

6. CERVICAL PLEXUS BLOCK

INTRODUCTION

The cervical plexus block provides anesthesia and analgesia to the head and neck region. Depending on the type of surgery, the plexus can be blocked either at a superficial or a deep level. The superficial branches (Figure 6-1) of the plexus innervate the skin and superficial structures of the head, neck, and shoulder. The deep branches (Figure 6-2) innervate the muscles of the deep anterior neck and the diaphragm. The deep cervical plexus block is used for deeper surgeries of the neck, such as carotid artery or thyroid surgery, and the superficial cervical plexus block is used for su-

perficial cutaneous surgeries of the head and neck. This block is also useful as a supplement to other regional techniques of the upper torso.

ANATOMY

The cervical plexus is formed from the anterior rami of the C1 through C4 nerve roots; it lies anterior to the cervical vertebrae and posterior to the sternocleidomastoid muscle. There are five main components of the cervical plexus: (1) the cutaneous branches, which supply the lesser occipital, greater auricular, transverse cervical, and supraclavicular nerves; (2) the ansa cervicalis, which innervates the infrahyoid and geniohyoid muscles; (3) the phrenic nerve, which is the only motor nerve to innervate

the diaphragm; (4) contributions to the accessory nerve (CN XI), which innervates the sternocleidomastoid and trapezius muscles; and (5) direct muscular branches, which supply prevertebral muscles of the neck.

Bilateral deep cervical plexus blocks, which would result in total diaphragmatic paresis, should not be performed. Also, patients with chronic respiratory conditions may not be suitable candidates for an ipsilateral deep cervical plexus block. Caution must be taken when placing a deep cervical plexus block because of the close proximity of the vertebral artery and the dural sleeve. Placing the block too close to the vertebral artery may result in an intravascular injection; placing it too close to the dural sleeve may result in a subarachnoid injection.

Figure 6-1. Superficial cervical plexus

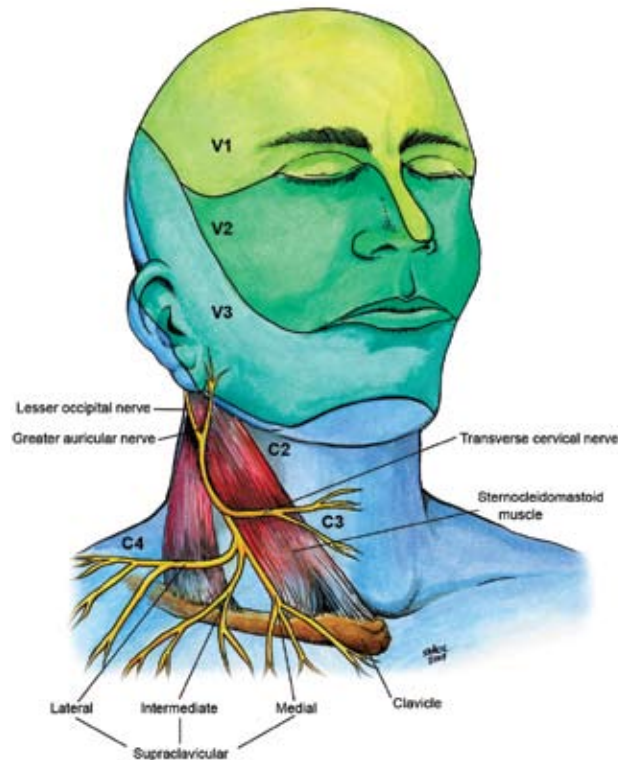
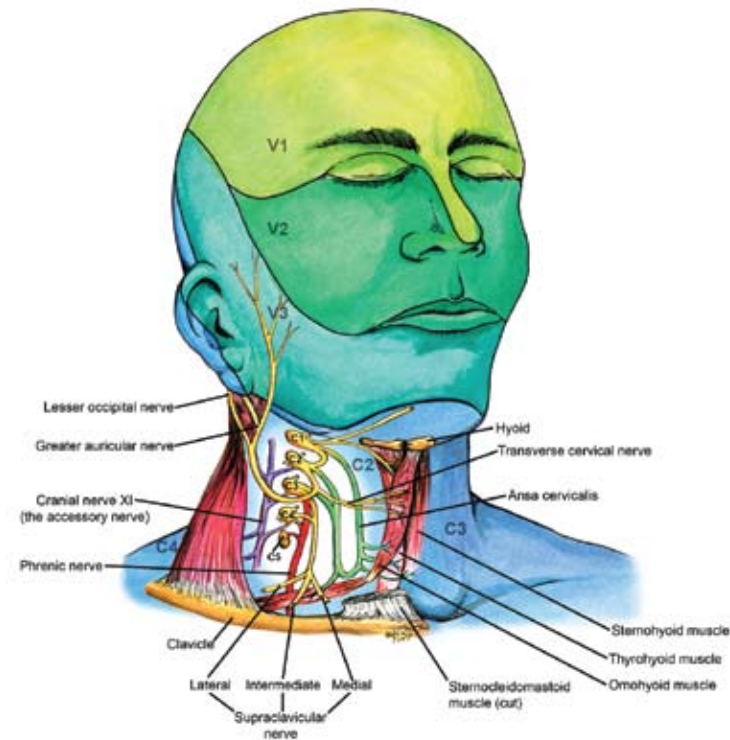


Figure 6-2. Deep cervical plexus



PROCEDURE

Landmarks

Superficial Cervical Plexus (Figure 6-3). Identify and mark the posterior border of the sternocleidomastoid, as well as the midpoint of the muscle.

