HOW WE DO IT

Day Care Hemithyroidectomy under Superficial Cervical Plexus Block

Vishwa B Gaonkar¹, Santosh Kumaraswamy², Chitresh Kumar³

ABSTRACT

Currently, most of the thyroidectomies are being done under general anesthesia (GA). Sometimes superficial cervical plexus block (SCPB) may be used if the patient is not for GA. Daycare hemithyroidectomy (HT) can be safely performed under SCPB for small benign thyroid nodules. The HT under SCPB is not associated with intubation-related complications, no need for hospitalization, early return to home, and economical surgery.

Keywords: Daycare, Hemithyroidectomy, Superficial cervical plexus block.

Introduction

Technically, hemithyroidectomy (HT) means removal of one lobe of the thyroid gland, isthmus, and a small cuff of the opposite lobe. Thyroid surgery was first described in the 12th century and till the early 20th century it was performed under local anesthesia (LA). After the development of safer anesthetic agents like propofol, midazolam, and fentanyl, thyroidectomy is currently being performed under general anesthesia (GA). Even today whenever the patient is not fit for GA, urgent thyroidectomy is being done under LA. But LA has less effect and has a shorter duration of action in comparison with GA, and after GA, we have to admit the patient leading to increased hospital stay and cost. The superficial cervical plexus block (SCPB) is more effective and has a longer duration of action in comparison with LA and does not require hospitalization. The other advantages of SCPB are avoidance of complications of GA as well as sustained pain control. HTx under SCPB can be performed as a daycare procedure. However, SCPB is technically more challenging than LA. SCPB may be given blindly or under USG guidance. Till now, we have safely done more than 50 daycare HTx under SCPB for benign thyroid nodule measuring up to 4 cm, without any conversion to GA.

Anatomy of Cervical Plexus

The sensory supply to the neck is provided by the cervical plexus which is formed by the anterior rami of the first four cervical spinal nerves. The nerves which form the cervical plexus lie between the levator scapulae and scalenus medius posteriorly and the prevertebral fascia, the internal jugular vein, and sternocleidomastoid anteriorly.

The branches of the cervical plexus can be divided into the following (Fig. 1):

1. Communicating branches.
2. Superficial branches:
   • Lesser occipital (C2)
   • Greater auricular (C2,3)
   • Transverse cutaneous nerve of the neck (C2,3)
   • Supraclavicular nerves (C3,4)
3. Deep branches to the muscles of the neck.
4. The phrenic nerve.

Procedure

1. Consent: A written informed consent must be taken and the procedure should be explained in detail with the help of pictures or videos emphasizing that he or she will be awake during the surgery and has to lie down quietly for at least half an hour.
2. Nil by mouth: The patient should maintain nil by mouth for at least 6 hours because if a patient is not comfortable under SCPB, the patient can be intubated and the procedure is completed under GA. Otherwise, the procedure can be completed on the next day under GA.
3. Position: The classical barking dog position is not required. Only 15° neck extension with 15° elevation of the head end of the table is sufficed, by keeping a sandbag under the shoulders and a head ring under the occiput.

The superficial branches of the cervical plexus innervate the skin and superficial structures of the head, neck, and shoulder. All the superficial branches are emerging from the midpoint of the posterior border of SCM, and this point is known as Erb’s point and is the most important landmark for SCPB (Fig. 2). The deep branches of the cervical plexus innervate the deeper structures of the neck which include the muscles of the anterior neck and the diaphragm.
4. Monitoring: Oxygen is given preferably by nasal prongs. Intensive blood pressure, pulse rate, and oxygen saturation monitoring should be done during the surgery.

5. Surface marking: After prepping and draping the position of a thyroid nodule, trachea, thyroid cartilage, suprasternal notch, mastoid and clavicular heads of sternocleidomastoid (SCM) muscle should be marked. The posterior border of the SCM was defined by asking the patient to raise his or her head slightly. With the patients’ head turned to the contralateral side, the midpoint of the posterior border of the sternocleidomastoid muscle is marked (Fig. 3A). These surface markings will help in identifying the landmarks used for SCPB.

