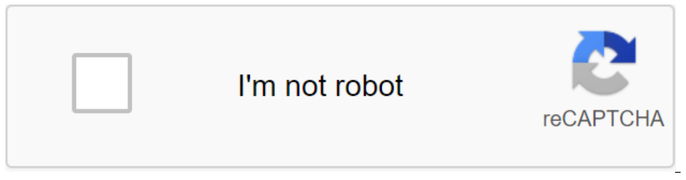
Usg guided supraclavicular block nysora



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NySORA's ultrasonic supraclavicular block of the brachial plexus emphasizes the anatomy and description of the technique of a successful blockade. Examine the ultrasonic anatomy of the Plexus inter-scale and supralavicular unit at NYSORA SIMULATORS™. Features anatomy and block techniques to perform supraclavicular brachyal plexus block. Emphasizes anatomy and ultrasound guidance technique for infrablavicular brachyal plexus of the block. It highlights an anatomy, sensory block and steps to perform an ultrasonic syced block of brachial plexus. Copyright 2020© NYSORA (New York School of Regional Anesthesia) Carlo D. Franco, Bram Byloos, and Ilvan Hasanbegovic INTRODUCTION Supraclavicular Block is one of several methods used for brachy plexus anesthesia. The block is performed at the level of the trunks of the shoulder plexus, where almost all sensory, motor and sympathetic inertia of the upper limb is carried out in only three nerve structures, limited by a very small area of the surface. Therefore, this method usually provides a predictable, dense block with a fast start. In 1911, Georg Hirschel described the surgical approach to brachy plexus in the condiment. A few months later, Hidrich Kulenkampff, in Germany, performed the first percutaneous supraaclavicular approach, reportedly on himself. The technique was published in 1928 by Kulenkampff and Persky. As they described it, the technique was performed with the patient in a sitting position (a normal chair would suffice) or in a position on the back with a pillow between the shoulders. The operator was sitting on a chair next to the patient. The needle was inserted over the middle point of the collarbone, where the pulse of the subclavas artery was felt and was directed medially to the spin process of T2 or T3. Kulenkampff's familiarity with the brachy anatomy of the plexus allowed him to know that the best way to get to the trunks was in the area of the subclavas artery above the first rib. His technique was also simple: all branches of the plexus can be anesthetized through a single injection. These two allegations are still valid today. Unfortunately. his advice on the direction of the needle is carried out inherently high risk of pneumothorax. The popularity of the super-clavicular block remained unmatched throughout the first half of the 20th century until well after World War II. During this time, the technique underwent several modifications, most of which were intended to reduce the risk of pneumothorax. The introduction of Accardo and Adriani's auxiliary methods in 1949 and Burnham10 in 1958 marked the beginning of a decline in enthusiasm for the supraclavicular bloc. The auxiliary unit was particularly popularized after the publication in the journal anesthesiology of Rudolf De Jong in 1961. The document was based on autopsy and included Now well-known calculation of 42 ml as the volume required to fill the cylinder 6 cm in length (washing shell); According to De Jong, this dose should be sufficient to completely redeem all branches of the brachie plexus. The article also criticized the supraclavicular approach. Coincidentally, the same magazine published an article by Brand and Papper that compared thought and supraclavicular methods and warned of a 6.1% rate of pneumothorax, often cited for the supralavicular block. More modern modifications of the supraclavicular unit include the sub-clan technique of Alon Vinnie and Vincent Collins and The Plumb-Bob technique of Brown and collaborators. The first is more of a concept than a radically different method, stating that the plexus of anesthesia is carried out around the main vessel (perivazcular) and within the shell. Otherwise, their technique is similar to Murphey's, which in 1944 described a single-incster technique made only lateral to the front muscle scale, directing the caudad needle. The plumb-bob technique, published in 1993, is based on dissections of corpses and magnetic resonance imaging performed on volunteers. In this method, the needle is inserted above the collarbone, only lateral to the muscle of sternocleidoid (SKM) and advanced perpendicular plexus in the direction of the anteroposterior. If the needle misses the plexus, the pleural dome can be cut. Many researchers appear to perceive the supraclavicular block as complex and associated with a significant risk of pneumothorax. However, its rapid onset, dense and predictable anesthesia, and high success rate make it a very useful approach, which, according to Brown and the staff, is unsurpassed by other methods. Indeed, in our practice, the supralavicular approach is the cornerstone of the distal upper limb of regional anesthesia, and we use it extensively with very low levels of complications. INDICATIONS Supraklavicular unit provides anesthesia and analgesia to the upper limb below the shoulder. This is a great choice for elbow and arm surgery. CONTRAINDICATIONS Common Contraindications to the use of this method are those that apply to any regional