Deep Cervical Plexus (Figure 6-4). Position the patient supine with the head turned toward the nonoperative side. Palpate the transverse process of C6 (Chassaignac's tubercle) at the level of the cricoid cartilage. Palpate the mastoid process behind the ear. Draw a line between the mastoid process and Chassaignac's tubercle. The transverse processes of the other cervical vertebrae will lie on or near this line. The first palpable transverse process below the mastoid process is C2. Palpate and mark the transverse processes of C2 to C4 (the C4 transverse process lies approximately at the level of the mandible). Insert the needle medially and caudally so that the needle tip is resting on the transverse process.

Needles

- 22-gauge, 5-cm, short bevel needle.

Injection

Superficial Cervical Plexus. Insert the needle at the midpoint of the posterior border of the sternocleidomastoid muscle to approximately half the depth of the muscle, and inject 3 to 4 mL of local anesthetic. Also perform a subcutaneous injection of additional local anesthetic cephalad and caudad along the length of the sternocleidomastoid muscle posterior border.

Deep Cervical Plexus. Attach a 10-mL control syringe to the needle. Once the transverse process

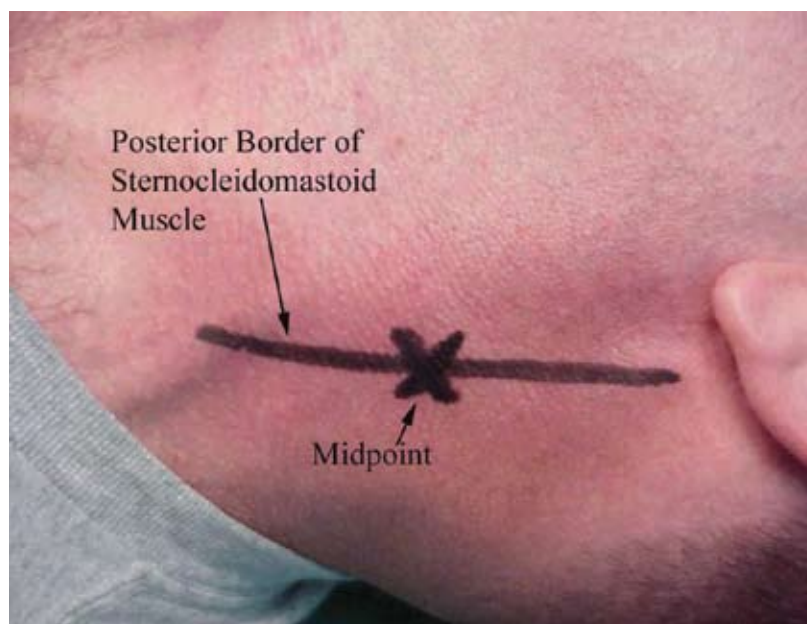


Figure 6-3

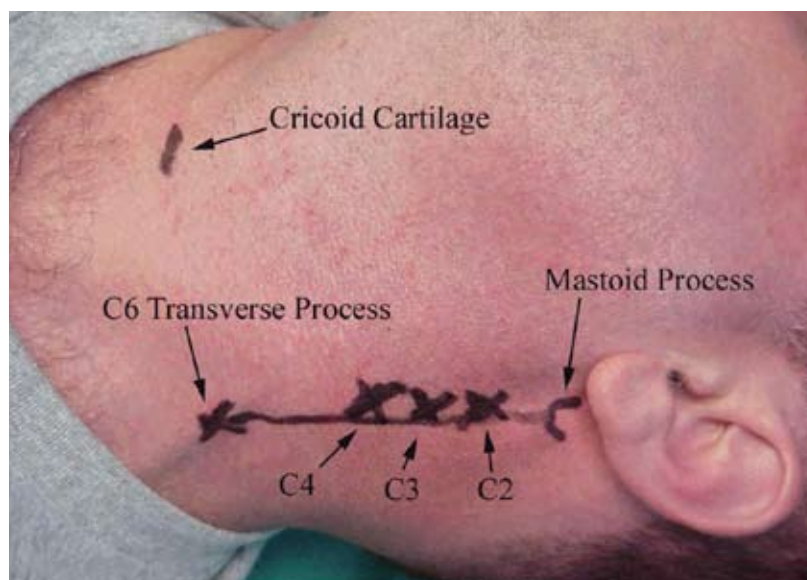


Figure 6-4

is contacted, withdraw the needle 1 to 2 mm. Inject the local anesthetic slowly with frequent aspirations. After completing the injection, remove the needle and repeat the block at the next level. (Many institutions perform only a superficial cervical plexus block, and the surgeon infiltrates deeper structures as required.)

Local Anesthetic

Superficial Cervical Plexus. 5–10 mL.

Deep Cervical Plexus. 3–5 mL at each level or 15 mL at C3 only.

Teaching Points. Caution should be exercised in patients receiving a deep cervical plexus block for carotid endarterectomy surgery. These patients will likely have atheromatous plaques that could be dislodged with excessive head hyperextension or cause cerebral ischemia with head rotation. For carotid endarterectomies, the surgeon must infiltrate the carotid body with local anesthetic because the cervical plexus does not innervate this structure.