

## ABSTRACT

**Background:** The brachial plexus block (BPB) is very popular in providing pain relief and operative anesthesia to the upper limb. There are various techniques of BPB depending upon the site of approaching the plexus; however, there has been a controversy related to the choice of the best technique in terms of benefits as well as complications. **Objective:** This systematic review was performed to evaluate the data from randomized controlled trials (RCTs) on the rates of complication in each of these techniques of BPB.

**Methods:** The literature was searched from PUBMED, EMBASE, Google Scholar, and Cochrane Library from 2001 till the year 2020. All the available RCTs that met the criteria were included. Data were independently extracted from the included studies by one of the authors and entered in the Microsoft Excel sheet.

**Results:** Our search strategy identified 73 RCTs comprising 5819 patients. Of these, the majority of the RCTs were published in the year 2018 (n=10) and performed with the supraclavicular BPB approach (n=21). Neurological complications (n=41) were reported by most of the studies that include Horner syndrome (n=32), paresthesia (n=21), followed by respiratory complications (n=23) comprising hemi-diaphragmatic paralysis in 19 studies, and cardiac complications (n=13), that includes hypotension and bradycardiac events (HBE) (n=11). Other complications such as hoarseness (n=8), phrenic nerve palsy (n=4), and many more complications related to local anesthesia were also reported in studies.

**Conclusion:** The most common complications reported in most studies are Horner's syndrome, paresthesia, followed by the occurrence of HDP, and HBE. Most of the complications were associated with Interscalene BPB and the

use of dexmedetomidine was found to be associated with the occurrence of HBE.

**Keywords:** *Approaches, Brachial plexus block, Complications, Shoulder surgery*