

Thyroidectomy for differentiated carcinoma in older patients on a short stay basis

Paolo Del Rio¹, Lucia Sommaruga¹, Lamia Bezer¹, Maria Francesca Arcuri¹, Simona Cataldo², Giuseppe Robuschi², Mario Sianesi¹

¹Unit of General Surgery and Organ Transplantation; Department of Surgical Science, University of Parma; ²Unit of Endocrinology, University Hospital of Parma, Parma, Italy

Abstract. *Background:* Total thyroidectomy is the treatment of choice for thyroid cancer and for selected benign thyroid conditions. The aging of the general population and the improvements in surgical technique induced an extension of the surgical indications to major thyroid surgery to older patients also on a short stay basis. *Methods:* From January 2004 to December 2006, 152 patients affected by thyroid carcinoma underwent total thyroidectomy on a short stay basis. We divided our series in 2 groups of patients according to the age (> or < of 65 yrs) and considered the outcome analysing several factors including: ASA score, mean operative time, mean hospital stay, tumour size, and post-operative complications. *Results:* The groups consisted of: 115 pts with a mean age of 46,81±11,63 years and 37 pts with a mean age of 74,53±3,71 years for the younger and older group respectively. The differences in ASA score and hospital stay were statistically significant between the groups (P< 0.007 and P< 0.004); neither postoperative haemorrhage nor permanent hypocalcemia was observed. One permanent paralysis of the recurrent laryngeal nerve was noted at 12 months follow up; transient hypocalcemia, which resolved in all cases within 30 days from surgery, was reported in 23 and in 7 patients in the younger and older group respectively. *Conclusions:* Although a longer length of stay was noted in the older group and possibly related to a higher ASA score and a worse preoperative airways condition, total thyroidectomy for differentiated thyroid carcinoma may be safely carried out in older patients on a short stay basis if performed by an expert staff and in the setting of a multidisciplinary and exhaustive preoperative assessment. (www.actabiomedica.it)

Key words: Short stay surgery, thyroidectomy, thyroid cancer, recurrent palsy, hypocalcemia, postoperative bleeding

Introduction

The recent focus on endocrinological screening programs in western countries has been accompanied by an apparent increase in the incidence of thyroid malignancies, especially among patients over 65 years of age (1).

The incidence of differentiated thyroid carcinomas ranges from 0,5 to 10 per 100.000, depending on the characteristics of the examined population, which may vary according to geographical areas, life ex-

pectancy, risk factors, diagnostic improvements in the preoperative work up (2-8).

Total thyroidectomy is the treatment of choice for thyroid malignancies, suspected or proven at fine-needle aspiration biopsy (FNAB) and for selected benign conditions. The risk of surgical complications following major thyroid surgery increases if extended or repeated procedures are performed (9-13). Nevertheless, as a result of the improvements in surgical technique and of the subsequent reduction in postoperative complications such as recurrent laryngeal nerve

palsy, this procedure has gained greater consent among endocrine surgeons, compared to more conservative approaches such as lobectomy, proving to be safe and effective also in the older population on a short stay basis.

We report our experience from January 2004 to December 2006 regarding total thyroidectomies performed as a "one day surgery" procedure for differentiated thyroid carcinomas in patients over 65 yrs.

Materials and methods

From January 2004 to December 2006, 152 patients underwent total thyroidectomy for differentiated thyroid carcinoma at our center.

Only patients with a preoperative cytological diagnosis of carcinoma were enrolled.

Patients were divided in 2 groups according to age (> or < 65 years old) and time of discharge (before or after 24 hours from the surgical procedure.)

Sixty-four patients were excluded because they underwent Minimally Invasive Video Assisted Thyroidectomy (MIVAT) (14-15). In both groups, younger (age < 65 yrs) and older (age >65 yrs) the following factors were examined: anesthesia risk (American Society of Anesthesiologist score), mean operative time, mean hospital stay, tumor size, presence of lymph node metastasis, multifocality and post-operative complications (hemorrhage, uni- or bilateral recurrent laryngeal nerve paralysis, hypocalcaemia).

The surgical technique, the operating team and the post-operative management were the same for all patients. All patients were operated on a short stay basis (discharged 24 hours after surgery) if no complications occurred. Levothyroxine sodium administration at the daily dose of 50 mcg has been started from POD 1 (Post Operative Day) and titrated according to thyroid function tests, thyroid disease and clinical symptoms.

Complications such as hypocalcaemia (serum calcium level below 8 mg/dL) or recurrent laryngeal nerve palsy that resolved spontaneously or after treatment during the first 12 postoperative months were considered as temporary.

Statistical analysis was performed using SPSS 10.0 for Windows: Student's t test and chi - square

test were carried out for independent and categorical variables. Values of $p < 0.05$ were considered statistically significant.

