A considerable amount of patients scheduled for surgery suffers from concomitant neurologic disorders. Traditionally, they have been precluded from regional anesthesia for fear of the postulated 'double crush' phenomenon, which is an increased susceptibility for second site neuronal injury via needle trauma or local anesthetic neurotoxicity. But on the other hand, general anesthesia is posing significant risks too, concerning autonomic dysfunction, interference with neuromuscular blocking agents and other anesthetics, respiratory weakness and airway complications as well as postoperative delirium.

More recent publications, although sparse, have shown, that regional anesthesia can for example be used successfully without neurologic complications in patients with peripheral neuropathies like Charcot-Marie-Tooth, in neuromuscular junction diseases like myasthenia gravis or in central nervous system disorders like multiple sclerosis.

Still, new data indicates also that neuraxial anesthesia may increase the risk of new or worsening neurologic symptoms in preexisting significant spinal pathology and that diabetic nerves are truly more sensitive to local anesthetics.

This problem based learning discussion presents different clinical cases and reviews today´s evidence including both neuraxial- and peripheral block techniques. It doesn´t limit itself on answering the question if choosing regional anesthesia after an individual risk/benefit consideration makes sense here or not, but also tries to work out under which circumstances and especially how to do it most safely, if indicated.

SP26 PERIPHERAL NERVE BLOCKS FOR TKA

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Background Knee osteoarthritis (OA) is one of the most common disabling pain conditions, leading to poor quality of life, direct and indirect costs. Main symptoms are decreased range of motion, stiffness, function-limiting pain and limitation in physical mobility. Every year more than one million procedures are performed all over the world. Recent reviews underline that nearly 25–30% of patients do not achieve satisfactory outcomes after TKA surgery because of persisting pain. Although recent research ruled out anaesthesia choice as a factor influencing outcome, peripheral nerve blocks are proven to provide satisfactory analgesia and reduced adverse events in terms of respiratory failure, cognitive impairment and myocardial infarction without influencing hospital length of stay significantly.[1]

Peripheral nerve blocks have been developed into a multitude of different approaches. From proximal to distal, these approaches are more and more selective with the aim to be motor sparing.

Even though a good analgesia can be obtained performing a lumbar plexus block or an epidural, in the clinical setting every day we try to be effective but minimally invasive to match a perfect risk/benefit balance. PNBs should be preferred over epidurals in terms of risk of complications.[2]

The knee joint is a complex neuroanatomic zone. Given the innervation is provided by lumbar and sacral plexus, the knee capsule can be divided into an anterior portion and the posterior or anterior capsule and posterior capsule.[3,4]

In this article we outline the current strategies to provide effective analgesia for TKA using peripheral nerve blocks

Anterior Capsule The anterior capsule is substantially provided by the terminal branches of the lumbar plexus. These nerves are distal divisions of the femoral and partially the obturator nerves.[3]

For this reason, femoral Nerve block is still the mainstay of knee analgesia in Total Knee Arthroplasty, given the easiness and efficacy demonstrated by the lower opioid consumption.

Continuous block is even more effective but at the cost of prolonged motor block.

A femoral nerve block under ultrasound guidance is performed placing a linear probe over the inguinal ligament. Once the femoral artery is identified proximal to its division, the iliopsoas muscle and the iliac fascia are outlined. The femoral nerve is located above the ileopsoas muscle, in the corner between the iliac fascia and the femoral artery. The needle is placed next to it with an in-plane view and usually 15ml are injected.

Trying to avoid motor blockade, the adductor canal block was developed by Manickam in 2009.[5] This block is performed under ultrasound guidance injecting into the adductor canal. The adductor canal is an anatomic space extending from the apex of the femoral triangle to the adductor hiatus. Into this space two branches of the femoral nerves, the nerve to the vastus medialis and the saphenous nerve can be blocked giving minimum motor blockade without increasing the risk of falling.[6]

ACB can be performed in different sites into the adductor canal with no differences in terms of analgesia,[7] but different volumes can makes the difference because it has been demonstrated that the injection can spread into the popliteal fossa and reach the popliteal plexus thus ameliorating the analgesic effect[8,9]

The ACB is performed after the identification of the saphenous artery under the Sartorius muscle. A linear probe is placed over the iliac spine where this muscle origin then is moved caudally following the muscle. Then we identify the saphenous artery joining the muscle in th. adductor canal. With an in plane technique the needle is placed laterally to medial under the Sartorius near the saphenous artery and a volume of 5 to 20 ml is injected

Posterior capsule The posterior capsule is innervated by a complex web of anastomotic branches identified as the popliteal plexus. These branches arise by the sciatic nerve from the tibial and the peroneal with a contribution of the posterior branch of the obturator nerve.