unit, such as local infection, significant coagulation anomalies, and inability to cooperate during unit placement or surgery. Like the interscal unit, the supralavicular unit is not used bilaterally or in patients with respiratory compromising because of the potential risk of pneumothorax or frenic nerve block. ANATOMY OF THE BRACHIAL PLEXUS ABOVE THE CLAVICLE Brachial plexus is formed by five roots originating from the abdominal division of C5 through T1. The roots lie between the front and middle muscles of the scale (Figure 1). The front muscle of the scale comes from the front tubular tubes of transverse processes via C6 and insertion on a pipe-killer scale of the top surface of the first rib. Medium-scale muscles originate in the posterior tubular transverse processes of C2 through C7 and are inserted on the top surface of the first rib behind the sub-clan groove. The five roots converge to form three trunks - the upper, middle and bottom, which are stacked one on top as they cross a triangular interscal groove formed between the anterior and medium-sized muscles of scale. This space becomes wider in the anteroposterior plane as the muscles approach their insertion on the first edge. The sub-Keyboard artery accompanies the brachial plexus in an interscal groove facing the lower trunk. Although the plexus roots are long, the trunks are almost as short as they are wide, soon generating the front and back parts as they reach the collarbone. Figure 1 shows the clinical anatomy of the brachial plexus and surrounding structures in the supraclavicular region. Pleuras could potentially be injured in two places during the supraclavicular block; pleural dome and the first inter-berear space. The pleural dome is the tip of the parietal pleura, bounded by the first rib. The first rib is a short, wide and flattened bone in the form of the letter C. This medial boundary forms the outer boundary of the pleural dome. The front scale, inserting into this boundary of the first rib, comes into contact medially with the pleural dome. There is no pleural dome of the lateral anterior muscle scale. The first intercoat space, on the other hand, is mostly infraflavicular (see figure 1) and therefore should not be achieved when the supraclavicular block is performed properly. FIGURE 1. Anatomy of brachyal plexus in low inter-scale space and supraclavicular area. NYSORA Tips With shoulder torn down, three shoulder plexus trunks are positioned above the collarbone; thus, the needle block should never reach below the collarbone during the supraclavicular block. The first inter-body space is located below the collarbone, so its penetration is unlikely during the correct above-the-clavicular block. The needle should never cross the parasagittal plane medial to the anterior muscle scale due to the risk of pneumothorax. The muscles of SKM are inserted onto the medial third of the collarbone, and the muscles are trapezoidal muscle on the lateral third of it, leaving the middle third for the neuro-vascular bundle. These proportions are maintained regardless of the size of the patient. As the brachyal plexus moves from the medial to the lateral as it descends, the higher the above the supraclavicular area, the more medial (closer to SKM) the plexus is located. The technique described in this chapter combines the simplicity of the original single injection Kulenkampff technique with the important principles that should make the technique safer than the original description. The main benchmarks for this unit are the lateral insertion of the SKM muscle into the collarbone, collarbone itself, and the patient's middle line. These three attractions are easily identifiable in most patients. EQUIPMENT Gloves Antiseptic Solution for Skin Disinfection Labeling Pen Sterile Gauze Two 20-ml syringes for local pain relief solution One 1-ml syringe with 25-caliber needle for skin wheal One 5-cm, Short-wheeled, 22-caliber insulated needle Surface electrode nerve stimulantThe injection monitor TECHNIQUE Ideal, the unit is performed in a room dedicated to regional anesthesia with the American Society of Anesthesiologists (ASA) standard monitors , a source of oxygen, suction and resuscitation equipment and drugs, including lipid emulsion. An emergency plan needs to be developed to deal safely and quickly with any emergencies that may arise. If not contraindicated, this unit is best performed after pre-implantation (e.g. midazolam 1 mg plus fentanyl 50 micrograms IV for the average adult). In young and healthy patients, this dose can be repeated as needed. The patient is best kept under pressure but cooperative and able to associate pain or any unnecessary discomfort. The unit is performed with the patient in a semi-family position with the head spinning in the opposite direction, as shown in figure 2A. The position of the half-seed is more comfortable than the position on the back for both the patient and the operator. Since patient positioning is very important in regional anesthesia, the operator should not try to recognize any guidance until the patient has taken the right position. The patient is asked