



## Research Paper

# Morbidity comparison of Primary and Completion Total thyroidectomy for differentiated thyroid cancer in relation to the extent of Redo surgery

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## ABSTRACT

**Introduction:** Total thyroidectomy has become the oncologic procedure of choice for differentiated thyroid cancers DTC. The aim of the present study was to evaluate the post-operative morbidity rates, in relation to the surgical extent of primary and redo-thyroid surgeries.

**Patients and Methods:** A total of 331 adult patients who underwent thyroid gland surgery for a diagnosed DTC were included. 213 patients had a completion thyroidectomy, while 117 received a primary total thyroidectomy. Among the redo surgery group, 108 had surgery on the previously unexplored side of neck only, while 105 had repeat exploration and thyroid resection on the previously operated side as well. Length of hospital stay, post-operative hypocalcaemia, recurrent laryngeal nerve injury and tumour recurrence were used as primary outcome measures.

**Results:** Comparing primary versus redo surgery, there was no statistically significant difference between the groups in terms of all four main outcome measures. After controlling for patient's age, T and N stage, length of follow up, and whether or not a neck node dissection was done, the opposite side only redo surgery was associated with a statistically significant shorter hospital stay and lesser risk of persistent hypocalcaemia. Performance of simultaneous neck dissections was found to be associated with longer hospital stay ( $P \leq 0.01$ ). Higher initial N stage has a higher likelihood of development of loco regional and metastatic recurrence ( $P < 0.05$ )

**Conclusion:** Analysis of our data suggest that under uniform conditions of tumour stage, surgeon, demographics and T stage, there is no statistically significant difference in post-operative outcomes between primary or completion total thyroidectomy. However, less extensive surgery is associated with a better perioperative outcome.

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## 1. Introduction

Total thyroidectomy has become the oncologic procedure of choice for differentiated thyroid cancers DTC [1]. It is associated with a longer disease free survival, and allows for monitoring of the disease with the help of radioactive iodine scans or serum thyroglobulin measurements [1,2]. In addition total thyroidectomy also makes the use of radioiodine possible for the treatment of residual and recurrent

disease [1,2]. This requires a greater number of completion thyroidectomies to be performed for differentiated thyroid cancers, diagnosed at an initial, lesser degree of thyroid surgery.

Redo thyroid surgery has been associated with a higher morbidity rate in some studies when compared to the primary total thyroidectomy [2–4]. However most studies do not precisely take into account the stage of local disease when comparing the outcomes, and also the extent, of redo surgery performed, i.e. one side neck exploration versus both sides or a performance of simultaneous neck dissection in completion surgeries [1,5]. These factors can independently have a significant impact on the outcome related to second surgery.

The aim of the present study was to evaluate the post-operative morbidity rates in relation to the surgical extent of primary and redo-thyroid surgeries.

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## 2. Patients and methods

### 2.1. Study design and settings

This study used a retrospective analytic study design. A total of 371 adult patients underwent thyroid gland surgery after a histo-pathological diagnosis of differentiated thyroid cancer between January 1996 and January 2014 at our institution. After formal exemption by the Institutional Review Board, 330 patients with complete medical records accessible either through our hospital's information system or via archived patient charts were included in the study. Patients who underwent surgery other than primary or completion total thyroidectomy (neck dissection/excision biopsies), second unsuccessful exploration, and patients with carcinoma of thyroglossal cyst were not included in the study (Fig. 1).

### 2.2. Outcome parameters

Length of hospital stay, post-operative hypocalcaemia, recurrent laryngeal nerve injury and recurrence were used as primary outcome measures for comparison between the two groups. Hypocalcaemia is further segregated into transient or persistent using cut off intervals of 3 months [6,7].

### 2.3. Methods

Our standard hospital policy for the management of well-differentiated thyroid cancer includes total thyroidectomy followed by radioactive iodine ablation therapy and a life long TSH suppression. Pre-operative staging for local extent of the disease was done with a neck MRI in most of our patients, with a few exceptions where CT scan or ultrasound of neck was considered sufficient. Patient follow-up is done at 4–8 weeks in a surgical clinic and later with a nuclear medicine physician at 3–6 months for 1st year and yearly afterwards, with measurements of serum thyroglobulin and TSH, and a whole body scan at 1, 2 and 5 years respectively. Patients who have persistent hypocalcaemia at 3-month follow-up are also seen by the endocrinologist for further evaluation and management of hypo-parathyroidism at regular intervals.

