Case Report

Anterior cervical discectomy in a patient with huge thyroid tissue (goiter)

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ABSTRACT

Enlarged thyroid gland (goiter) may hinder to reach anterior part of the vertebrae or may impose more retraction than usual. The patient had left arm pain, and his left biceps muscle strength was 3/5 and triceps muscle strength was 4/5. Physical examination of his neck showed no abnormality. We performed anterior cervical discectomy, but we did not reach to the anterior part of the vertebrae due to enlarged thyroid gland even making moderately forceful medial retraction. It is therefore, we performed thyroidectomy previously, and later we performed anterior cervical discectomy at the level of cervical 5-6 and cervical 6-7. It will be wise to excise the goiter and later continue to cervical discectomy rather than using forceful retraction in cases with no preoperative detection as in our case to prevent damage of the recurrent laryngeal nerve and hoarseness due to pressure effect of the medial retraction during the anterior cervical approach.

Key words: Anterior cervical discectomy, goiter, recurrent laryngeal nerve

Introduction

The anterior part of the neck has many important anatomical structures including the esophagus, trachea, common carotid artery, recurrent laryngeal nerve, ductus thoracicus and thyroid gland. One of the most frequently encountered complications is vocal cord paralysis from either the left or the right approach.[1-3] Some patients suffer dysphagia and hoarseness after cervical discectomy due to retraction of the esophagus, trachea and recurrent laryngeal nerve.[4-6] Damage of the recurrent laryngeal nerve develops following vigorous mobilization of the trachea, esophagus and thyroid gland to the medial side rather than direct neural injury.[7-10] We presented this case to emphasize the management of goiter, with no external signs or abnormal thyroid function tests in the preoperative period, during anterior cervical discectomy.

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Case report

The patient was a 48-year-old man who had left arm pain. His left biceps muscle strength was 3/5 and triceps muscle strength was 4/5 with both the triceps and biceps reflex decreased. Cervical magnetic resonance imaging showed cervical 5-6 and 6-7 herniated disc [Figure 1]. Blood chemistry and hematologic parameters were within normal limits. In addition, the thyroid function tests were within normal limits and the neck examination showed no abnormality. We operated the patient using anterior cervical approach and obliquely incised the neck skin in front of the sternocleidomastoid muscle. Then, we opened the platysma muscle. We retracted trachea and esophagus to the medial side, and we detected huge thyroid gland (goiter).We were not able to mobilize the trachea and esophagus medially with moderate force because of the goiter [Figure 2a and b]. We asked for help from a general surgeon who is involved in thyroid surgery. The general surgeon used first skin incision, because it was enough to expose to the huge thyroid gland. He dissected the goiter and protected the parathyroid gland and recurrent laryngeal nerve. Then, he excised goiter totally. Its size was 10 × 4 × 5 cm [Figure 3]. Following thyroidectomy, we easily performed anterior cervical discectomy at the levels of cervical 5-6 and cervical 6-7 and we did fusion with cages. The patient had no pain

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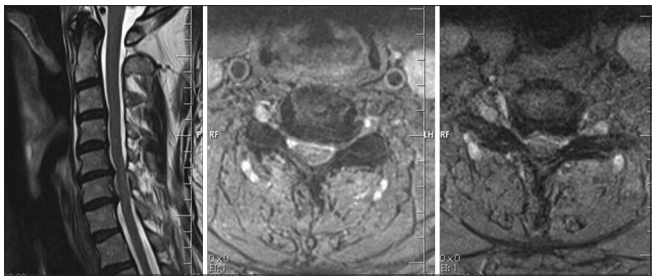

Figure 1: T2WI magnetic resonance image sagittal and axial plane illustrating herniated cervical disc at the level of cervical 5-6 and cervical 6-7

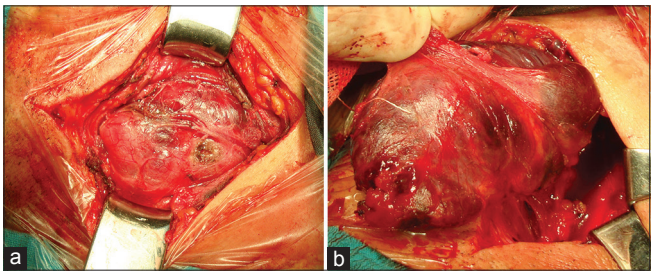

Figure 2: (a and b) Intraoperative appearance of the huge thyroid (goiter) which hindered medial retraction of the trachea and esophagus

Figure 3: The appearance of the enlarged thyroid tissue (goiter) after the excision. The size of the goiter was 10 × 4 × 5 cm

and had better muscle strength postoperatively, and his hoarseness resolved in six days. We discharged the patient on the second postoperative day, and biopsy revealed no malignancy.

