# Diaphragm-sparing nerve blocks for shoulder surgery, revisited

**By:** Tran, DQ (Tran, De Q.)[1]; Layera, S (Layera, Sebastian)[2]; Bravo, D (Bravo, Daniela)[2]; Cristi-Sanchez, I (Cristi-Sanchez, Iver)[3]; Bermudez, L (Bermudez, Loreley)[4]; Aliste, J (Aliste, Julian)[2]
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## Abstract

Although interscalene brachial plexus block (ISB) remains the gold standard for analgesia after shoulder surgery, the inherent risks of ipsilateral phrenic nerve block and hemidiaphragmatic paralysis (HDP) limit its use in patients with preexisting pulmonary compromise. In a previous Daring Discourse (2017), our research team has identified potential diaphragm-sparing alternatives to ISB for patients undergoing shoulder surgery. In recent years, the field has been fertile with research, with the publication of multiple randomized controlled trials investigating supraclavicular blocks, upper trunk blocks, anterior suprascapular nerve blocks, costoclavicular blocks, and combined infraclavicular-suprascapular blocks. To date, the cumulative evidence (pre-2017 and post-2017) suggests that costoclavicular blocks may provide similar postoperative analgesia to ISB coupled with a 0%-incidence of HDP. However, in light of the small number of patients recruited by the single study investigating costoclavicular blocks, further confirmatory trials are required. Moreover, future investigation should also be undertaken to determine if costoclavicular blocks could achieve surgical anesthesia for shoulder surgery. Anterior suprascapular nerve blocks have been demonstrated to provide surgical anesthesia and similar analgesia to ISB. However, their risk of HDP has not been formally quantified. Of the remaining diaphragm-sparing nerve blocks, supraclavicular blocks (with local anesthetic injection posterolateral to the brachial plexus), upper trunk blocks, and combined infraclavicular-anterior suprascapular blocks merit further investigation, as they have been shown to achieve similar analgesia to ISB, coupled with an HDP incidence <10%.

## Keywords

**KeyWords Plus:** BRACHIAL-PLEXUS BLOCK; ULTRASOUND-GUIDED INTERSCALENE; SUPRASCAPULAR NERVE; HEMIDIAPHRAGMATIC PARESIS; POSTOPERATIVE ANALGESIA; DOUBLE-BLIND; COSTOCLAVICULAR SPACE; PULMONARY-FUNCTION; PHRENIC-NERVE; VOLUME

## Author Information

**Reprint Address:** Tran, DQ (reprint author)

+ McGill Univ, Anesthesia, Montreal, PQ H3T 1M5, Canada.

**Addresses:**

+ [ 1 ] McGill Univ, Anesthesia, Montreal, PQ H3T 1M5, Canada
+ [ 2 ] Univ Chile, Anesthesia & Perioperat Med, Santiago, Chile
+ [ 3 ] Univ Mayor, Fac Ciencias, Escuela Kinesiol, Santiago, Chile
+ [ 4 ] Univ Desarrollo, Fac Med, Santiago, Chile

**E-mail Addresses:**de_tran@hotmail.com

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