Results

The characteristics of both groups are summarized in table 1.

The younger group consisted of 115 patients with a mean age of $46,81 \pm 11,63$ yrs while the older group of 37 patients had a mean age of $74,53 \pm 3,71$ yrs. The difference in ASA score between the two groups (younger 2.01 ± 0.24 , older $2.48 \pm 0,63$) and the mean hospital stay ($1.06 \pm 0,29$ days vs. $1,374 \pm 0,58$ days; range 0.8-2 days) were statistically significant ($p=0.007$ and $p=0,004$ respectively) (Table 1). No postoperative deaths or major complications occurred including hemorrhage. Three patients developed temporary unilateral recurrent laryngeal nerve palsy, 2 in the younger group and one in the older group; of these 2 developed mild clinical dysphonia that resolved spontaneously in all cases but one who required 8 weeks of speech therapy. One permanent recurrent laryngeal nerve palsy was observed at 6 months follow up; however dysphonia in this patient was mild and mostly recovered after speech therapy. No others patients without endoscopic evidence of recurrent laryngeal nerve palsy developed dysphonia.

Transient hypocalcaemia was reported in 23 (20%) and 7 (18.9%) patients in the younger and older group ($p < 0.05$) respectively. Symptoms completely resolved within POD 7 and replacement therapy was gradually discontinued after 30 days in all patients.

Table 1. Clinical characteristics

	Group A	Group B	P
N. Patients	115	37	
Mean age (\pm SD)	$46,81 \pm 11,63$	$74,53 \pm 3,71$	
ASA	2.01 ± 0.24	2.48 ± 0.63	0.007
Mean operative time (min \pm SD)	$83,24 \pm 15,98$	$84,11 \pm 14,91$	
Sex ratio (F:M)	4:1	3:1	
Mean hospital stay	$1,06 \pm 0,29$	$1,374 \pm 0,58$	0.004

Table 2. Pathologic features

	Group a	Group b	p
Tumor histologic type			
• Papillary	93/115 (80,9%)	29/37(78,4%)	n.s.*
• Follicular	22/115 (19,1%)	8/37(21,6%)	n.s.
T (tumor size) cm	1,323±1.154	1,298±1.09	n.s.
Multifocality	31 (26,9%)	8 (21,6%)	n.s.
N (lymph node metastasis)	7 (6,09%)	1 (2,7%)	n.s.

* not significant

No statistically significant differences were evidenced in terms of mean operative time (83,24±15,9 vs 84,11±14,91 minutes), tumor size, number of synchronous nodal metastasis, histological type between the 2 groups (Table 2).

The reasons for a longer hospital stay were: mild respiratory distress (1 and 4 pts in the younger and older group), symptomatic hypocalcaemia (7 and 3 pts respectively), non surgery-related medical issues (1 and 4 pts for younger and older group).

All patients with mild respiratory compromise in the older group had preoperative tracheal compression/deviation for mediastinal goiter associated with carcinoma while only 1 in the younger group had tracheal involvement. 24 hours of short acting inhaled bronchodilators but no chest physiotherapy were necessary for these patients.

At statistical analysis factors significantly related to hospital stay were preoperative tracheal deviation/compression and ASA.

Discussion

Short stay thyroid surgery is performed routinely around the world since the incidence of complications such as bleeding or respiratory distress due to laryngeal nerve injury are seen in the first 6-8 postoperative hours (16); we have adopted this approach at our center since 1996.

A trend to extend indications to surgery to older patients has been observed according to the overall progressive aging of the population. Lang et al. reported a series of candidates for total thyroidectomy

and observed that the mean age rose from 56,6 years in 1995 to 63.2 years in 2003 (1).

No statistically significant differences in tumor size, histological type, lymph node involvement or serious post-operative complications related to surgery were noted between the 2 groups in our series.

In our series older patients had a longer hospital stay mainly for respiratory issues, which were associated to the higher incidence of preoperative tracheal compression/deviation among these patients, and for non surgery-related medical reasons, as the higher ASA score in this group could explain.

Older patients undergoing total thyroidectomy, especially for cancers that develop on a bulky long-standing goiter, can present with tracheal compression and deviation, whose reported incidence in small series ranges from 16 to 85%, resulting in post-operative respiratory distress. Careful airways preoperative evaluation and close collaboration with the anesthetist are mandatory in patients at risk for early respiratory complications, including those related to tracheomalacia, in order to identify the population necessitating strict monitoring early after extubation. Temporary dysphonia and hoarseness due to a rearrangement of the upper respiratory tract are frequent even if no damage to the recurrent laryngeal nerves is present. None of our patients had permanent dysphonia, including the small group of patients with evidence of temporary recurrent laryngeal nerve palsy and the one with permanent paralysis at 6 months. Moreover, there was no difference in the incidence of temporary dysphonia in the 2 groups.

