posterior direction until a paraesthesia or motor response is elicited or the first rib encountered. The needle can be systematically walked anteriorly and posteriorly along the rib until paraesthesia results.



**Figure 1 - ANATOMY OF NECK SHOWING BRACHIAL PLEXUS**



**Figure 3a - PENETRATION OF 26 G NEEDLE 1.5 cm POSTERIOR TO MID POINT OF CLAVICLE; Figure 3b - INJECTION OF LOCAL DRUGS AFTER CONFIRMATION OF PARAESTHESIA**

After localization of brachial plexus, aspiration for blood performed & then injection lignocaine + adrenaline 2% 10 ml plus injection bupivacaine 0.5% 20 ml, making total volume 30 ml of local anaesthetic agent planned to be given.

After giving 10 ml of initial lignocaine + adrenaline 2% , it was felt that injected needle displaced from previous site accidentally so I repositioned the needle in same direction , encountered the first rib and remaining 20 ml of drug given. After waiting for 10 minutes ,mild sensory & motor action achieved & so operating surgeon allowed to proceed. But after successful close reduction patient started complaining pain when incision starts for plating. We decided to change over to intra venous regional anaesthesia ( Bier's block) . A 22 G scalp placed distally in fractured limb , exsanguination of limb done & esmarch tourniquet applied , after checking pulseless activity with pulseoximeter injection lignocaine 0.5 % 40 ml given . After 5 min , action confirmed with wrist drop , second tourniquet applied distally next to proximal tourniquet . After one minute, proximal tourniquet released , surgery started & procedure lasted for 45 minutes. No significant hemodynamic changes observed during procedure. Tourniquet released after 60 min. Patient shifted to recovery & after 15 minutes observation shifted to respective ward.

### DISCUSSION

Generally a case of nerve block can be performed in some better option such as using nerve stimulator as well as USG guided regional block. But its cost , availability & technical difficulty limits its use in rural setups. We observed in above case that the action of supraclavicular blockade is also present because the action of Bier's block should be gone maximum after one hour . We were continuous in touch with patient , both sensory and motor action regress after six hour of the procedure. Patient starts complaining pain & limb movement starts after six hours. So it should be wait and watch for complete action of supraclavicular block for atleast 20-30 minutes, only after that decision has to be taken to changeover to general anaesthesia or whether managed with T.I.V.A. or I.V.R.A. as we used in above discussed case.

It is heartening to see a crying patient with a fracture settling down after a nerve block which slowly takes off his pain and at the same time allowing the patient to remain conscious. But at the same time, if the block fails it adds misery to an already suffering individual. So it becomes necessary to know about the factors affecting the success rate of a nerve block and perfecting them so as to reduce the failure rate to an acceptable minimum. The variables affecting the success rate of a nerve block can be broadly classified into.

- A. Patient Selection
- B. Anatomical factors
- C. Surgical factors
- D. Drug factors.

In addition to above factors we should always keep patience & wait for the complete action of blockade atleast up to 20-30 minutes , what we missed in above discussed case . Other better option such as using nerve stimulator as well as USG guided regional block can be performed to reduce the chances of failure if available.

### CONCLUSION:

However careful we are, failures are bound to occur. In those situations, decision has to be taken whether to changeover to general anaesthesia or manage with TIVA. The stage of the surgery influences the selection of the anesthetic technique. If it has to begin, it is better to start G.A., keeping in mind that starting a general anaesthesia in a hurried manner may predispose to commit errors. If the surgery is going to be over within a short time, then one can be managed either by holding a mask or by TIVA.

It is possible to reduce the incidence of block failure to minimum by

meticulously following the technique and the above recommendations. If failure occurs, instead of feeling depressed, it is wise to analyze the cause of the failure and rectify it by repeated practice.

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