

Video Presentation Abstracts

Transaxillary Robot Thyroid Surgery: Recurrent Laryngeal Nerve and Parathyroid Gland Preservation

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BACKGROUND AND AIMS

In recent times, robot thyroid surgery has been performed worldwide in thyroid tumors, and reducing surgical complication is also an important factor in robot surgery besides thyroidectomy. This study presents the surgical technique of preserving the recurrent laryngeal nerve and parathyroid gland in transaxillary robot thyroid surgery.

METHODS

The drawback of robot thyroid surgery is that it cannot tell how strong the surgeon is holding and retracting the tissues or feels the thermal change when energy device is activated. Dissection or manipulation should be performed by layers and structures. The surgeon should not advance to the next procedure immediately after activating the coagulating energy device when related to tissues for preservation since there could be a thermal injury. After the activation, pause or make contact to a gauze placed in the operative field to check the spread of remaining heat. The shielded side of the device should be placed to the remnant structure side. By doing so, the thermal spread could be minimized. When coagulating vessels, the surgeon should not impatiently manipulate the grasped tissues since they could tear before fully coagulated and encounter bleeding. When preserving the recurrent laryngeal nerve and parathyroid gland, these surgical tips are very important to minimize the injury.

RESULTS

Applying such surgical techniques, the result of preserving the recurrent laryngeal nerve and parathyroid gland is safe and secure in robot thyroid surgery as presented in our video clip.

CONCLUSION

Endocrine surgeons perform functionally safe thyroidectomy and reduce the surgical complications in any type of thyroid surgery. The above-mentioned techniques will help preserve the recurrent laryngeal nerve and parathyroid gland in robot thyroid surgery.

Endoscopic Thyroidectomy through Breast and Axillary Approach with Gas Insufflations

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BACKGROUND AND AIMS

To study the safety and feasibility of Endoscopic thyroidectomy through breast and axillary approach.

METHODS

Thirty-one cases were operated through breast and axillary approach from December 2013 to November 2015 at our institute. All cases were operated by a single surgeon.

RESULTS

The mean age was 30.0 ± 10.0 years, the male-to-female ratio was 2:7, the mean duration of goiter was 34.14 months, and the surgery performed was total thyroidectomy in 10%, hemithyroidectomy in 84%, completion thyroidectomy in 3%, and converted to open in 3%. The mean nodule size was 4.48 cm and the mean gland weight was 16.10 gm. The mean duration of the surgery was 148.27 minutes for hemithyroidectomy and 270 minutes for total thyroidectomy. The mean hospital stay was 2.36 days for hemithyroidectomy and 6.33 days for total thyroidectomy. Final histopathology was benign colloid nodule (78%), follicular adenoma (13%), follicular carcinoma (3%), Hurthle cell adenoma (3%), and follicular variant of papillary thyroid carcinoma (3%). The postoperative complications include hypoparathyroidism in three patients of total thyroidectomy, paresthesia around the

neck in four patients, and bad scar around the nipple in one patient; all were managed conservatively. There was one conversion to open due to hemorrhage from upper pole of thyroid. There was no case of permanent hypoparathyroidism and recurrent laryngeal nerve palsy. The cosmetic outcome was excellent.

CONCLUSION

Endoscopic thyroidectomy through the breast and axillary approach is feasible and safe in selected group of patients of thyroid tumor with excellent cosmetic outcome.

Robotic Transoral Subperiosteal Thyroidectomy (TOSPOT): Video Presentation of a Cadaver Experience

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BACKGROUND AND AIMS

Recently, endoscopic transoral techniques for thyroid surgery have been reported. Nevertheless, robotic transoral techniques for thyroid gland access have been described. Herein, we aimed to report a robotic transoral subperiosteal approach to carry out a thyroidectomy.

METHODS

The da Vinci[®] Si Surgical System (Intuitive Surgical, Sunnyvale, CA) robot was used in a human cadaver. All surgical planes were observed with three ports. The dissection was performed with successful removal of the thyroid gland with the subperiosteal approach.

RESULTS

Thyroidectomy in the cadaver using the da Vinci robotic system with the transoral subperiosteal approach was performed successfully, by preserving the recurrent laryngeal nerve and parathyroid tissues.

CONCLUSION

Robotic transoral subperiosteal thyroidectomy (TOSPOT) provides an alternative approach for thyroidectomy in a field of "scarless" techniques. Concerns regarding mental nerve injury, oral contamination, and minimal invasiveness should be clarified.

How to detect and preserve EBSLN with Neuromonitoring in Thyroid Surgery?

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BACKGROUND AND AIMS

The external branch of the superior laryngeal nerve (EBSLN) is susceptible to injuries during thyroidectomy, causing postoperative voice impairment. Especially in cases with Graves' disease, large nodule, and thyroid cancer in the upper thyroid lobe, the EBSLN is extremely vulnerable. In this article, we present the cases with EBSLNs who are running close to the upper pole of the thyroid lobe.