All operations of primary or completion total thyroidectomy were performed by the same set of two experienced surgical oncologists over this extended period of time. Uni/bilateral selective lateral neck dissections were performed by the maxillofacial surgeon if required, depending upon pre-op pathological/radiological evidence of node positive disease.

The presence of recurrent laryngeal nerve injury was considered as positive by any documentation of voice change at two separate occasions in the patient's follow-up notes by two different physicians.

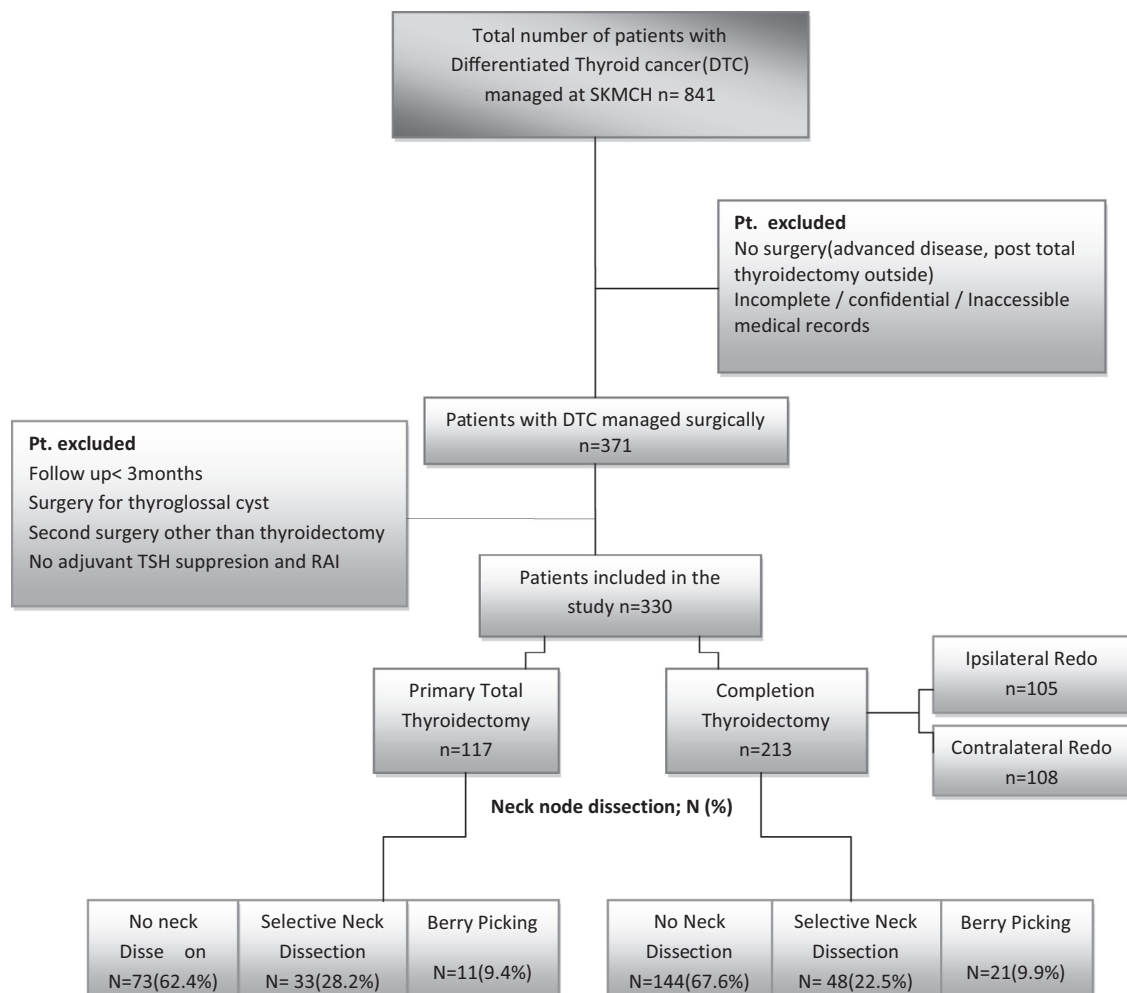


Fig. 1. Flow chart showing patients selection and distribution. Neck node dissection; N (%).

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