Lateral Approach to Attack Superior Thyroid Vascular Pedicle Eliminates the Need for Strap Muscles Cutting during Thyroidectomy

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**Abstract**

*Background:* Strap muscle division during thyroidectomy is a controversial issue. The role of strap muscles in voice and swallowing functions and the postoperative morbidity sequelae after strap muscles cutting have been proved by some investigators. So we have been enthused to develop a surgical approach that enables us to avoid such an unnecessary invasiveness, an idea that seems to be in harmony with both surgical orthodoxy and modern surgical trends towards less invasiveness.

*Objective:* To give a precise detailed stepwise description of such proposed procedural surgical approach and its anatomical basis with the assessment of its feasibility and safety.

*Patients and Methods:* 100 cases 35-60 years, F:M (3:2) presenting for thyroidectomy from April 2010 through May 2013, were selected for lateral (carotid triangle) approach, where we approach the superior thyroid vascular pedicle and the middle thyroid vein through the carotid triangle. Eligibility criteria were: Huge goitres not more than 12cm in greatest dimension, strong taut strap muscles in males, retropharyngeal, retro-esophageal extensions or huge Zukerkandl tuberculum and vascular goitres with marked adhesions. Patients with small goitres, recurrent goitres, retrosternal goiters reaching aortic arch, previous neck irradiation, and malignant goitres were excluded. Intraoperative and postoperative data were gathered for procedural assessment.

*Results:* The procedure was successful in all of the study cases with no conversion to strap muscles cutting. RLN was identified in 93% of pts and EBSLN in 30%. Para-thyroid glands were identified and preserved in all pts. The mean intraoperative blood loss was 70cc, the mean operative time was 90 minutes, postoperative pain was well tolerated, mean amount of postoperative drainage was 78cc with a mean duration of 2 days and a mean hospital stay of 3 days. There were 2% permanent unilateral RLN injury, one developed transient EBSLN injury and 2 developed transient hypoparathyroidism. None developed sympathetic nerve injury.

*Conclusion:* Lateral (Carotid triangle) approach to control the superior thyroid vascular pedicle enables us to avoid aggressive surgical handling of strap muscles by cutting or even excessive exhausting muscle retraction with its possible morbid sequelae in terms of voice and swallowing function post-thyroidectomy.

**Key Words:** Lateral approach – Carotid triangle – Thyroidectomy – Strap muscles.

**Introduction**

DIVISION of cervical strap muscles during thyroidectomy is a controversial issue. Some surgeons do it routinely to gain adequate exposure of the field [1-3], others do it only in certain circumstances like huge goiters, male patients with strong taut strap muscles, retropharyngeal, retro-esophageal extensions or huge Zukerkandl tuberculum and also in vascular goiters with marked adhesions [4,5].

Cervical strap muscles have a role in voice pitch control and swallowing functions [6-9]. There is a debate about the morbid sequelae that may follow strap muscles division [4,9-13]. Some investigators advocate that strap muscles division has no morbid sequelae and recommend its liberal use when operating on large, toxic or neoplastic goiters [4,10], others advocate that surgical handling of strap muscles and reconstitution or even excessive retraction affects voice and may be swallowing functions post-thyroidectomy [9,11-15] and this is considered as one of the causes of post-thyroidectomy voice changes other than laryngeal nerve injury because of laryngotracheal fixation of the strap muscles with impaired laryngeal vertical mobility together with their temporary malfunction due to denervation or section [10-12,16-19]. The aim

**Abbreviations:**

RLN: Recurrent laryngeal nerve.
EBSLN: External branch of superior laryngeal nerve.
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for dividing cervical strap muscles during thyroidectomy was always to improve access to the superior vascular pedicle and facilitate exposure and dissection on the lateral aspect of the gland [2,6]. Lateral (backdoor) approach to the thyroid bed has been previously described for parathyroidectomy, recurrent thyroidectomy, and hemithyroidectomy for solitary thyroid nodule [5,20-22]. On revising the anatomy of the front and lateral regions of the neck we see that the superior pole of the thyroid is medially applied to the inferior pharyngeal constrictor on which the superior thyroid vessels are running anteromedially paralleling the EBSLN in their way to the superior thyroid pole and cricothyroid muscle respectively and such landmark muscle (inferior pharyngeal constrictor) constitute a part of the floor of the carotid triangle [23]. So we hypothesized that via the lateral approach through the anatomical window between the upper part of sternocleidomastoid and superior belly of omohyoid which entails only opening of a fascia (investing layer of deep cervical fascia) we can control the superior thyroid vessels, the middle thyroid vein and easily start the lateral part of dissection of the thyroid lobe, thus facilitating its mobilization and easy delivery from underneath the taut strap muscles to the midline wound without their division or even excessive retraction. We are not aware of any publications that have described the use of lateral approach to avoid strap muscles cutting when it is necessary to do in certain circumstances during thyroidectomy. Also the lateral approach has not been precisely described on through anatomical basis. In this study we aimed at precisely describing the surgical technique of this approach with its anatomical basis, and presenting our preliminary results to evaluate its feasibility and safety as an alternative approach to avoid cervical strap muscles cutting.

