

Our first step in minimally invasive video-assisted thyroidectomy

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Abstract

The video-assisted thyroidectomy was developed mainly due its cosmetic outcome, such as small scars, or even lack of neck scars, although other benefits have been reported. **Methods.** Minimally invasive video-assisted thyroidectomy technique (MIVAT) was used in the "I. Tanasescu-VI. Buțureanu" First Surgery Clinic of the Iasi "Sf. Spiridon" University Hospital between 2009-2018. Thus, 18 patients underwent the modified Miccoli thyroid surgery. **Results** All 18 patients were women, the thyroid lesions being bilateral in 16 cases, and in the remaining 2 cases the thyroid nodules were located only in the left lobe. Conversion was required in 3 cases due to high thyroid volume of over 25 ml in 2 cases and suspected malignancy (not histopathology confirmed) in 1 case. The average operating time was 30 min (\pm 15 min) for the removal of each thyroid lobe. Intraoperative blood loss was several milliliters. No intraoperative incidents or accidents were recorded. Drainage of the thyroid lodge was not necessary. The postoperative course was good in 16 cases while 2 patients developed reversible recurrent paresis. **Conclusions:** MIVAT is a safe, feasible technique with good visibility of anatomical structures and good cosmetic outcome in selected cases. Operating time is comparable to classical surgery after the learning curve.

Keywords: : Minimally invasive video-assisted thyroidectomy, MIVAT, Selected cases, Video-assisted surgery

Introduction

Classic Kocher incision that provides good visibility for exploring the thyroid gland is no longer used today in most surgeries for thyroid diseases.

The first video-assisted neck surgery, namely a subtotal parathyroidectomy, was performed by Michel Gagner in 1996 in a patient with secondary hyperparathyroidism [1,2]. The first completely endoscopic thyroidectomy was performed by Huscher in 1997 [3], and was subsequently replaced by gasless techniques: minimally invasive video-assisted thyroidectomy - MIVAT (Miccoli), cervical video-assisted lifting (Shimizu), endoscopic breast approach (Oghami), and axillary approach (Ikeda) [4]. Another variant is the transoral approach described by Bakkar S [5].

Methods

We review the MIVAT technique used at the "I. Tanasescu-VI. Buțureanu" First Surgery Clinic of the Iasi "St Spiridon" University Hospital between 2009 and 2018. During this interval, 18 cases underwent the modified Miccoli thyroid surgery. All patients were investigated and diagnosed with nodular goiter at the Endocrinology Clinic of the same hospital.

MIVAT technique consisted of a neck incision by anterior cervical approach, with the patient positioned on the operating table in dorsal decubitus, without neck hyperextension, the surgeon and scrub nurse standing on patient's right side, two assistant surgeons on patient's

left side and one at the head of the table. A 10-mm, 30-degree telescope, 5-mm laparoscopic LigaSure and bipolar grasper, classic Baraya forceps, and two Farabeuf retractors were used.

Results

This technique combines elements of endoscopic thyroidectomy with the classical technique. A horizontal incision is made 2 cm above the suprasternal notch, in an existing skin fold (fig. 1). Incision length varies between 2 and 4 cm, depending on the size of the gland.

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Fig. 1. MIVAT - small horizontal incision 2 cm above the sternal notch

Through this incision we entered by digital dissection into the thyroid lodge and created a working space by retraction with 2 divergent Farabeuf retractors (fig. 2). Under visual control we sectioned the upper left thyroid pedicle with the 5-mm laparoscopic LigaSure (fig. 3). The entire lobe was dissected around, the isthmus

was cut and the left lobe dissected off the thyroid cartilage; next, the thyroid lobe was extracted from the wound and completed the lobectomy with LigaSure outside by sectioning the inferior thyroid pedicle (Fig. 4). The same intervention was performed on the opposite side when the lesions were bilateral.

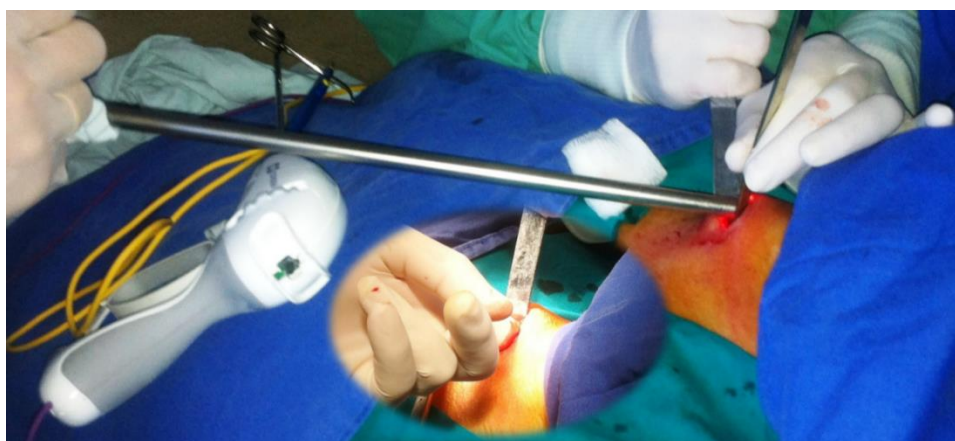


Fig. 2. MIVAT – digital dissection of the thyroid lodge and creation of work space by lifting with Farabeuf retractor

