Operative time and postoperative pain following minimally invasive video-assisted parathyroidectomy

P. DEL RIO, L. BEZER, S. PALLADINO, M.F. ARCURI, E. IOTTI, M. SIANESI

SUMMARY: Operative time and postoperative pain following minimally invasive video-assisted parathyroidectomy.

P. DEL RIO, L. BEZER, S. PALLADINO, M.F. ARCURI, E. IOTTI, M. SIANESI

Background. Minimvasive surgical techniques have been proposed to treat the patients affected by parathyroid adenoma starting by endoscopically-assisted parathyroidectomy up to video-assisted and radio-guided approaches.

Patients and methods. Our technique, minimally invasive video-assisted parathyroidectomy (MIVAP), in accord with Miccoli's technique, has been introduced in our center since 2006 after extensive experience with MIVAT (minimally invasive videoassisted thyroidectomy). From September 2006 to October 2008 we performed 32 MIVAP on 32 patients, 21 female and 11 males with a mean age of 53.4 years (range 25-77) affected by parathyroid adenoma. Patients have been divided in two groups in chronological order: Group A included the first 15 patients, Group B the second ones.

Results. Mean operative time from incision to skin closure has been 47.4±14.2 minutes for group A and 34±10.3 minutes for group B (p<0.01). Postoperative pain, scored from 0 to 10 evaluated at time 0 and after 24 hours from the procedure, has been of 2.6±0.5 and 1.4±0.5 in group A (p<0.001) while in group B of 2.58±0.51 and 1.16±0.38 (p<0.001) respectively. The difference in postoperative pain was not significant between the two groups and the pain was controlled by the administration of paracetamol 1 g. On the other side, the comparison between postoperative pain in patients operated via traditional bilateral cervical exploration and MIVAP (2.61±0.5 vs 3.55±0.51 and 1.38±0.5 vs 2.16±0.61 at 0 and 24 hours respectively), was statistically significant (p<0.001) and in favour of MIVAP.

Conclusions. We showed a shorter operative time between the A group and B group. 15 cases are sufficient as good learning curve if the surgeon is experienced in videoaisted neck procedure. The postoperative pain is lower in videoassisted procedure than cervical bilateral approach.

KEY WORDS: Parathyroid adenoma - Parathyroidectomy - MIVAP.

Adenoma paratiroideo - Paratiroidectomia - MIVAP.

Introduction

The incidence of PHPT (primary hyperparathyroidism) is significantly increased since the Seventies, secondary to the introduction of the screening test for pla-
smallest calcium levels. In the last 10 years sestamibi-scintigraphy allowed to identify with a certain degree of relia-

MIVAP, in accord with Miccoli’s technique (3), has been introduced in our center since 2006 after extensive experience with MIVAT (minimally invasive video-assisted thyroidectomy) (5); it involves the use of a single suprasternal 2 cm access through which a 5 mm 30 degrees camera is introduced. Intraoperative PTH (iPTH) has been recently introduced in our series. The enrollment of the patients in this study started after the learning curve of the surgeon was considered completed in endocrine surgery videoassisted surgical procedure.

Patients and methods

From September 2006 to October 2008 we performed 32 MIVAP on 32 patients affected by primary hyperparathyroidism, 21 female and 11 males with a mean age of 53.4 years (range 25-77). Inclusion criteria in our study were:

- sporadic PHPT;
- preoperative identification of a parathyroid gland smaller than 3 cm;
- no clinical suspicion for parathyroid cancer;
- absence of thyroiditis.

All patients underwent general anesthesia. The learning curve of the surgeon, started with minimally video-assisted thyroidectomy, included 50 procedures for each of the surgeons involved in the study. The introduction of MIVAP has been delayed in our hospital due to logistic difficulties to set up intraoperative PTH testing, mandatory for this technique. Preoperative evaluation included: plasma Calcium and PTH levels, cervical ultrasound to rule out comorbidities and sestamibi scintigraphy to identify the location of the adenoma.

Patients have been divided in 2 groups in a chronological order: group A included the first 15 patients while Group B the second 17 ones.

Every patient signed a detailed and specific informed consent for the procedure.

The factors included in the statistical analysis were: pre and postoperative plasma calcium level, postoperative pain (immediate after surgery-time 0, and delayed, after 24 hours). Evaluation of postoperative pain between patients operated via traditional bilateral exploration for technical difficulties due to intraoperative PTH assay and for preoperative unknown thyroiditis.

