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Brachial plexus: “thorax-off” modification of coracoid block

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Introduction. Though the infraclavicular techniques of Brachial Plexus Block are very spread, no one of them can be seen as absolutely safe according to such complications as pneumothorax and phrenic nerve paralysis. Some of them are also relatively difficult in finding of appropriate landmarks by adipose patients.

Coracoid block of Wiffler (1981) is the most lateral and therefore seeming to be most safe of all infraclavicular approaches. This technique assumes the puncturing inferiomedial to the coracoid process “usually” at right angle to the skin to cross the line of supposed subclavial artery course. On base of own studies on cadavers with 51mm long needle, author had proposed coracoid block as safe and easy technique what concerning the risk of pneumothorax.

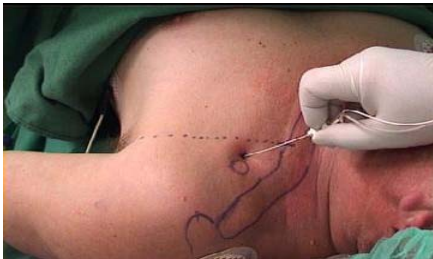
Considerations. According to our experience, the technique is really easy and offer gut quality of anaesthesia if distal stimulations were obtained. But puncturing at right angle to skin means slight thorax wards direction. And in about 40% of cases, the needle had to be redirected more caudal in sagittal plane, to rich the brachial plexus. By some patients, the brachial plexus could be reached 60 – 65 mm deep from skin. By virtual reconstruction of puncture direction according to this technique, on base of CT thorax dates, we could not absolutely excluded the risk of thorax penetration. And by slight medial, for example accidental, needle deviation by puncturing, the risk of thorax hitting was in any cases thinkable.

Therefore the “Thorax –off” modification of coracoid brachial plexus block was proposed.

Method.

Landmarks. Coracoid process, anterior and posterior axilar folds, eventually supposed subclavial artery course.

Position of patient. Supine position with head tilted to opposite side, the relevant arm abducted approximately 45-65° from the chest wall.



Equipment. Standard try for regional anaesthesia, 22 - 24G x 7,0 – 8,0 cm long stimulating needle.

Technique. The coracoid process is identified and marked. Additionally, the course of subclavial – axilar artery (brachial plexus) can be marked as line binding midpoint of clavícula and anterior axilar fold, or can be defined sonographically.

The needle is advanced at point lying approximately 0,5 cm medial and 0,5cm caudal to coracoid process. The needle has to be directed to posterior axilar fold, at approximately 45° angle to skin to cross the supposed course of

brachial plexus tangential. After musculocutaneous nerve stimulations are received, the needle has to be carefully advanced yet 0,5 – 1,5 cm deeper to reach a distal stimulations of hand. Once the stimulations are reached at 0,2 – 0,3 mA, 35 -40 ml of local anaesthetic can be injected. The musculokutaneous nerve stimulations should not be accepted. For additional safety by operations on elbow and in depending regions, the supplementary block of musculocutaneous nerve can be recommended. By proposed technique, its performing is very easy and dos not need the extra puncturing. Musculocutaneous nerve can be newly localised by careful withdrawing of the needle with stimulating current of 0,5 – 0,7 mA. Once stimulations are received again, additional 5 – 10 ml of local anaesthetic can be injected.

Results. Brachial plexus could be usually reached at 6,0 – 8 cm from skin. Of 51performed blocks in 42 cases (82%), the anaesthesia was completely sufficient and no any supplementation was needed. As sufficient we have considered the anaesthesia wan thermal sensation of 5 arm nerves was absent 20 min after blocking and operation could be problem less performed 30 min after local anaesthetic injection. In 8 cases (16%), the light supplementation was needed for miscellaneous reasons. In one case (2%) because of incomplete block of musculocutaneous nerve, the general anaesthesia had to be additionally made. Altogether the musculocutaneous nerve problem was observed in tow cases (4%). Therefore supplementary blocking of this nerve can be recommended if operation has to be made in depending regions. In one case, the accidental puncture of subclavial artery was observed without any feather symptoms. No any other complications could be observed.

“Thorax-of” coracoid block modification is safety and easy technique. It seems to be the method of choice for ambulant forearm and hand surgery.