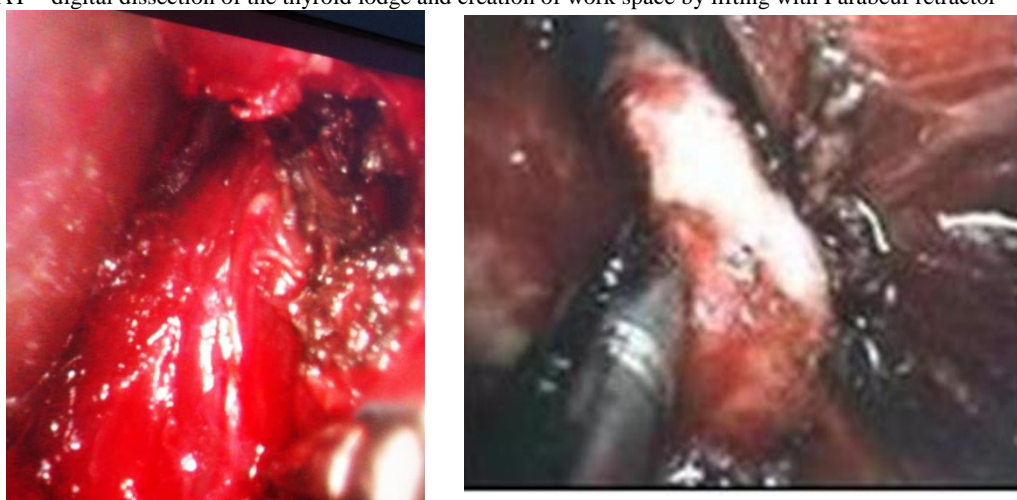


Fig. 3. MIVAT – upper thyroid pedicle dissection with Ligasure



Fig. 4. MIVAT – outside left inferior thyroid pedicle division

All 18 patients were women, the thyroid lesions being located bilaterally in 16 cases, and only in the left lobe in the remaining 2 cases. The high thyroid volume over 25 ml and suspected malignancy (not histopathological confirmed) required conversion in 2 and 1 case, respectively.

The average operative time was 30 min (\pm 15 min) for the removal of each thyroid lobe. Intraoperative blood loss was several milliliters. No intraoperative incidents or accidents were recorded.

Drainage of the thyroid lodge was not necessary.

The postoperative course was good in 16 cases, while the remaining two patients developed reversible recurrent paresis. Although they provide good hemostasis, vascular sealing devices have a major disadvantage, namely they can produce distant thermal damage to various structures, the recurrent nerves included.

Postoperative hospital stay was 1 - 3 days. Microscopic examination showed that the tumors were benign in all cases. Postoperatively, all patients were referred to the endocrinology clinic for further treatment. In this group no recurrence was recorded.

Discussion

There are numerous minimally invasive thyroidectomy techniques [4]. MIVAT with neck incision can be performed by anterior or lateral approach (for video-assisted lymphadenectomy in low-risk papillary carcinoma).

The MIVAT technique was first described by Miccoli in 1998, and the first MIVAT in Romania was performed in 2009 at the Iasi First Surgery Clinic by C. Bradea and E. Târcoveanu [6].

Miccoli's eligibility criteria for MIVAT (used in the study group) are: thyroid volume less than 15 ml, nodules not exceeding 3.5 cm in diameter, and absence of thyroiditis, previous neck surgery, or not preoperative irradiation [7].

Originally, the procedure is performed by a totally gasless technique, through a 15 mm-incision made centrally above the sternal notch, under endoscopic control and using miniature instruments. For beginners, a larger incision of 3-4 cm is recommended.

The mean operating time reported by Miccoli in 336 cases operated over 3 years ranged between 30 and 90 min, mean postoperative hospital stay was 2 days, and conversion rate was 4.5% [8].

Terris and Seybt performed 178 video-assisted thyroidectomies according to the Miccoli technique over a 4-year period and reported similar results, using the intraoperative monitoring of the recurrent laryngeal nerve [9].

As the inferior laryngeal nerve represents the "milestone" of MIVAT, its anatomical variants that may influence the choice of the minimally invasive technique must be recognized.

The same authors used MIVAT in patients with well-differentiated papillary or follicular thyroid cancer (92 patients), reporting no recurrences, excellent cosmetic results, and no higher risk of complications in high-volume thyroid centers [10].

Conclusion

MIVAT is gaining ground on classical surgery although it has some disadvantages, especially related to thyroid lesion size and presence of malignancy. MIVAT is a safe technique, feasible, with good visibility of anatomical structures and improved satisfaction with cosmetic results. MIVAT and classical surgery have comparable operating times after the learning curve.

Conflict of Interest

Authors have no conflict of interest to disclose

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