**Material and Methods**

100 cases with goiters that are indicated for surgery, presenting to us in the Endocrine Surgery Clinic of the National Institute of Endocrinology, were selected for this approach according to the proposed eligibility criteria from April 2010 through May 2013.

**Eligibility criteria were:**

**Inclusion criteria:**
- large goiters, not more than 12cm greatest dimension (by US), especially in males with strong strap muscles, ± substernal extension not reaching the aortic arch.
- Retropharyngeal, retroesophageal extensions or large Zukerkandle tuberculum.
- Vascular goiters with marked adhesions.

**Exclusion criteria:**
- Small goiters.
- Very huge goiter > 12cm in greatest dimension.
- Retrosternal goiter reaching to aortic arch.
- Recurrent retrosternal goiter.
- Malignant goiters.
- History of neck irradiation.
- Inability to gain informed consent.
- Inaccessibility for follow-up.

All patients were evaluated preoperatively by neck sonography and/or computerized tomography, FNAC, thyroid function tests and indirect laryngoscopy.

The study was approved by the local ethics committee and a written informed consent was obtained from all participants prior to entry into the study.

**Surgical technique:**

Figs. (1-4) and Photo (1-4).

**Anesthesia and positioning:**

Under general endotracheal anesthesia the patient is supinely positioned with gentle neck extension and arms stuck to patient’s both sides with perfect alignment of the head and body for proper placement of the incision and adequate anatomical exposure.

**Incision:**

A low collar incision along or parallel to one of the langer’s lines, its length is appropriated according to the size of the gland. We traditionally begin with 4 to 5cm incision, though lateral extension may be warranted based on the size of the gland and the need for adequate anatomical exposure to facilitate our proposed surgical approach.

The incision then cuts through the subcutaneous fat and platysma muscle and after developing the subplatysmal plane we raise the upper subplatysmal flap till the thyroid notch and the lower flap till the suprasternal notch with exposure of the two anterior jugular veins which symmetrically flank the linea alba colli. Then dissecting laterally in the subplatysmal plane till exposing the anterior border of sternocleidomastoid muscle along the whole of its length on both sides.
Approaching and exposing the thyroid gland:

*Midline approach:

The investing cervical fascia is incised by electrocautery at the linea alba colli from the thyroid notch to the sternal notch to separate the strap muscles apart, then we start at the side of the larger lobe (determined clinically and radiologically) by opening the delicate pretracheal fascia and dissecting the strap muscles free off the thyroid capsule. At this stage it became quiet apparent that it is difficult to gain adequate access to the superior thyroid vascular pedicle, the middle thyroid vein and the lateral aspect of the gland unless the strap muscles are divided or excessively retracted.

*Lateral (carotid triangle) approach:

