



Video-assisted thyroidectomy for Graves' disease

Report of a preliminary experience

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Abstract

Background: Ever since the introduction of video-assisted thyroidectomy (VAT), Graves' disease has represented a contraindication. This study aimed to demonstrate that VAT can be proposed also for Graves' disease.

Methods: From January 2002 to March 2003, 21 patients (20 women and 1 man) with Graves' disease underwent VAT. One patient showed positive test results for gene RET. The mean age of the patients was 36.4 years.

Results: No conversions of procedure were necessary. The mean operative time was 56.9 min. The RET-positive patient underwent total thyroidectomy and central compartment lymphadenectomy. Postoperative bleeding occurred in the patient with the largest gland. Histology showed goiter in 18 cases, medullary carcinoma in 1 case, and papillary carcinoma in 2 cases. No cases of vocal cord palsy but three cases of transient hypocalcemia were registered.

Conclusions: Graves' disease can be treated safely using VAT only if selection criteria are carefully respected. The young age of the patients with this disease encourages us to propose VAT for its good cosmetic and postoperative outcome.

Key words: Hyperthyroidism — Graves' — Thyroidectomy — Video-assisted thyroidectomy

Ever since the introduction of endoscopic procedures for thyroidectomy, Graves' disease has been considered a contraindication [3, 7, 13] because of its highly vascular pattern. This is particularly true in countries with iodine deficiency in which these patients commonly present with large goiters [14]. Actually, when the gland does not exceed the total volume generally recommended for such operations [6], there is no reason to rule out a video-assisted thyroidectomy (VAT) because the high vascu-

larity of the gland can be reduced easily by giving the patients Lugol's solution for some days before surgery [2].

Accordingly, our confidence with the minimally invasive procedure we have described and currently adopted [7] led us to extend the indication to VAT also to patients with Graves' disease if they presented with a goiter that fulfilled all the selection criteria generally required for the operation. This report aims to demonstrate that VAT actually is a safe operation also for Graves' disease, which should be a correct indication for endoscopic procedures if all the other selection criteria are carefully respected.

Materials and methods

From January 2002 to March 2003, 180 patients with Graves' disease were referred to our department of surgery. Of these patients, 21 (20 women and 1 man) (9%) were selected for VAT on the basis of their relatively small thyroid volume (mean, 22.5 ml; ranges, 8–38 ml), as measured preoperatively by means of ultrasonography. The mean gland volume of the patients excluded from VAT was 46.18 ml (range, 15–215 ml). The mean age of the 21 study patients was 36.45 years (range, 22–58 years).

Preoperative echography showed a multinodular variant in eight cases. One patient also showed positive results for gene RET screening. She underwent a total thyroidectomy and a central compartment lymphadenectomy. One patient presented with a small papillary carcinoma (1 cm), diagnosed by means of fine-needle aspiration. All the patients were euthyroid at the time of the operation and had been given Lugol's solution for 10 days before surgery. Total thyroidectomy was the operation performed for all the cases according to our policy of treatment [11].

The Harmonic Scalpel (Ultracision; Etmicon Endosurgery, Inc., Cincinnati, OH) was used for hemostasis. Vascular clips (2 mm) were used only for small intracapsular vessels. No drain was left at the end of the operation. Calcium serum levels were measured on postoperative days 1 and 2, and direct laryngoscopy was performed 1 month after the operation. The patients were interviewed by telephone and requested to give their opinion about the cosmetic result of the scar.

Results

Video-assisted thyroidectomy was performed as previously described [7], but in two cases the incision had to

be enlarged because of the higher thyroid volume (30 and 38 ml, respectively). For these two very young patients, the minimally invasive procedure was attempted because both demanded the best cosmetic outcome.