Mean operative time from incision to skin closure has been 47.4 ± 14.2 minutes for group A and 34 ± 10.3 minutes for group B (p<0.01) (Tab. 1).

Postoperative pain, scored from 0 to 10 and evaluated at time 0 and after 24 hours from the procedure, has been of 2.6±0.5 and 1.4±0.5 in group A (p<0.001) while in group B of 2.58±0.51 and 1.16±0.38 (p<0.001) respectively (Tab. 2). The difference in postoperative pain was not significant between the two groups and the pain was controlled by the administration of paracetamol 1 g. On the other side, the comparison between postoperative pain between patients operated via traditional bilateral cervical exploration and MIVAP, i.e. 2.6±0.5 vs 3.55±0.51 and 1.38±0.5 vs 2.16±0.61 at 0 and 24 hours respectively, was statistically significant (p<0.001) and in favour of MIVAP (Tab. 3).

24-hours serum calcium level has normalized in all treated patients. No transient injuries to the recurrent nerve have been observed. One patient necessitated pro-

Surgical technique

MIVAP was performed in a standardized technique (3). Patient was supine without neck hyperextension. The position of the team members was the following: surgeon is on the right side, first assis-
longue hemostasis at the end of the MIVAP procedure for endoclip dislocation.

Postoperative PTH decreased in all patients. In 3 patients transient hypoparathyroidism developed. No permanent hypoparathyroidism was observed in our series. One patient, affected by multigland disease, one month after surgery had persistent hyperparathyroidism due to a false positive intraoperative PTH assay. In 28 patients treated with MIVAP pathology confirmed parathyroid adenoma and in one case the diagnosis was parathyroid hyperplasia.

Discussion

Minimvasive video-assisted procedures for thyroid and parathyroid surgery, after an initially slow diffusion, spread widely among endocrine surgeons.

Previous series of traditional bilateral neck exploration reported rates of success as 90-95% of cases (7-10). In 2003 Berti et al. (11) suggested that 30 is a sufficient number of procedures to complete the learning curve of the surgeon and to guarantee operative times equivalent to traditional approaches. Some authors have also confirmed the safety of MIVAP and reported improved results, in terms of postoperative hypocalcemia, compared to bilateral cervical exploration, likely attributed to the absence of parathyroid manipulation during MIVAP (12, 13).

The learning curve progressively showed a decrease in the operative times. For MIVAP there is a time frame which does not depend on the surgeon experience, which is the one involved with intraoperative PTH assay (14-16). In our study, the learning curve had been considered previously completed because extensive experience with MIVAT had been obtained for all surgeons.

The advantage of the surgeon performing MIVAP compared to other miniminvasive procedure, such as endoscopic procedure, is that he operates in very contained spaces without the need to a change in position and view.

Our series has been divided in two groups in a chronological order, which is directly associated with the degree of confidence and experience gained by the surgeon, and a significant difference in the operative times has been noted in favor of the second group (Table 1).

In terms of postoperative pain, there was no difference between the groups but there was a significant higher pain experienced by patient operated in the traditional fashion, both in the early phase and also after 24 hours (Tables 2 and 3).

The accuracy of preoperative diagnosis is of the utmost importance, especially in areas of endemic goiter. In those cases, the synergy between ultrasound of the neck and sestamibi scintigraphy decreases the incidence of false positives, characterized by a high concentration of myocondria in thyroid nodules of follicular proliferation or when reduced thyroid function can interfere with the uptake of the radionuclide. These refinements in preoperative radiology allowed the spread of miniminvasive surgical techniques to take place.

MIVAP has been proved safe also in our study and we believe, in compliant selected cases, this procedure could be indicated on a day surgery basis with regional anesthesia.

A recent report from Miccoli et al. (17) demonstrated how, in case of logistic and financial difficulties to organize intraoperative PTH assay, bilateral video-assisted exploration can be performed with results equiva-
lent to MIVAP with no increase in operative times. The above mentioned procedure can be taken into consideration also when the indication for surgery is a double adenoma or parathyroid hyperplasia. However, in the large majority of cases MIVAP with intraoperative PTH assay is preferred to avoid the removal of large but functionally and pathologically normal glands.

It is to be noted that the cost of MIVAP is mainly due to intraoperative PTH measurement rather than to the surgical equipment which is non disposable, a part from the clipper charger, and can be used multiple times.

References