So instead, we approach the superior thyroid vascular pedicle and the middle thyroid vein through the carotid triangle (the anatomical window between the upper third of sternocleidomastoid laterally, the superior belly of omohyoid medially and posterior belly of digastric muscle superiorly) where we incise the investing layer of the deep cervical fascia along the anterior border of sternocleidomastoid muscle, and by gently retracting the sternocleidomastoid laterally and the superior belly of omohyoid muscle together with the paired sternohyoid/sternothyroid muscles medially the superior pole of the thyroid which is medially applied to the inferior pharyngeal constrictor and the thyroid cartilage became exposed. With gentle inferolateral traction on the superior pole together with opening of the cricothyroid space the superior pole became dislocated, putting the superior thyroid vessels under tension as they descend inferomedially on the inferior pharyngeal constrictor, so that the superior thyroid vessels became clearly exposed and separated from EBSLN that may or may not be visualized at this step. The superior thyroid vessels are now to be individually ligated and divided along the anterior aspect of the superior pole. With the superior pole now free of fascial attachment it is grasped by an artery forceps and retracted medially, rotating the larynx and exposing the tracheo-oesophageal groove where dissection commences on the lateral aspect of the lobe by dissecting craniocaudally through the pretracheal fascia (false capsule of the thyroid gland) as it blends with the carotid sheath laterally. One or more middle thyroid veins may be encountered along the lateral aspect of the gland, it is ligated and divided, then we continue dissecting latero-posteriorly through the pretracheal fascia as it merges with the carotid sheath till reaching the prevertebral fascia, thus allowing for further mobilization and rotation of the thyroid lobe. Figs. (2A-C).

*Mobilization of the lower pole:

The inferior thyroid veins are approached through the midline where they are ligated and divided. If there is a substernal extension the lower lobe is delivered to the neck region by blunt digital dissection with the index finger, but sometimes it is difficult to deliver it digitally, so in this situation, our technique was to deliver it with the use of a metal tongue depressor which acts as a lever with its fulcrum on the clavicular edge. Such maneuver greatly facilitates delivery of the lower pole to the front of the neck.

*Delivery of the whole lobe to the midline wound:

Now the whole lobe became mobilized, then we push the lobe from lateral to medial through the opened carotid triangle to the midline wound aided by pulling medially on an artery forceps grasping the upper pole till delivering the whole lobe from underneath the uncut strap muscles to the front of the neck then through the skin wound.

*Identification of the inferior thyroid artery, RLN and the parathyroid glands:

At this stage the whole lobe is delivered through the midline, thus allowing the critical lateral dissection to be undertaken close to the skin surface where the inferior thyroid artery, RLN and parathyroid glands were identified and with careful capsular dissection the tertiary branches of the inferior thyroid artery are ligated and divided with preservation of the parathyroid glands with their vascular pedicles. Finally the ligament of Berry is encircled, ligated and divided with careful identification and preservation of the RLN.

*Dissection of the thyroid isthmus, thyroglossal tract ± pyramidal lobe:

After division of the ligament of Berry the whole lobe is now completely delivered free of any fascial attachments in the thyroid bed. We then dissect in the subisthmic plane detaching the isthmus from the trachea and following the thyroglossal tract up to the hyoid bone with removal of the pyramidal lobe if present (especially in thyrotoxic cases). The lobe is now attached only to the isthmus.

*The contralateral lobe:

In case of operating by lateral approach for a huge goiter with bilopar pathology we usually start by this approach in the side of the larger lobe (determined clinically and radiologically), because
inferomedial traction on the freed isthmus with its attached ipsilateral lobe (the larger lobe) greatly facilitates exposure of superior thyroid vascular pedicle and lateral aspect of the contralateral lobe (the smaller one) through the midline easily without needing to resort to the lateral approach in the contralateral side, unless the contralateral lobe is so huge or there are extensive adhesions and vascularity where the lateral access through the carotid triangle is resorted to in the same manner described above.

**Closure:**

Closure in anatomical layers by approximating the strap muscles in the midline and the platysma muscle with interrupted absorbable sutures after leaving a suction drain in the thyroid bed coming through the carotid triangle then through the lower skin flap, then closing the skin incision with subcuticular stitches.

**Procedure assessment:** Our proposed approach is evaluated by gathering the following data.

*Intraoperative data:
- Intraoperative morbidity.
- Conversion to strap muscle cutting.
- Sacrificing superior belly of omohyoid.
- Laryngeal nerve identification.
- Parathyroid gland identification.
- Intraoperative blood loss.
- Operative time.
- Bilaterality of the procedure.
- Inferior pharyngeal constrictor identification.
- Cricothyroid space identification.

*Postoperative data:
- Postoperative pain.
- Neck parasthesia.
- Hematoma/seroma formation.
- Postoperative drainage.
- Hospital stay.
- Laryngeal nerve injury.
- Hypoparathyroidism (clinically and biochemically).
- Swallowing difficulty.
- Diameters of the resected specimen.