No conversion was necessary in this series. The mean operative time was 56.9 min (range, 35–120 min). One patient experienced postoperative bleeding, which required a reoperation after 20 min. An open cervicotomy was performed, and the origin of the bleeding proved to be an imperfect sealing of the upper pedicle by the Harmonic Scalpel. A traditional ligature was applied, and the postoperative course was uneventful. The patient who manifested this early complication was the one with the largest gland (38 ml). Histology showed benign goiter in 18 cases and confirmed diagnosis of papillary carcinoma in one case. The RET-positive patient showed two foci of medullary carcinoma. In another case, an incidental papillary carcinoma (2 mm) was described. For the patient with medullary carcinoma, lymphadenectomy allowed removal of 13 lymph nodes whose test results proved to be negative for metastases.

After a mean follow-up period of 8.5 months (range, 1–14 months), no vocal cord palsy was shown by direct laryngoscopy. Three cases of transient hypocalcemia were registered, but the patients delivered the substitutive therapy within 20 days after the operation. All the patients were given levothyroxine replacement therapy immediately.

A preliminary telephone interview to evaluate the cosmetic outcome as judged by the patients yielded the following results: excellent in 17 cases, fair in 3 cases, and insufficient in one case. A further evaluation was conducted with these patients summoned to our outpatient surgery. In the case judged as insufficient by the patient, a cheloid actually was present. In 18 cases, the scar was barely visible, whereas in the last two patients, the scar was visible, but satisfactory overall.

Discussion

The current study showed that Graves' disease can be performed safely only if selection criteria are carefully respected in terms of thyroid volume. In fact, hemostasis can be achieved during VAT by means of the Harmonic Scalpel only as long as large, highly vascular goiters are not approached. When we decided not to respect carefully our inclusion criteria recommending a maximum volume of 15 ml [6], we had to cope with a frightening complication represented by postoperative bleeding requiring a second operation that had to be performed through a conventional cervicotomy. The exploration clearly demonstrated the failure of the hemostasis obtained by Harmonic Scalpel alone on the upper pedicle. In the meantime, it cannot be attributed to an inadequacy of the instrument, which has proved to be efficacious in achieving an excellent hemostasis during open thyroid surgery in several instances [5]. However, our experience with Ultracision in VAT was limited to cases in which the gland volume did not exceed 15 ml [9].

A possible explanation for the complication is that for Graves' patients, who also show a hypervascular pattern in their glands, the traction that must be exerted on the lobe to extract it from the small skin incision constitutes an additional risk of bleeding for the upper pedicle. By consequence we are inclined to assume that although young patients strongly ask for more cosmetic procedures, the limit of volume should never be exceeded, in particular for Graves' patients.

On the other hand, this series demonstrated that the advantages offered by minimally invasive thyroid surgery [4] should not be ignored for this class of patients in which young women are largely predominant (mean age, 35 years). The only caution to be observed is careful adherence to all the inclusion criteria formerly described. Obviously this will greatly reduce the indications for the use of VAT in Graves' disease because in most of these patients, thyroid volume exceeds 15 ml. On the other hand, it must be stressed that Graves' disease sometimes presents with thyroid glands not enlarged, so it can be assumed that VAT can be proposed for glands with less than 20 ml of volume, although particular care must be observed for the upper pedicle hemostasis.

The operative time was slightly longer than for other VAT procedures (53.6 vs 56 min), but this has no statistical relevance.

Histology confirmed the presence of both the papillary carcinoma and the medullary carcinoma, showing one more papillary carcinoma that occurred incidentally. According to our protocols of treatment, we performed a central compartment lymphadenectomy only for the medullary carcinoma patient. It allowed removal of 13 nodes, all testing negative, thus confirming that VAT also can be an oncologically correct operation [10]. The fairly high rate of transient hypocalcemia (15%) should not discourage adoption of VAT because it is well known that in these patients, hypocalcemia is much more attributable to the "hungry bone effect" [12] than to anatomic damage of the parathyroid glands. The absence of permanent hypocalcemia and the short duration of this condition seem to confirm this interpretation of the biochemical data.

Finally, the satisfaction of patients with their scar proved once again to be very high (80% judged it to be excellent), and this is consistent with the conclusions of most prospective studies that have appeared recently in the literature [1, 4, 8].

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