Discussion

The anterior cervical approach is relatively safe, technically simple and relatively bloodless.[11] Although simple, this approach can harbor many potential devastating complications including esophageal and tracheal injury, vascular injury, and nerve injury, which fortunately occur rarely.[12-15] Cases with anatomical variations and unexpected structures such as a goiter need special attention during the anterior cervical approach to prevent occurrence of unexpected complications.[16] These potential complications may occur at each step and every surgical step during anterior cervical discectomy has a specific complication risk as deducted from the literature and our surgical experience.[8,12-14] The strap muscles, thyroid tissue, trachea and esophagus are retracted medially using a hand retractor, and prevertebral fascia is transected to provide exposure to the anterior part of the vertebrae and intervertebral discs. In addition, the longus colli muscles are dissected laterally on each side to provide a place for the automatic retractor.[11-13] Complications may occur during dissection, retraction of the structures to the medial and lateral sides of the neck, and dissecting the longus colli muscles from the anterolateral side of the cervical vertebrae.[12-14] All of these complications have been reported by different authors.[12-14] Excessive tension of the esophagotracheal groove may lead to esophageal injury, tracheal injury and recurrent laryngeal nerve damage.[15] Regarding of our case, following dissection of the neck, we retracted the thyroid, esophagus and the trachea medially to reach the anterior part of the vertebrae and intervertebral discs as part of the normal surgical procedure, but we encountered the unexpectedly enlarged thyroid tissue (goiter). Because of it, exposure to the prevertebral region was extremely difficult. We decided not to forcefully retract the thyroid gland, esophagus and trachea medially. We consulted a general surgeon experienced in thyroid surgery. The general surgeon excised the goiter preserving the parathyroid and the recurrent laryngeal nerve, and the size of the goiter was 10 × 4 × 5 cm. Later, we obtained easy exposure and the anterior cervical discectomy at two levels was performed without any complication. The patient suffered from hoarseness immediately after surgery, but this resolved in 6 days. We think that this hoarseness may be due to the retraction as well as endotracheal cuff pressure. The patient would have had permanent hoarseness and dysphonia due to forceful retraction if we had insisted on retraction to access the anterior cervical region. Forceful retraction can lead to high tensions on the recurrent laryngeal nerve which courses on the esophagotracheal groove, and endotracheal cuff pressure may be a contributing factor for the occurrence of the hoarseness in patients who undergo anterior cervical discectomy. Hoarseness was noted immediately after surgery in 38% of patients and resolved in one week, and vocal cord paralysis developed only in one patient.[16-18] Different studies regarding recurrent laryngeal nerve damage during anterior cervical discectomy showed no correlation between the cuff pressure and occurrence of vocal cord paralysis in anterior cervical approach.[16-19] The trachea, esophagus and thyroid are retracted medially during anterior cervical discectomy. The recurrent laryngeal nerve is passed through the groove between esophagus and trachea, hence it will be under bilateral pressure if

the medial retraction area correlates with the inflated endotracheal cuff. We believe that cuff pressure may be a contributing factor in the development of recurrent laryngeal nerve injury although there is no concrete evidence. An inflated cuff together with the need for increased retraction may increase the risk of recurrent laryngeal nerve injury. An enlarged thyroid tissue (goiter) should therefore be diagnosed preoperatively to protect the recurrent laryngeal nerve and other anatomic structures. If it is not diagnosed in the preoperative period as in our case, it would be wise to excise the goiter and later continue the anterior cervical approach rather than using forceful retraction.

Conclusion

Forceful medial retraction may especially lead to recurrent laryngeal nerve injury in patients with a huge goiter. It is therefore wise to excise the goiter and later continue with the anterior cervical approach rather than forceful retraction. In addition, inflated cuff pressure may be reduced to prevent bilateral pressure on the recurrent laryngeal nerve during medial retraction in cases needed more retraction than usual in the anterior cervical approach for cervical discectomy.

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