**Results**

Patient’s demographics and clinico-pathologic characteristics are presented in (Table 1). The mean age of our 100 patients was 45 years (range, 35-60 years) they comprised 60 females and 40 males (3:2). The indication for lateral approach was; huge size in 72 patients (72%), retropharyngeal/retro-esophageal or Zukerkandl tuberculum in 10 (10%), taut strap muscles in 10 (10%), vascular goiter with marked adhesions in 8 (8%). 75 patients (75%) were euthyroid, 20 (20%) were controlled hyperthyroid (7 primary and 13 secondary) and 5 was hypothyroid (5%). Substernal extension was present in 21 patients (21%) and in the remaining 79 (79%) the gland was confined to the cervical region. The pathology was bilobar in 72 patients (72%) and confined to one lobe in 28 (8 adenomas and 20 huge solitary thyroid nodule) and the final histopathology was colloid nodular goiter in 80 patients (80%), follicular adenoma in 28 (8%), Graves’ disease (Diffuse toxic goiter) in 7 (7%) and lymphocytic thyroiditis in 5 patient (5%). Most of our patients 69 (69%) were operated upon by total thyroidectomy, 28 were operated by hemithyroidectomy and only 3 were operated by near total thyroidectomy.

The intraoperative and postoperative data evaluating this surgical approach are presented in (Table 2). There were no technique related intraoperative morbidity and our evolving approach has succeeded in all study cases with no conversion to strap muscle cutting or sacrificing of superior belly of omohyoid to improve exposure has occurred. RLN was identified in 93 cases (93%) and EBSLN in 30 patients (30%). Parathyroid glands were identified and preserved in all patients. The mean amount of intraoperative blood loss was 70ml (range; 45-140ml). The mean operative time was 90 minutes (range; 60-140 minutes). In only 13 patients (13%) this approach was done in both sides. In regard to postoperative pain, the operation was well tolerated and all of our study patients required minimal analgesia. Only 9 patients complained of parathesias of the skin of the front of the neck and 18 complained of swallowing difficulty, both complaints improved with time, 7 of our patients suffered from hematoma/seroma formation postoperatively under skin flaps which resolved with repeated aspirations. The mean amount of postoperative drainage was 78ml (range; 40-160ml) with a mean duration of 2 days (range; 1-4 days). The mean hospital stay was 3 days (range; 2-6 days). There were 2 cases RLN injury (unilateral, permanent), however only one patient developed transient EBSLN injury and 5 developed transient hypoparathyroidism.
### Table (1): Demographics and clinico-pathologic features of 100 patients.

<table>
<thead>
<tr>
<th>Age (mean, range)</th>
<th>45 years, 35-60</th>
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<td>Sex (M:F)</td>
<td>3:2</td>
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**Indication for lateral approach**
- Huge size 7 2 (72%).
- Retropharyng., retrooesoph.or Zukerkandl tuberclum 10 (10%).
- Taut strap muscles 10 (10%).
- Vascular goiter with marked adhesions (8%).

**Hormonal state**
- Euthyroid 75 (75%).
- Hyperthyroid (controlled) 20 (20%) 1ry 7, 2dry 13
- Hypothyroid (controlled) 5 (5%).

**Gland position**
- Cervical only 79 (79%).
- Substernal extension 21 (21%).

**Bilaterality of pathology**
- Bilobar 72 (72%).
- Unilobar 28 (28%).

**Type of operation**
- TT 69 (69%).
- NTT 3 (3%).
- Hemithyroidectomy 28 (28%).

**Final histopathology**
- Adenoma (follicular) 8 (8%).
- Grave’s 7 (7%).
- Colloid nodular goiter 80 (80%).
- Lymphocytic thyroiditis 5 (5%).

### Table (2): Procedure assessment in 100 patients of the study.

**Intraoperative data:**
- Intraoperative morbidity. None
- Conversion to strap muscle cutting. None
- Sacrificing superior belly of omohyoid. None
- Laryngeal nerve identification. 93 (93%)
  - RLN.
  - EBSLN.
- Parathyroid glands identification and preservation. 100 (100%)
- Inferior pharyngeal constricitor identification. 100 (100%)
- Cricothyroid space identification. 100 (100%)
- Mean intraoperative blood loss (ml). 70ml (45-140ml)
- Mean operative time (minutes). 90M (60-140M)
- Bilaterality of the procedure. 13 (13%)

