INTRODUCTION

Brachial plexus is the network of nerves passing from the spinal cord to supply the sensation and function to the major part of the upper limb. Surgical anesthesia of the arm from the elbow to the hand is performed by injecting the local anesthetic solution around the brachial plexus named as brachial plexus block (BPB). The block is very popular in providing pain relief and operative anesthesia to the upper limb as it avoids the needs of general anesthesia and the risks associated with it.[1]

The brachial plexus can be approached through a needle from various sites along its course. Depending upon the site of approaching the plexus, type of surgical procedure to be performed, condition, and medical comorbidities of the patient, techniques are divided as the axillary block (AXB) where the skin is pierced in the axilla, interscalene block (ISBPB) where the needle pierces in front of the neck and passes between the scalene muscles, infraclavicular block (IBPB) where the skin below the clavicle is pierced, supraclavicular block (SBPB) in which the skin in the root of the neck above the clavicle is pierced, and retroclavicular block (RBPB). The choice of the best technique is very difficult as it depends upon the preference of the practitioner and efficacy of each technique.[2] A Cochrane systematic review compared the effects of blocking the brachial plexus by injecting local anesthetic in the area below the collarbone (the IBPB) with other techniques and concluded that the IBPB is an effective and safe choice for producing anesthesia of the lower arm.[2]

There has been a controversy related to the choice of the best technique for providing surgical anesthesia to the upper limb as each of these techniques have their benefits as well as complications. Since the BPB alters the integrity of the skin, it is associated with several types of complications such as Horner

syndrome, brachial plexus injury, nerve injury (neuropraxia, neurotmesis), complications associated with local anesthetic toxicity (nausea, vomiting, dizziness, arterial puncture, venous puncture), rare instances of serious complications like pneumothorax, phrenic nerve palsy (PNP), and many more.[3,4] There is also evidence from a systematic review that the use of ultrasound (US) during the block procedure decreases the rates of several serious complications such as pneumothorax, PNP, and vascular injury, and increases block efficiency as the use of ultrasound has made these blocks more safe.[1]

We, therefore, have undertaken a systematic review to evaluate the data from randomized controlled trials (RCTs) on the rates of complication in each of these techniques of BPB.