

POST-OPERATIVE COMPLICATIONS OF THYROIDECTOMY FOR DIFFERENTIATED THYROID CARCINOMA

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ABSTRACT

Objectives: This study evaluates the percentage and risk factors of complications in the patients submitted to thyroidectomy for Differentiated Thyroid Carcinoma.

Study Design: Case series .

Setting & Duration: Department of General Surgery and Department of Otorhinolaryngology and Head and Neck surgery at Nawabshah Medical college Hospital from January 2006 to January 2007.

Methodology: A retrospective chart and complications review of 50 consecutive patients who underwent thyroidectomy for Differentiated Thyroid Carcinoma. Fifty patients submitted to the thyroidectomy (Different Surgical procedures) for differentiated thyroid Carcinoma, were analysed retrospectively for the post-operative complications.

Result: Of the fifty patients the main post operative complications were hypocalcemia in 16 patients (32%) and transient vocal cord palsy in one patient (2%). Para tracheal lymph node dissection when associated with total thyroidectomy were significantly related to transitory and permanent hypocalcemia.

Conclusion: Thyroid surgery can be performed safely with acceptable morbidity. Hypocalcemia is the most significant complication. Paratracheal lymph node dissection were the most significant predictors of hypocalcemia in patients submitted to total thyroidectomy.

KEY WORDS: Differentiated Thyroid Carcinoma, Complications, Post-operative

INTRODUCTION

According to data from American Cancer Society, the number of new cases of differentiated thyroid Carcinoma has been increasing in the past decades.¹ The incidence rates have increased from 6.3% in 1983 to 20.4% in 1998.²

Thyroidectomy is the main form of initial treatment for thyroid gland cancer. However the extension of resection performed in the treatment of differentiated thyroid carcinoma remains controversial, particularly because, the incidence of postoperative complications is directly related to the type of thyroidectomy (Lobectomy near total or total).³

In the early part of the last century the major complications following thyroidectomy were haematoma and post-operative infection and most of these pioneer authors reported some post-operative mortality.^{4,5} Currently the main post-operative complications are vocalcord palsy because of recurrent laryngeal nerve dysfunction, and hypocalcemia.^{5,10} Post-operative death is now rare or even unrecorded.⁶

The occurrence of such complications has been attributed to the particular aspects of surgical technique, extension of operation, reoperation, neck dissection and experience of surgical team.^{2,4,6} The main purpose of this study is to evaluate the percentage and risk factors of complications in the patients undergoing thyroidectomy for differentiated thyroid carcinoma, with a view to propose preventive measures that can result in improvements in the functional outcomes.

METHODOLOGY

This study was carried out in the Departments of Surgery and Otorhinolaryngology and Head and Neck Surgery

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in the tertiary care hospital of Peoples Medical College Nawabshah from January 2006 to January 2007. Fifty patients were submitted to thyroidectomy for differentiated thyroid carcinoma. There were 45 females patients (90%) and 05 male patients (10%) with a mean age of 42 years (ranging from 8 to 88 years). Preoperative workup included medical history and physical examination, thyroid function tests, thyroid ultrasound, fine needle aspiration biopsy and thorax radiography. All patients had preoperative evaluation of vocal cord mobility by means of indirect laryngoscopy or fibrolaryngoscopy.

The surgical procedures included total thyroidectomy in 28 patients (56%) sub-total thyroidectomy in 08 patients (16%) lobectomy with isthamectomy in the 14 patients (28%). Paratracheal lymph node dissection was performed in 20 patients (13 ipsilateral and 7 bilateral). The pathologic examination showed 44 papillary carcinoma (88%) and six follicular carcinoma (12%). We routinely identified the parathyroids and recurrent laryngeal nerves before performing the ligation of the inferior thyroid pedicles. Penrose drains were used in 10 patients and hemovac drains in 37 patients to facilitate postoperative care and to permit earlier discharge from the hospital while in 3 selected patients no drain was used. All the patients were evaluated for at least 30 days with regard to the occurrence of postoperative complications.

Post-operative vocal cord palsy or paresis were defined as the presence of immobility or decreased movements of vocal chords. A persistent vocal chords dysfunction after six months was considered permanent. Hypocalcemia was considered present whenever there was a need for exogenous calcium replacement to maintain normal serum levels (8-10.4 mg/dl) or to eliminate the clinical signs and symptoms of hypocalcemia. Hypocalcemia was considered permanent, when calcium replacement was necessary for over than six months.