**Postoperative data:**
- Postoperative pain. Well tolerated
- Neck parathesias. 9 (9%) (Hypothesia)
- Haematoma/seroma formation. 7 (7%)
- Postoperative drainage.
  - Mean amount (ml). 78ml (40-160ml)
  - Mean duration (days). 2 days (1-4 days)
- Mean hospital stay (days). 3 days (2-6 days)
- Laryngeal nerve injury.
  - RLN. 2 (2%) (unilateral)
  - EBSLN. 1 (1%) (Transient)
- Sympathetic nerve injury. None
- Hypoparathyroidism. 5 (5%) (Transient)
- Swallowing difficulty. 18 (18%)
- Mean diameter of resected specimen (the larger lobe)
  - Craniocauda 9cm (5-12cm)
  - Transverse 5.1cm (3-8cm)
Opened carotid triangle

Incising cervical fascia

Superior pole of enlarged thyroid gland

Superior belly of omohyoid

Paired sternohyoid and sternothyroid muscles

The midline wound

Grasping and pulling the devascularised superior pole

Digitally pushing the superior pole medially

Superior belly of omohyoid

Latero-caudal traction of the thyroid pole

Superior thyroid vessels

Cricothyroid space

EBSLN

Thyroid cartilage

Inferior thyroid constrictor

Fig. (1): Topographic anatomy of the superior thyroid pole.

Fig. (2): Exposure of the right superior thyroid pole through the carotid triangle.

Fig. (3): Exposure the right superior thyrovascular pedicle through the opened carotid triangle.

Fig. (4): Delivery of the right thyroid lobe to the midline wound without cutting strap muscles.

Photo (1): Exposure of the right carotid triangle.

Photo (2): Exposure of the right superior thyroid pole through the carotid triangle.

Photo (3): Devascularised right superior pole through the carotid triangle.

Photo (4): Opened right carotid triangle wth uncut strap muscles after gland removal
Discussion

Some surgeons have no hesitation to perform strap muscles cutting during thyroidecctiony in certain circumstances or sometimes routinely and regard this as straightforward surgical behavior without considering the possible morbid sequelae of such maneuver.

The respect for the motoricity of cervical strap muscles is necessary not only because they are accessory breathing muscles [6] but more importantly because of their part in voice pitch control and swelling functions [6-11]. Inspite of that some investigators have emphasized that strap muscles cutting has no sequelae and recommend its liberal use when indicated [4,10], there are an increasing number of investigators who have proved that surgical handling of strap muscles by safeguarded or even by excessive retraction affects voice and swallowing functions [9,11-15]. Strap muscles cutting and reconstitution lead to fibrosis with laryngotraacheal fixation that impairs vertical mobility together with strap muscles temporary malfunction with the resulting deleterious effect on voice and swallowing functions [10-12,17-19]. It is noteworthy here to mention that not only cutting but also excessive retraction of strap muscles may lead to their denervation and also fibrosis [10-14].