Although older patients developed hypocalcemia more frequently, in all patients it resolved within 1 month from surgery.

The fact the all procedures were performed by the same surgeons, who have a longstanding expertise in endocrine surgery, and the low complication rates observed, comparable to those reported in literature, suggest that also major thyroid surgery can be performed safely in older patients with good outcomes by high volume surgeons, as previously described in a cross sectional analysis by Sosa et al. where it was observed that complications rate and length of hospital stay were related to the surgeon's procedure-related experience (17).

In conclusion, in our experience total thyroidectomy for thyroid cancer performed as short stay surgery appears to be safe also in older patients when a careful and multidisciplinary preoperative assessment is performed and when the procedure is carried out by experienced staff.

References

1. Lang BH, Lo C. Total thyroidectomy for multinodular goiter in the elderly. *Am J Surg* 2005; 190: 418-23.
2. Parkin DM, Muir SL, Whelan SL, Gao YT, Ferlay J, Powell J. Cancer incidence in five continents. Vol. VI. Lyon: IARC Scientific Publications Nr 120; 1992.
3. Parkin DM, Whelan SL, Ferlay J, Raymond L, Young J. Cancer incidence in five continents. Vol. VII. Lyon: IARC Scientific Publications Nr 143; 1997.
4. Merhy J, Driscoll HK, Leidy JW, Chertow BS. Increasing incidence and characteristics of differentiated thyroid cancer in Huntington, West Virginia. *Thyroid* 2001; 11 (11): 1063-9.
5. Levi F, Randimbison L, Te VC, La VC. Thyroid cancer in Vaud, Switzerland: an up date. *Thyroid* 2002; 12 (2): 163-8.
6. Parkin DM, Whelan SL, Ferlay J, Teppo L, Thomas DB. Cancer incidence in five continents. Vol. VIII. Lyon: IARC Scientific Publications Nr 155; 2002.
7. Burgess JR. Temporal trends for thyroid carcinoma in Australia: an increasing incidence of papillary thyroid carcinoma (1982-1997). *Thyroid* 2002; 12 (2): 141-9.
8. Verger P, Catelinois O, Tirmarche M, et al. Thyroid cancers in France and the Chernobyl accident: risk assessment and recommendations for improving epidemiological knowledge. *Health Phys* 2003; 85 (3): 323-9.
9. Neis C, Sitter H, Zielke A, et al. Parathyroid function following ligation of the inferior thyroid arteries during bilateral subtotal thyroidectomy. *Br J Surg* 1994; 81: 1757-9.
10. Wagner HE, Seiler C. Recurrent laryngeal nerve palsy after thyroid gland surgery. *Br J Surg* 1994; 81: 226-8.
11. Gough IR, WILKINSON D. Total thyroidectomy for management of thyroid disease. *World J Surg* 2000; 24: 962-5.
12. Mishra A, Agarwal A, Agarwal G, et al. Total thyroidectomy for benign thyroid disorders in an endemic region. *World J Surg* 2001; 25: 307-10.
13. Zambudio AR, Rodriguez J, Riquelme J, et al. Prospective study of postoperative complications after total thyroidectomy for multinodular goiters by surgeons with experience in endocrine surgery. *Ann Surg* 2004; 240: 18-25.
14. Del Rio P, Sommaruga L, Ferreri G, Arcuri MF, Sianesi M. Preliminary experience in minimally invasive videoassisted thyroidectomy (MIVAT). *Acta Biomed* 2006; 77 (1): 27-9.
15. Del Rio P, Berti M, Sommaruga L, Arcuri MF, Cataldo S, Sianesi M. Pain after minimally invasive videoassisted thyroidectomy and after minimally invasive open thyroidectomy. Results of a prospective outcome study. *Langenbecks Arch Surg* 2008; 393 (3): 271-3.
16. Schwartz AE, CLARK OH, Ituarte P, Lo Gerfo P. Therapeutic controversy: thyroid surgery – The choice. *J Clin Endocrinol Metab* 1998; 83: 1097-105.
17. Sosa JA, Bowman HM, Tielsch JM, Powe NR, Gordon TA, Udelsman R. The importance of surgeon experience for clinical and economic outcomes from thyroidectomy. *Ann Surg* 1998; 228: 320-30.

Accepted: April 24th 2009

Correspondence: Paolo Del Rio M.D.

Unit of General Surgery and Organ Transplantation
Department of Surgical Science, University of Parma
Via Gramsci, 14

43100 Parma-Italy

Fax 0039521992501

E-mail: paolo.delrio@unipr.it