to lower his shoulder and bend his elbow, so the forearm lies on his knees. The wrist is supinated so the palms of the patient's face as shown in Figure 2B. This maneuver allows you to detect any subtle finger movements produced by nerve stimulation. If the patient cannot supinate their wrist, the roll is placed under it to allow the fingers to move freely. The operator usually stands on the side to be blocked, so for the left side of the block, the palpation is done with the left hand and the needles are manipulated from the right (see Figure 2B). For the right unit, the operator manipulates the needle with his left hand and palpates with his right. However, the operator may choose to manipulate the needle from the preferred side, regardless of the side of the block. FIGURE 2 A: Patient positioning. The patient lies in a semi-sitting or position on his back with his head turned away from the side to be blocked. B: The shoulder is down, the elbow bends, and the palm of the hand rests on the patient's lap while it is facing his face. The entry point of the needle With the patient in the described semisitting position and shoulder down, lateral The SKM muscle boundary is identified and follows distally to the point where it meets the collarbone. This particular dot is marked on the skin above the collarbone, as shown in Figure 3. The side boundary of the SKM is usually clearly visible at the level where the outer jugular vein crosses it. From this level the border can be traced caudally to the point where it meets the collarbone. The parasagittal line (parallel to the middle line) is drawn at this level to recognize the medial area that is at risk for pneumothorax. The entry point of the needle is the side to this parasagital plane, separated by a distance that we call a safety reserve. This distance is about 1 inch (2.5 cm) of SCM's side insertion on the collarbone, as shown in Figure 4. The strength reserve can be set alternatively using a distance equal to the width of the SKM clavicular head when inserted onto the collarbone. The finger finger is placed on this site, as shown in Figure 5. Usually we draw two arrows in this place, pointing at each other. The proximal arrow, above the finger, is used to localize the entry point of the needle, the distal shows the direction of the needle path. The needle is injected immediately with the finger finger head and advanced first perpendicular to the skin at 2-5 mm (depending on the amount of subcutaneous tissue of the patient) and then turned caudally under the finger palpation to propel it in the direction that parallels the middle line as shown in Figure 5. The block should pass over the key, under the finger palpation. As a goal we would cause isolated muscles to twitch in all fingers either in flexion or expansion to confirm the needle's proximity to the lower plexus trunks. Any other response has a significantly lower success rate. If the needle repositioning is necessary, the needle is removed and the angle is adjusted in the anteroposterior plane, but always parallel to the middle line and never directed medially FIGURE 3. Attractions. Under the finger is shown the side insertion of SKM in the collarbone. FIGURE 4. Safety margin. The distance of about 1 inch (2.5 cm) is measured by the lateral from the SCM to ensure the placement of the needle from the pleural dome. FIGURE 5. The entry point of the needle and direction. The entry point of the needle is located only to the cephalopod finger and one finger above the key. The needle is first injected perpendicular to the skin, and then obeys and advanced parallel to the middle line. The Nervous Stimulant Settings Nerve Stimulant was initially set at a current intensity of about 0.8 mA and a pulse width of 100 mx. After receiving the desired answer (i.e. muscle twitching of fingers) the injection is initiated without reducing the current of the nerve stimulant. It's unique supraclavicular block. One study found that the onset, duration and success with the supraclaven block does not affect the reduction of the nerve stimulant to 0.9 mA or less.18 Supraclavicular and lumbar plexus blocks are the only peripheral nerve blocks in which injectable at a higher ting than 0.5 mA is recommended. NYSORA Tips the sideline of the SKM muscle follows a straight line from the mastoid to the collarbone. The needle is inserted in a parallel middle line. Depending on the weight of the patient, finger palpation should exert a different amount of pressure on the deeper tissues. This maneuver helps to bring the plexus closer to the skin and makes the needle's trajectory shorter. The needle should never be inserted deeper than 1 inch (2.5 cm) if there is no twitching from the brachial plexus. Since the trunks are adjacent, caused twitches from one barrel to follow the other without interruption. If the twitching instead disappears before reaching the bottom of the trunk, the needle is removed to the point of the previous twitch and advanced with a slight change in the anteroposter angle insertion. The strength reserve of about 1 inch (2.5 cm) lateral to insert SCM on the collarbone provides