Strap muscles cutting is now considered as one of the causes of post-thyroidectomy voice changes other than laryngeal nerve injury [9-12] but such voice changes are subtle and may pass unnoticed, however this is to be considered especially in case of professional voice users like singers, public speakers, teachers, etc. Three of our study patients were teachers, one was a lawyer, one was working in tourism guidance and another one working as wandering salesman. Some surgeons mention that they rarely resort to strap muscles cutting during thyroidecctomy, but this is most probably on the expense of excessive strap muscles retraction which besides having the same deleterious effects of muscle cutting according to some authors in terms of denervation and fibrosis [12,14], it is exhausting to both the assistant and the surgeon and leads to excessive gland manipulation and may be inadvertent entry into the subcapsular veins during attacking the high cranially migrated superior pole with the resultant profuse troublesome bleeding [2] or may be ligating the superior pole itself which is a surgically unsound practice especially in toxic and malignant goiters [24,25] or ligating the superior pole vessels en mass which has a higher risk for injuring EBSLN [26]. Developing our procedural technique depended upon a through working knowledge of the anatomy of the lateral and anterior neck regions and the pathological anatomy of the enlarged thyroid gland. The carotid triangle is bounded anteriorly by the superior belly of omohyoid muscle, posteriorly by the anterior border of the upper third of sternocleidomastoid muscle and the base is formed by the posterior belly of digastric muscle, it is covered by the investing layer of the deep cervical fascia and the inferior pharyngeal constrictor muscle forms part of its floor, the superior thyroid pole is medially applied to this muscle with the superior thyroid artery arising from the external carotid artery and running downward and medially toward the superior pole together with the superior thyroid vein, also the EBSLN is closely related to the superior thyroid vessels here where it runs in parallel to them on the surface of the inferior constrictor (in 20% of cases it may be embedded between its fibers) in its way to the cricothyroid muscle [27]. Cernea and associates have put a widely accepted classification system for the relationship of EBSLN to the superior thyroid vessels, this classification greatly helps to avoid injury of EBSLN during ligation of the superior thyroid vessels. In Cernea I (two thirds of cases); the nerve crosses the vessels more than 1cm from the tip of the superior pole, in Cernea II (the remaining one third); the nerve crosses within 1cm from the superior pole and this type is subclassified into Iia; where the nerve crosses less than 1cm but still above the tip of the superior pole, and type Iib; in which the nerve crosses below the tip of the superior pole where it is at high risk of injury, this type occurs in 15% of cases but this normal anatomy became pathological when the gland became hugely enlarged where this percentage rises to 56% due to cephalad growth of the superior pole behind the superior thyroid vessels [26,28,29]. With such cephalad migration of the superior pole due to pathological enlargement of the thyroid gland, the superior pole became fully located in the carotid triangle and it is easily directly approached through it with easy safeguarding of EBSLN. Some authors advocate that the most important aim of strap muscles cutting is to facilitate exposure of the cricothyroid space which is important in identifying and safeguarding of the EBSLN because the laterocaudal traction of the superior pole is limited by proximity of the insertion of sternothyroid muscle [2]. However, such exposure of the cricothyroid space can be easily facilitated without strap muscles division, by approaching the superior pole via our lateral approach through the carotid triangle with gentle mediocranial retraction of the superior belly of omohyoid together with the paired sternohyoid and sternothyroid muscles and laterocaudal retrac-
tion of the superior pole. So we propose that if this lateral approach is added as an extra step to the widely accepted Linnquist's stepwise procedure for the identification of EBSLN [27], it will greatly facilitate the identification of the inferior pharyngeal constrictor muscle and cricothyroid space which are tow important steps in the linnquist's procedure, a modification that worths consideration because of its sound anatomical basis.

Caliot and Dumont showed that the apex of theansa cervicalis is above or behind the omohyoid muscle in 85% of cases but always close to the inferior border of the muscle, so during our lateral approach, the retraction that gently lifts the strap muscles forward and cranially will protect nerve branches aiming at sternohyoid and sternothyroid muscles [30].

Our gathered intraoperative data confirm that this procedural approach was successful in 100% of our study cases with no conversion to strap muscles cutting or even scarification of the superior belly of omohyoid as is classically done on laterally approaching the visceral structures of the neck, it gives adequate exposure of the field in terms of clear identification of vital anatomical landmarks (namely; inferior pharyngeal constrictor, cricothyroid space), laryngeal nerves, superior thyroid vessels, and parathyroid glands with minimal blood loss and consuming a reasonable operative time.

There was no need to do this lateral approach bilaterally in most of the cases (only 13% of patients needed bilateral lateral approach), because we usually start using this lateral approach in the side of the larger lobe (determined clinically and radiologically) and after delivery of this lobe through the midline wound to the skin surface and applying traction on the mobilized isthmus, there became a capacitant room for working on the contralateral lobe aided by the empty ipsilateral thyroid bed with free side to side gliding mobility of the laryngotrachea and laterocaudal traction on the freed isthmus, thus allowing for easy and safe devascularization and consequently mobilization of the contralateral lobe through the midline without laterally approaching it. The post operative swallowing dysfunction that occurred in 18 of our study patients resolved within a short period of time which is in accord with other investigators that demonstrated that non specific swallowing dysfunction occurs in 15% of cases postthyroidectomy and resolve with time [14].

The only potential risk of this approach is the risk of injury of the sympathetic chain which was safeguarded by careful handling of the carotid sheath with the avoidance of its excessive retraction or dissection behind it.

