

Preliminary experience in minimally invasive videoassisted thyroidectomy (MIVAT)

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Abstract. *Background:* We report our initial experience in the treatment of thyroid disease with Minimally Invasive Videoassisted Technique (MIVAT) introduced by Miccoli. *Methods:* We have treated from July to September 2005, 5 patients, with MIVAT. The procedure is carried out through an incision of 15-20 mm 2 cm on sternal notch and the thyroidectomy is performed by dedicated instruments. *Results:* We have surgically treated 3 follicular hyperplasias, one Hurthle adenoma and one papillary carcinoma. The mean time of thyroidectomy was 98 ± 14 minutes; four cases were discharged after 24 hours and one case after 48 hours for a postoperative hypertension. No hypocalcemia, no nerve palsy. Cosmetic result and postoperative pain were excellent. *Conclusion:* MIVAT is a safe, reproducible technique with an indication in a minority of patients candidates to thyroidectomy and is characterized by a better postoperative discomfort. (www.actabiomedica.it)

Key words: MIVAT, thyroidectomy, ultracision

Introduction

Several authors have introduced since 1998 a new endoscopic procedure to remove thyroid gland following the introduction of the miniinvasive surgical approach developed for the parathyroidectomy (MIVAP) (1-3).

We present our preliminary experience in the treatment of surgical thyroid disease using this miniinvasive video-assisted thyroidectomy (MIVAT) (4, 5).

Materials and methods

From July to September 2005 we have selected 5 patients for surgical treatment with MIVAT (Tab. 1).

We have respected the inclusion criteria of Miccoli technique (Tab. 2). All the patients were informed on the surgical technique and on the thyroidectomy complications. We have chosen all cases after a complete pre-operative screening with otorinolaryngoia-

tric evaluation. In our cases, we have preoperatively certified the presence of nodules of diameter < 3 cm. MIVAT is characterized (Miccoli's technique) by a single incision of 1.5 cm above the sternal notch. We perform a dissection of platysma and subsequent incision of linea alba. With the use of the first retractor we retract the muscle and the second retractor is successfully located on the thyroid lobe to medially push the thyroid. Using the specific instrument for the MIVAT we can dissect the thyroid lobe from the muscle. At this time 5 mm endoscopic camera, 30 mm degree, is inserted through the skin incision. The thyrotracheal groove dissection is conducted with the particular spatula created for this technique. After the ligation of the middle vein with clips or Ultracision Harmonic Scalpel (Ethicon®) we separate the upper pedicle from the larynx with subsequent selective ligation of the vessels after the identification of the superior laryngeal nerve and the superior parathyroid gland. The inferior pedicle is ligated with the same technique. After these procedures we medially retract

Table 1. Casistic of candidates to MIVAT

	Years	Nodule cm	FNAB
Case 1	67	0.9	follicular neoplasia
Case 2	31	1.2	follicular neoplasia
Case 3	42	1.0	follicular neoplasia
Case 4	51	1.4	follicular neoplasia
Case 5	44	1.5	papillary carcinoma

Table 2*Indications*

- Nodule < 3 cm of diameter
- Thyroid volume < 25 mL
- Benign or low grade follicular lesions
- Papillary carcinoma

Contraindications

- Absolute
 - Previous neck surgery
 - Large goiter
 - Locally metastases
- Relative
 - Previous neck irradiation
 - Hyperthyroidism
 - Thyroiditis

the lobe to check the inferior laryngeal nerve and the inferior parathyroid gland. The lobe is pulled out the skin and dissected from the trachea and removed. In the total thyroidectomy the procedure is conducted with the same technique on the contralateral lobe. The incision, after an accurate haemostasis, is closed. In all cases the post-operative calcium was measured to control the risk of a postoperative hypocalcemia.

Results

All cases respected the inclusion criteria of MIVAT. The final histological evaluation confirmed in three cases the presence of follicular hyperplasia, in one case Hurthle adenoma and in the 5th one a papillary carcinoma. Postoperative hospital stay was 24 hours in four cases and 48 hours in the last case, not for complications associated to thyroidectomy but for

**Figure 1.** Cosmetic result after three weeks from surgical procedure.

postoperative hypertension. We have registered a case of transient hypocalcemia, no nerve palsy. Cosmetic result (Fig. 1) was evaluated as excellent by all patients.

Discussion

The initial experience conducted with MIVAP (Minimally Invasive Video Assisted Parathyroidectomy) led some authors to perform the same surgical approach for the thyroidectomy. The first idea that moved to MIVAT (Minimally Invasive Video Assisted Thyroidectomy) was the better cosmetic result (an incision of 1.5-2 cm). The majority of patients affected by thyroid disease are women and so the cosmetic result becomes very important.

Subsequently the introduction of MIVAT, the surgeons observed that the postoperative course of this procedure was better if referred to the classical procedure:

- lower post-operative discomfort;
- lower post-operative pain.

The MIVAT is a minimally invasive procedure that requires a good experience in thyroid surgery for a correct selection of patients (5-8% of all surgical cases) and a right conduction of the endoscopic “gasless” procedure management.

The advantages of MIVAT are the magnification of image, the smaller incision, the lower postoperative

pain correlated to the neck position (the neck is not hyperextended so as in traditional thyroidectomy) (6, 7). The mean operative time in our initial experience is 98 ± 14 minutes. This surgical time is longer than the classical thyroidectomy but it must be correlated to the learning curve (characteristic of a new technique). The use of Harmonic Scalpel to ligate the vessels, in larger surgical experience, has reduced the operative time.

Several studies showed that MIVAT is similar to open thyroidectomy in the treatment of thyroid differentiated carcinoma (concordance with inclusion criteria) and the rate of complications is comparable in both techniques (8, 9).

This procedure is indicated in a minority of surgical patients but the possibility of a better control of post-operative course will encourage the application of this technique in endocrine surgery (10).

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