

## Original Article

### Value of laryngoscopy Before and After Thyroidectomy

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#### ABSTRACT

**Objective:** To evaluate value of laryngoscopy as preoperative and postoperative work up in patients under going thyroid surgery.

**Patients and Methods:** One hundred patients undergoing surgery for any lesion of thyroid gland were assessed in a before and after surgery during a one-year period. All were examined by rigid laryngoscope. Any abnormality of vocal fold (VF) movements was recorded. Modification of phonation was evaluated before and after surgery by a questionnaire. The rate of asymptomatic abnormal VF movements was determined and effect of surgery and pathology of lesions were evaluated.

**Results:** There were 54 females and 46 males, with the mean age of  $42.1 \pm 8.27$  years. There were 89 cases with benign disease of thyroid and 11 cases had malignancy. Modification of phonation and impaired VF motion were seen in 11 and 7 patients before operation, respectively. 42.86% cases with impaired VF motion were asymptomatic. These rates were 13 and 11 cases after operation, respectively. Impaired VF motion was significantly higher in patients with total thyroidectomy ( $p < 0.001$ ).

**Conclusion:** Our results emphasize the need of preoperative laryngoscopic examination of patients undergoing surgery for thyroid gland. Likewise, absence of abnormality in voice would not accurately rule out the probability of VF or laryngeal nerve lesions (Rawal Med J 2009;34:89-91).

**Key words:** Recurrent laryngeal nerve, thyroidectomy, laryngoscopy, malignancy.

## **INTRODUCTION**

Thyroidectomy is one of the most frequent head and neck surgical procedures worldwide.<sup>1</sup> Among the potential surgical complications, recurrent laryngeal nerve (RLN) injury with consequent vocal fold (VF) immobility may be a debilitating complication leading to voice changes.<sup>2</sup> Injury to the laryngeal nerve may be secondary to direct trauma, unintentional sectioning, stretching, ligature entrapment or thermal or electrical injury.<sup>3</sup> RLN damage is a well-recognized morbidity after thyroidectomy<sup>4</sup> and incidence of permanent nerve palsy varies widely from 0% to 5.8%.<sup>5</sup> However, the incidence of permanent recurrent nerve paralysis could be as high as 13% and 30% of patients during thyroid cancer operations and secondary thyroidectomy, respectively.<sup>6-9</sup> Routine examination of the vocal cords perioperatively to document recurrent nerve damage was usually incomplete and the reported incidence of nerve injury may be somewhat underestimated.<sup>10</sup> In addition, many reports were retrospective and included operations performed by many surgeons and extended during a long duration.<sup>10-12</sup> The aim of this study was to evaluate VF mobility in patients who underwent thyroidectomy using pre and post operative videolaryngoscopic examinations.

## **MATERIAL AND METHODS**

From January 1, 2006 to December 31, 2007, 100 consecutive patients underwent thyroidectomy in Department of ENT, Imam Khomeini Hospital, Tabriz University of Medical Sciences, Tabriz, Iran. An indirect laryngoscopic examination (storz 90 rigid rod telescope) was performed 48 hours before and was repeated within 1 week after the operations for all patients to detect either the presence or absence of VF lesion and mobility, and the laryngeal configuration.

Demographic, clinical and surgical variables were extracted from the patient's medical files.

Identification of parathyroids and RLN was done before ligation of the inferior thyroid pedicle and individual dissection and ligation of the vessels of the superior pole was done in order to avoid injury to the external branch of the superior laryngeal nerve. Potential risk factors for recurrent nerve paralysis, including the underlying pathological characteristics, the weight of the gland resected, the extent of resection, surgery for substernal goiter, thyroid reoperations, surgery for recurrent substernal goiter, operating time, and estimated blood loss, were noted. Statistical analysis was performed using the Fisher exact test (categorical variables) and the *t*-test (continuous variables).  $P < 0.05$  was regarded as statistically significant.

## **RESULTS**

There were 46 males and 54 females with mean age of  $42.1 \pm 8.27$  (range 19-67) years. There were 9 cases of papillary carcinoma, 34 of nodular goiters, 55 of adenoma, and two of follicular carcinoma. Thus, there were 89 benign and 11 malignant thyroid diseases. Pre-operative true vocal fold immobility was found in 7 patients. Pre-operative procedure included unilateral lobectomy in 49, total or near total thyroidectomy in 7, and bilateral subtotal thyroidectomy in 44 patients. Routine identification of the recurrent laryngeal nerve was performed during all operative procedures. The superior laryngeal nerve damage was documented in 2 patients that in one patient associated with true vocal fold immobility.

New post-operative voice symptom was documented in 4 patients with total or near total thyroidectomy and in one patients with bilateral subtotal thyroidectomy ( $P=0.31$ ). Post-operative true vocal fold immobility was found in 11 patients that seven of them had permanent post-operative true vocal fold immobility. From 5 new post-operative voice symptoms, two cases in patients with benign thyroid diseases and three cases in patients with malignant thyroid diseases that there was no significant difference between the two series ( $P=0.09$ )(table I).

## **DISCUSSION**

A total of 11% of patients had pre-operative voice symptoms that all of them were high frequencies type. Pre-operative voice symptoms have been reported as 25%,<sup>6</sup> and 34%.<sup>7</sup> We

found voice symptoms in nine cases with benign thyroid diseases (10%) and two cases with malignant thyroid diseases (18%) (P=0.35). The post-operative voice symptom was documented in 13 patients that 8 of these patients had pre-operative voice symptoms that distinguished 62% of patients with post-operative voice symptom had also had pre-operative voice symptoms. Randolph<sup>8</sup> et al reported a similar result.<sup>8</sup> Pre-operative true VF immobility has been reported as 4%<sup>8</sup>, 5%<sup>9</sup>, 6%<sup>10</sup> and 11%.<sup>6</sup> Several factors could have caused difference between our study and these studies which include difference at count of patients, percent of benign and malignant lesion, difference in used methods for evaluation of vocal cord and voice symptoms.

Our study and many other indicate the inadequacy and inaccuracy of reliance on voice symptom as the true VF immobility and recurrent laryngeal nerve damage. Pre-operative true VF immobility in patients with malignant thyroid diseases (27%) was significantly higher than benign lesion (4%) (P=0.028). New post-operative true VF immobility in patients with malignant thyroid diseases (9%) was not significantly different from benign disease (3%) (P=0.38). In the study of Osmólski<sup>13</sup> et al, a significant correlation was not found but in the study of Gao<sup>14</sup> et al, the incidence of RLN paralysis was 7.8%, and significantly related to the histopathologic findings of malignancy (P < 0.01).

All New Post-operative true VF immobility was found in patients with total or near total thyroidectomy (95% CI 0.01-0.09; OR=.031, P<0.001). In the studies of Osmólski<sup>13</sup> et al and Jamski<sup>12</sup> et al, significant correlation was found between Post-operative true VF immobility and total thyroidectomy. The surgeon's care to avoid damage to laryngeal nerves does not exclude other problems of the nerves and of laryngeal dynamics such as hematoma, edema, scarring adhesion.<sup>6</sup> RLN injury during thyroid surgery can be avoided by identifying the nerve and following its course carefully.<sup>15</sup> In conclusion, pre-operative vocal cord palsy was found in 7% of patients that 43% of them had no voice symptom. True VF immobility with RLN damage after total thyroidectomy was significantly higher than other thyroid surgery. Therefore, pre and post operative laryngoscopic examination is recommended in patients undergoing thyroid surgery.

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