a safe distance of the side to the outer boundary of the pleural dome for the needle to travel. Because of the steep downward direction of the trunks, increasing this lateral distance can prevent the needle from making contact with the plexus above the collarbone or miss short trunks altogether. In the supraclavicular unit, the initial current of the nerve stimulant is 0.8 mA high enough to produce guidance in the plexus, but low enough to provide sufficient proximity for a successful blockade. The risk of intra-innueral injection is minimized by low-pressure injections and careful technique. The injection is performed slowly with frequent aspirations with close observation of the patient. If pain or abnormal pressure is felt at any time during the injection, the needle should be removed 1-2 mm, after which a new assessment is carried out. Traditionally, supracravicular technique was not considered the best choice for the placement of catheters. The greater mobility of the neck in this place carries the risk of knocking out the catheter. Tunneling the catheter to the infraflavicular level can help make the catheter more stable; However; there is currently little data on the subject. LOCAL ANESTHETIC CHOICES FOR SINGLE-SHOT AND CATHETER TECHNIQUES Most operations on the upper extremities performed under regional anesthesia last 1-3 hours. Consequently, we most often use 30 ml 1.5% mepiracaine with 1:200,000 epinephrine, which provides about 3-4 hours of anesthesia. The same anesthetic solution without epinephrine provides about 2-3 hours of anesthesia. To accelerate the start of the block, 2 ml 8.4% bicarbonate can be added to every 20 ml of mepiracaine solution. Solutions levobupivacaine, ropivacaine, or bupivacaine provide longer acting anesthesia (5-7 hours) when needed. Recent studies have shown that the use of ultrasound guidance can reduce the amount needed for a successful unit. For continuous methods, you can give a dose of bolus about 10-15 ml of local analgesic solution, followed by an infusion rate of 8-10 ml/h. Patient controlled bolus 3-5 Ll every 30-60 minutes can be added, with basal infusion reduced to about 5 ml/h. Breakthrough pain should be treated with a bolus local anesthesia because simply increasing the rate of infusion can take several hours to have an effect. PERIOPERATIVE MANAGEMENT Patient who receives disposable blocks can undergo surgery under intravenous sedation, giggled for the patient's comfort. Sedation requirements vary from patient to patient and range from small intermittent midazolam or fentanyl pains to propofol infusion at 25-50 micrograms/kg/min to mild general anesthesia. COMPLICATIONS Common side effects associated with this technique include a phranic nerve block with diaphragmatic paralysis and a sympathetic nerve block with the development of Horner syndrome. They are usually self-limiting and do not require intervention. Phrenic nerve block is reported to occur about 50% of the time, although this can be reduced by using an ultrasound guide. Intravascular injections with systemic local anesthesia toxicity and hematoma formation can also occur. To reduce the risk, a high level of vigilance is required due to the rish-vascularity of the supraclavicular region. In the case of the supralavicular block, this may be due to a puncture of the sub-keyboard, transverse cervix or dorsal shoulder blade of the arteries, all of which are located near the plexus at this level. Pneumothorax is as common as the 6.1% that was reported in 1961, compared to 230 consecutive supraclavicular blocks with 246 consecutive illuminated blocks. However, the comparison was neither blinded nor randomized, and several different methods were used in the study. In contrast, this complication is rare in modern literature. It is often mentioned that pneumothorax, which complicates the supraclavicular block, has a delay of beginning. Although such cases were published in literature, most pneumothorabs reported being diagnosed within hours of the procedure and before the patient was discharged. Based on the available literature, pneumothorax associated with the supralavicular block is a rarity, usually small, and it presents within hours of the procedure. In some cases, its presentation may be delayed to 12 Summary Supraclavicular unit is a reliable, fast-growing approach to plexus of anesthesia. The anatomy of the brachial plexus, with its three trunks limited to a significantly reduced surface area, provides a high level of success for achieving anesthesia in the upper limb below the shoulder. The combination of good anatomical knowledge, simple guidance and careful technique is paramount to consistent success and limiting its possibilities for complications. Examine the ultrasonic anatomy of the Plexus inter-scale and supralavicular unit at NYSORA SIMULATORS™. REFERENCES Moore D: Supraclavicular approach for brachi plexus unit. In Moore D (ed): Regional bloc. A handbook for use in clinical practice medicine and surgery, 4th ed. Thomas, Springfield, Illinois: 1981, page 221-242. Lanz E, Theiss

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