RESULTS

Twenty three patients (46%) had postoperative complications with hypocalcemia as the most frequent one. Other less frequent complications were vocal fold palsy, haematoma, seroma and wound infection (Table I). The mean duration of hospital stay was two days (ranging from 01 to 18 days).

The overall rate of vocal cord palsy was 2% (Table I) which was transitory palsy with full recovery occurring within 6 months. There was no patient having permanent vocal cord palsy or bilateral palsies, nor was there, a need for tracheostomy. The type of thyroidectomy,

patient's gender, diameter of nodule, surgeons experience and the association or not with neck dissection did not have any significant association with the percentage of vocal cord palsy. Post operative hypocalcemia occurred in 16 patients (32%) (Table I). Transitory hypocalcemia was found in 13 patients (26%) all with full recovery occurring within 6 months. Three patients (6%) had permanent hypocalcemia (Table I).

Complications of post-operative hypocalcemia did not have any significant correlation with patient's gender, age diameter of the nodule and surgeons experience.

Table I. Post Thyroidectomy Complications

Complications	No.	%
Transitory Hypocalcemia	13	26
Permanent Hypocalcemia	3	6
Transitory Vocal Cord Palsy	1	2
Hematoma	2	4
Seroma	3	6
Surgical Site Infection	1	2
Total	23	46

However the extension of thyroidectomy and the association with Paratracheal lymph node dissection were significantly associated with the risk of transitory and permanent hypocalcemia. In the group of patients who underwent the thyroidectomy only, the percentage of hypocalcemia was significantly lower (4/25%) when compared with the cases where paratracheal lymph node dissection was associated 12 patients, 75% (Fig.1).

Seroma was a postoperative complication found in 03 patients (6%) (Table I). Seroma developed in 1 patient who had a Penrose drain and 02 patients who were drained using hemovec drain. None of the patients in whom no drain was placed, presented with this type of complication. One patient (2%) developed postoperative surgical site infection. Two patients (4%) were reoperated on as a result of a haematoma that occurred in one patient in whom no drain was placed and in other patient who was drained with hemovac drain (Table I).

DISCUSSION

Thyroidectomy is very common surgical procedure world wide and is performed by surgeons with varied training and back grounds such as general surgery, thoracic surgery, endocrine surgery, otorhinolaryngology and head and Neck surgery and oncologic surgery.

There has been a significant reduction in the incidence of complications and mortality in thyroid surgery since the beginning of the 20th century, currently making thyroidectomy a surgical procedure with an acceptable morbidity and mortality rates. Post-operative mortality with thyroidectomy has become an extremely rare complication in various reports in literature.^{7,9,10} Post-operative death was not observed in this series.

The rates of Post-operative complications reported in the literature are variable (7.4% to 53%).^{7,9} In this series, we observed post operative complications in 23 patients (46%). The most common and feared complications in thyroid gland surgery are vocal chord palsy and hypocalcemia, and there are various factors involved in the occurrence.^{7,9,10} The incidence of recurrent laryngeal nerve injury reported in literature vary from 0% to 4.8% being higher in extensive resections and in reoperation series.⁸ In this series no patient (0%) showed permanent vocal chord palsy. In our group, the dissection and identification of recurrent laryngeal nerve is performed as a routine manner before the ligation of inferior pedicle vessels, thus reducing the risk of nerve injury. This early identification of recurrent laryngeal nerve is also advocated by several authors.^{8,9,10} Cernea⁹ reported the importance of the external branch of superior laryngeal nerve and the rate of nerve injury during thyroidectomy. The identification and preservation of this branch is also of paramount importance.

Hypocalcemia was an important complication in this series (26% transitory and 6% permanent). On reviewing recent thyroidectomy literature, we found an incidence of symptomatic post-operative hypocalcemia ranging from 04% to 42%. Permanent hypocalcemia occurs with a lower incidence (0% to 8%).^{8,9,10} In this series, paratracheal node dissection (ipsilateral or bilateral) were the most important risk factors for the occurrence of hypocalcemia, however the age did not present any significant association with the post-operative hypocalcemia. Although in one study, higher incidence of hypocalcemia observed, was associated with patients under the age of 18 years.¹⁰

CONCLUSION

Paratracheal lymph node dissection was the most significant predictor of hypocalcemia in cancer patients who

underwent total thyroidectomy. The contra indication of elective paratracheal dissection can reduce the occurrence of the main postoperative complications of thyroidectomy in selected low risk patients, however this chain of lymph nodes should be examined carefully during the surgical exploration.

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