METHODS

In cases with Graves' disease, as increasing the volume of the goiter, the EBSLN gets closer to the upper pole of the thyroid and the superior thyroid vessels. In cases with benign nodule, the EBSLN may run close to the upper pole just behind the superior thyroid artery. During surgeries for benign disease, we always use the stimulating probe of the intraoperative neural monitoring system (NIM-Response 3.0; Medtronic) to stimulate and detect EBSLN without an endotracheal tube with the electrodes. We can see the contraction of the cricothyroid muscle following the electrical stimulation of EBSLN and detect the running course of the nerve. In cases with thyroid cancer in the upper pole of the thyroid lobe, EBSLN may be involved with the tumor. In such cases, preservation of EBSLN is extremely challenging without the intraoperative neural monitoring. We demonstrate how to detect and preserve EBSLN.

RESULTS

During the surgeries of the present cases, we can detect and preserve EBSLN with the application of IONM.

CONCLUSION

As the risk of the EBSLN injury cannot be forecasted in the preoperative settings, identification of the nerve during surgery is important to prevent the nerve injury. The application of IONM makes it possible to identify and preserve EBSLN.

Rare Surgery in a 2-Month-Old Infant for Neonatal Severe Primary Hyperparathyroidism

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BACKGROUND AND AIMS

Neonatal severe primary hyperparathyroidism (NSPHPT) is a rare disorder of calcium homeostasis with fatal outcome in majority of cases. It usually presents at birth due to a homozygous mutation in the calcium-sensing receptor. We intend to present a rare surgical video for NSPHPT done in a 2-month-old infant with very severe hypercalcemia

METHODS

A 1-week-old male baby presented to the neonatal intensive care unit (NICU) with failure to thrive. On evaluation the baby was found to have grossly elevated serum calcium levels, 30 mg/dl (8.5–11.2 mg/dl). The intact parathormone levels were found to be high at 984 pg/ml (15–72 pg/ml). With a biochemical diagnosis of NSPHPT, the baby was resuscitated with intravenous fluids, bisphosphonates, and calcimimetics. When the calcium level fell to 16 mg/dl, at the end of 2 months of life, the baby was operated upon.

RESULTS

Total parathyroidectomy and transcervical thymectomy were performed for this 2-month-old kid, with a thorough exploration of all the embryological sites of parathyroid descent. Postoperatively, calcium gradually fell down to hypocalcemic range, necessitating calcium and vitamin D supplements. CASR mutation was performed, which was homozygous positive. The baby has completed 3-year follow-up without recurrence. The baby is on calcium and oral vitamin D supplements.

CONCLUSION

Neonatal severe primary hyperparathyroidism is life-threatening and requires emergency parathyroidectomy and thymectomy. It needs a clear understanding of parathyroid embryology and surgical expertise in operating a 2-month-old baby. The above surgical video is for presentation.

Management of Advanced Thyroid Cancer with Mediastinal Lymph Node Metastasis

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BACKGROUND AND AIMS

Thyroid cancers most frequently present as local diseases in the neck and show indolent progress. However, not a few of them show aggressive disease patterns as local invasion, extensive nodal metastasis, or distant metastasis. Advanced thyroid cancers with extensive metastasis to mediastinum are extremely rare, which are frequently associated with high morbidity and mortality.

METHODS

The mechanism of mediastinal metastasis from thyroid cancer has not been yet fully understood. However, because superior mediastinal lymph node metastasis has been reported to predict contra-lateral neck node metastasis or distant metastasis, the connection through lymphatics in the central compartment, superior mediastinum, and lower mediastinum can be supposed to be the main pathway from primary tumor focus.

RESULTS

As for other malignant diseases, the principles of treatment are complete surgical removal of all metastatic foci and appropriate adjuvant therapy. However, because of the highest degree of surgical difficulty, postoperative morbidity, and mortality, most of the previous studies indicated that the surgical treatment would be impossible.

When the metastatic foci are confined to the anterior–superior mediastinum, the majority can be removed via transcervical approach. However, in cases of metastasis at lower-than-aortic arch level, with extensive invasion to vital organs in mediastinum, and irradiated neck and mediastinum, a full midline sternotomy is needed. The choice of surgical options should be one that offers the lowest morbidity, as well as the highest long-term remission rate. When the distant metastases are present, the surgical treatment option can be palliative or cytoreductive intent to facilitate the effects of adjuvant therapies. High-dose radioiodine therapy should be done in all indicated cases.

CONCLUSION

In summary, mediastinal metastasis from thyroid cancers may result in local failure as well as decreased overall survival. The surgical treatments should focus on complete removal leaving minimal morbidity and maintaining the functions.

Lateral Neck Node Dissection

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BACKGROUND AND AIMS

Lateral neck node metastasis is a frequent clinical problem in patients with thyroid cancer. Knowledge of the anatomy, staging, and classification of cervical metastatic disease is an essential prerequisite to therapy.