6. SCPB: SCPB is given on the ipsilateral side by the operating surgeon. Seven to eight ml of 0.25% undiluted bupivacaine was taken, half of the volume injected subcutaneously at the midpoint of the posterior border of SCM (Erb’s point), and the remaining half infiltrated upward and downward in a fan-shaped manner covering the middle third of the posterior border of SCM (Fig. 3A). Try to avoid inadvertent entry into the external jugular vein which usually crosses the posterior border of SCM near Erb’s point.

7. Incision: Two to four milliliters of 1% lignocaine with adrenaline is injected along the line of the incision to reduce the bleeding. A 3 to 4 cm long classical collar incision was made two finger breadths above the sternal notch (Fig. 3B). The incision is deepened till we cut the platysma.

8. Skin flaps: With the help of sharp dissection or electrocautery, the subplatysmal skin flaps are raised superiorly till the thyroid notch, inferiorly till the suprasternal notch, laterally till the posterior border of SCM, and medially till the anterior border of SCM (Fig. 3C).

9. Division of midline: The midline raphe (investing layer of the deep cervical fascia) was identified in between the strap muscles and was incised vertically (Fig. 3D). The strap muscles were retracted laterally. The isthmus and the anterior surface of the thyroid lobe are exposed. Strap muscles can be divided horizontally if enough exposure is not achieved by midline exposure.

10. Capsular dissection: Gently separate the thyroid gland from surrounding strap muscles with the help of sharp and blunt dissection. Keeping the plane of dissection over the thyroid surface to avoid the parathyroid and recurrent laryngeal nerve injury is called capsular dissection. Identify, dissect, ligate the thin tortuous middle thyroid vein originating from the thyroid and draining into internal jugular vein (Fig. 4A). Both the parathyroid are usually present in the 1 cm area where the inferior thyroid artery crosses the recurrent laryngeal nerve (RLN). Carefully dissect from thyroid with the help of bipolar cautery preserving their blood supply.
11. Division of upper pole: Capsular dissection extended toward the upper pole. The space between the cricothyroid muscle and the medial surface of the upper pole (space of reeves) is carefully dissected (Fig. 4B). If the external branch of the superior laryngeal nerve (EBSLN) is identified, preserve it. Upper pole vessels ligated and divided separately taking care of EBSLN.

12. Division of lower pole: Now extend the capsular dissection up to the lower pole, identify, and dissect the inferior thyroid vessels. Ligate and divide individual branches close to the thyroid gland to avoid the ligation of parathyroid vessels.

13. Delivering the thyroid lobe: After attending both the thyroid poles, gently pull out the thyroid lobe and retract to the opposite side exposing the tracheaesophageal groove. We have enough exposure to identify the parathyroid glands (if not identified till now) and the RLN (Fig. 4C). After preserving RLN and both the parathyroids now divide the Berry’s ligament and lift the thyroid lobe off the trachea to the opposite side (Fig. 4D). Dissect the pyramidal lobe if present. Divide the isthmus and small cuff of opposite lobe along with thyroid lobe (Fig. 5A).

14. Closure of wound: A complete hemostasis is achieved with the help of bipolar cautery (Fig. 5B). A mini vacuum suction drain is placed if there is oozing from the bed. The strap muscles were sutured back in the midline. The platysmal layer was approximated with poliglecaprone 3-0 and the skin was closed with the 4-0 absorbable suture in a subcuticular fashion (Fig. 5C).

15. Postop care: The patient is interviewed about the pain and discomfort experienced during the procedure inside the operating room. Keep the patient in the recovery room for one hour after surgery. The patient is allowed by mouth after an hour of surgery and sent home with tablet paracetamol. The patient will be reviewed after 2 days for wound and voice assessment.

If the drain was placed, it can be removed when output is less than 20 mL in 24 hours. After 14 days histopathology is reviewed and appropriate management is given.

**Summary**

The hemithyroidectomy can be safely performed under SCPB as a daycare procedure for small benign thyroid nodules. The SCPB can be easily given by the operating surgeon inside the operating room. This technique can reduce the time and cost associated with general anesthesia and prolonged hospitalization. In the future, more and more patients can be benefited from this technique.

**References**