In conclusion; our results suggest that lateral approach to control the superior thyroid vascular pedicle enables us to avoid aggressive surgical handling of strap muscles by either cutting or excessive exhausting retraction and vigorous gland manipulation with the possible morbidity sequelae in terms of voice and swallowing functions. It is an expeditious technical approach that facilitates surgery without compromising safety, it is bloodless and less traumatizing as it uses fibrous sheathes (cervical fasciae) with respect of their contents. We believe it to be a reasonably straightforward technique to learn with no need for a learning curve, only supervision by a senior endocrine surgeon is all what is needed until standardization of the technique. A current randomized controlled trial assessing the lateral approach as an alternative to strap muscles cutting during thyroidectomy is now in progress and we recommend further assessment of such approach by other investigators, because we suggest it to be an appropriate addition to the armamentarium of endocrine surgeon whenever indicated.

References

المفصل العربي

الخليفة: يعد قطع عضلات الرقبة الأمامية أثناء عملية استئصال الغدة الدرقية محل خلاف بين الجراحين فهمهم من يقوم بذلك بشكل روتيني، وآخرون يقومون بذلك في ظروف معينة. وقد أثبت العديد من الباحثين دور عضلات الرقبة الأمامية في وظيفتي الصوت والابز وخلال العوائق المرضية التي تنتج عن انقباضها. إذا تحسنت لإعداد مدخن جراح جديد يمكننا من تجنب هذا الغزو الجراحي المتبادل في قطع عضلات الرقبة الأمامية.

الهدف من البحث: إعطاء وصف تفصيلي دقيق الدخول الجانبى للغدة الدرقية كاستخدام جديد لتسهيل قطع عضلات الرقبة الأمامية وأساس التشريع مع تقييم إمكانية تفيذه وكذلك أمانه على المريض.

المريض وطرق البحث: تم اختيار 100 مريض بالغدة الدرقية التي تستحق الجراحة تتراوح أعمارهم بين 25-60 عاما بنسبة 42 ÷: نذكر أن إبريل 2013 حتى أذار 2014 تم عمل دخول جانبي أثناء عملية استئصال الغدة الدرقية حيث يتم الدخول الجانبي للتحكم في الأوعية الدموية للقلب العلوي للغدة الدرقية. وكانت دواعي اختيار المرضى لهذا الدخول الجانبي هي التضخم المفرط للغدة الدرقية والتي لا تتجاوز 15 سم والذكور ذوى العضلات الأمامية القوية المشدودة وانتشار الغدة الدرقية المتضخمة خلف البلعوم أو الرئة. وقد تم إستعداد مرضى الغدة المرتبطة والتضخم البسيط والتضخم المزدوج خلف القص وصول إلى منحنى الأورتسي وسرطان الغدة الدرقية وكذلك وجود تاريخ معيشي إشعاعي على الرئة. وفي كل الحالات يتم جمع معييات جراحية أثناء وبعد الجراحة لقياس هذه الطريقة الجراحية الجديدة.

النتائج: كان الاستخدام الجديد للدخول الجانبى للغدة الدرقية ناجحا في جميع الحالات دونها تحول إلى قطع عضلات الرقبة الأمامية في أي منها. وقد تم تحديد العصب الحنجري المرتبط في 97% من الحالات وابز الحنجري العلوي الخارجي في 90% كما تم تحديد الغد جار الدموية والحفاظ عليها في جميع الحالات. وكان معدل فقدان الدم أثناء الجراحة 70 سم² في المتوسط وتم استعادة٪ 90 دقيقة وكانت ما بعد الجراحة محتللة تماما في كل الحالات كما كان متوسط الورد في الدقة بعد الجراحة 8 سم² في مدة متوسطها يومين وكانت مدة الإقامة بالمستشفى بحالة ثلاثة أيام. وقد أصيب 18% من المرضى بنسبة 7% بعدم دم في العصب الحنجري المرتبط في ناحية واحدة وأصيب 1% بعطب عضري في العصب الحنجري العلوي الخارجي وأصيب 2% بعطب عضري في وظيفة الغدة جار الدرقية ولم يصب أي من المرضى بعطب في العصب السميائي الورقي.

الاستثناء: الدخول الجانبي للتحكم في الأوعية الدموية للقلب العلوي للغدة الدرقية أثناء عملية استئصال الغدة الدرقية يمكننا من تجنب التعامل الجراحي المتبادل في قطع عضلات الرقبة الأمامية أو الاله المفرط عليها وما ذلك من عواقب مرضية ممكنة تتعلق في التأثير السلبي في وظيفتي الصوت والابز بعد عملية استئصال الغدة الدرقية.