METHODS

A low transverse curvilinear skin incision was made along the natural skin crease. The subcutaneous tissue was divided and platysma muscle was opened. The subplatysmal skin flap was developed. The flap was elevated to the top of the thyroid cartilage. Inferiorly, the skin flap was elevated to the level of the manubrium.

The SCM fascia is raised around the anterior and internal border of the muscle, the accessory nerve and the cranial end of the IJV are identified, and a downward dissection is performed to clear compartments IIa and III preserving the deep prevertebral fascia and as many branches as possible of the deep cervical plexus. Then the omohyoid muscle is cut and the dissection is carried out downward, preserving the transverse cervical vessels. Compartment IV is then cleared. At this stage, the more internal part of compartment V may be pulled from below the SCM and included in the specimen. The vagus nerve, the phrenic nerve, and the brachial plexus are routinely identified and preserved.

RESULTS

If properly done, lateral neck dissection is not too invasive a surgical procedure and patients can be discharged from the hospital on the 5th to 7th postoperative day for a smooth postoperative course.

CONCLUSION

Start by appropriately elevating the SCM fascia. Do not miss the accessory nerve. Do not go deep below the deep cervical fascia and the deep cervical plexus. Preserve the transverse cervical vessels. Identify the phrenic nerve and the vagus nerve. Dissect selectively compartments IIb and V according to cancer extension.

Video-assisted Thyroidectomy utilizing Mist-less Retractor for Patients with Papillary Carcinoma

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BACKGROUND AND AIMS

Shimizu et al introduced the video-assisted thyroid surgery utilizing the VANS method in 1998. Originally in this procedure, two Kirschner wires had to be inserted horizontally into the subcutaneous layer on the anterior neck in order to create a working space. To make this preparation step briefer and easier, we developed an innovative retractor named “Mist-less retractor.” This retractor can be inserted easily from the main 1-inch incision, which is made in the tumor side of the chest wall below the clavicle, and then lift the neck skin flap up. It has a suction channel to keep operative field clearly visible from mist evolved by an ultrasonic scalpel. Additionally, the retractor makes surgical instrumental approach to the pre and para-tracheal space easier resulting in blameless D1 lymph node dissection.

METHODS

We performed video-assisted thyroidectomy utilizing the VANS method on a total of 255 patients from May 2009 to December 2015. Among these patients, 20 cases were preoperatively diagnosed as cT1N0M0 papillary carcinoma and underwent video-assisted hemithyroidectomy plus D1 neck dissection utilizing the VANS method. In all cases with papillary carcinoma of this study, the mist-less retractor was utilized to lift anterior neck skin.

RESULTS

All cases successfully underwent the VANS method without conversion to open surgery. Among the total 14 patients with papillary carcinoma, median the operative time was 126 minutes, the median intraoperative bleeding was 7 ml, and the median duration of postoperative hospitalization was 2 days. As a complication, no patient had permanent recurrent laryngeal nerve paralysis and postoperative hypocalcemia; however, four patients had postoperative temporally recurrent laryngeal nerve paralysis lasting within 2 weeks. All patients were satisfied with their 1-inch surgical scars.

CONCLUSION

Here we show that the VANS method with our mist-less retractor for patients with T1N0M0 papillary carcinoma is safe and cosmetically excellent. We hope video-assisted thyroid surgery will be the first choice for patients with early-stage papillary carcinoma in the near future.

Hydrodissection: A Simple Way to dissect Parathyroid Adenoma in a Bloodless Manner

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BACKGROUND AND AIMS

Focus parathyroidectomy has remained the mainstay of treatment option for patients with primary hyperparathyroidism with concordant localization study. However, dissection of parathyroid adenoma in this limited operative space was difficult. It resulted in bleeding, capsular rupture, incomplete resection, and even parathyroid tissue seeding. We describe an operative approach that facilitated the parathyroid dissection and enhanced the rate of en-bloc complete resection of parathyroid adenoma.

METHODS

A patient with localized parathyroid adenoma was arranged for focused parathyroidectomy. A 2.5 cm lateral collar incision was made. Sternocleidomastoid muscle was retracted laterally and strap muscles were retracted medially. Dissection continued close to the capsule of the thyroid gland, and the thyroid gland was retracted medially by the Langenbecks' retractor, and carotid artery was retracted laterally. Parathyroid adenoma was identified. A 3 ml syringe was connected to the cannula of 22G angiocatheter and filled with normal saline solution. Normal saline solution was injected on the surface of parathyroid adenoma. Connective tissue around parathyroid adenoma was expanded and separated from adenoma. A plain for dissection was defined and well developed. After further mobilization of parathyroid adenoma, pedicle vessels were controlled with metal clips and divided.

RESULTS

With the use of hydrodissection, the capsule of parathyroid adenoma remained intact. It minimized the bleeding and capsular break during dissection. It also facilitated the dissection and mobilization of parathyroid adenoma. Pedicle of parathyroid adenoma was well defined and delineated.

CONCLUSION

Hydrodissection is simple to learn and facilitates the dissection of pathological parathyroid gland. The technique of hydrodissection should be used in patients undergoing parathyroidectomy.