As for the femoral nerve, the sciatic nerve block is extremely effective in improving analgesia especially if performed in combination but as mentioned before at the price of an important motor block

SNB is more effective than local infiltration in the posterior capsule (LIA) but can mask surgical neurological damage of the common peroneal nerve which can be as frequent up to 10% in the patients undergoing TKA.

A sciatic nerve block can be performed along its course from the parasacral approach to the popliteal fossa ahead of its bifurcation.

If chosen for analgesia purpose, we recommend the execution in the easiest approach where this block can be performed safely under ultrasound guidance.

Typically in our institution this block is performed transgluteal or subgluteal. For the transgluteal approach a convex probe is placed over the gluteus maximus in the interspace between the greater trochanter and the ischial tuberosity. Between these bony ultrasound marks lies the quadratus femoris muscle. The sciatic nerve is located over this muscle and under the gluteus maximus between these bony landmarks.

Subgluteal is another approach in case of elevated BMI. In this approach a convex or a linear probe is placed under the gluteal fold with the patient in lateral decubitus and the thigh flexed. In this region the sciatic nerve lies above the adductor magnus and between the biceps femoris and semitendinosus. The probe is firstly placed over the ischial tuberosity where biceps femoris and semitendinosus originate, then is moved caudally to identify the belly of these two muscles. The needle is inserted laterally to medial in an in-plane approach and 15 to 20 ml of anaesthetic is injected.

In order to manage pain from the posterior compartment without compromising motor strength, Sinha proposed in 2012 an ultrasound (US)-guided local anaesthetic infiltration between the popliteal artery and the capsule of the knee (IPACK).[10]

Further investigations outlined that iPACK block reduced opioid consumption providing further effective analgesia if added to the FNB following TKA. Moreover, iPACK with ACB provided equivalent analgesia and improved physical therapy performance, allowing earlier hospital discharge.[11]

The iPACK block is performed by placing a convex probe over the popliteal fossa. After the femoral condyles are identified the probe is moved cranially until the condyles disappear. The target lies between the bone landmark and the popliteal artery. The needle is inserted in-plane medial to lateral in order to avoid tibial or peroneal nerve damage and once the needle reaches the target 20 ml of local anaesthetic is injected.

Conclusion We are now living in a very bright era in regional anaesthesia. Our knowledge is more and more complete in the innervation of the knee and this, in conjunction with the evolution of ultrasound technology allows us to manage postoperative analgesia in an effective, accurate and tailor made strategy.

PNBs are now considered essential procedures to manage perioperative analgesia.

To date we can suggest to perform an ACB in every patient for the management of TKA. An iPACK block can be added in selected patients considering the clinical setting, the surgical approach and early discharge strategies.

We recommend anyway not to underestimate the learning of other approaches because being flexible increases the chances to fit into your case

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SP27 PULSED RADIOFREQUENCY IN CHRONIC SHOULDER PAIN: A STATE OF THE ART REVIEW

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Shoulder pain is a wordwide high- incidence disease, with a reported European prevalence up to 26%[1] and a similar reported USA prevalence of 24%.[2] The disease bacame chronic in 20% of patients with consistent impairement in functional activity and painful limitation.[3] The incidence of chronic shoulder pain increases with age, with a higher prevalence in patients older than 70 years old. [?]

Considering this high prevalence, the consistent functional limitation and the high chronicization, shoulder pain is a relevant disease not only in terms of patients quality of life but also in healthcare resource management.

There are a lot of different diagnostic options (e.g: rotator cuff disease, shoulder impingement syndrome, adhesive capsulitis, reumatologic disease and other), all leading to the same symptom: chronic shoulder pain. As a consequence, a multidisciplinar and complete treatment, from conservative to surgical approach, is required.