



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3462153>Available online at: <http://www.iajps.com>

Research Article

**COMPARISON OF POST-OPERATIVE COMPLICATIONS BETWEEN  
AUTOIMMUNE THYROID DISEASE AND NON-AUTOIMMUNE  
THYROID DISEASE UNDERGOING TOTAL THYROIDECTOMY**<sup>1</sup>Dr. Tariq Jamil, <sup>2</sup>Dr. Ahsan-ur-Rehman, <sup>3</sup>Dr. Irfan Ahmad<sup>1</sup>Senior Registrar, Department of Surgery, Nishtar Hospital Multan<sup>2</sup>Assistant professor, Department of Surgery, Nishtar Medical College Multan<sup>3</sup>Senior Registrar, Department of Surgery, Nishtar Hospital Multan**Abstract:**

**Objective:** To compare the post-operative complications between autoimmune thyroid disease and non-autoimmune thyroid disease undergoing total thyroidectomy.

**Material and methods:** This prospective study was conducted at Department of Surgery Nishtar Hospital, Multan from November 2018 to May 2019 over the period of 6 months. Total 207 patients with benign thyroid disease necessitate surgery either male or female were selected. Postoperative complications after total thyroidectomy was assessed.

**Results:** Total 207 patients with benign thyroid diseases were selected and total thyroidectomy was performed in selected. Patients were divided into two groups A (autoimmune thyroid disease) & B (non-autoimmune thyroid disease) based on postoperative histopathological findings. Mean age in group A was 40.15±10.2 years and in group B was 42.6±9.6 years. The wound infection was 1.4% and 1.5% in both groups respectively with no significant difference among studied groups (p=0.58) The postoperative bleeding was 2.7% and 1.5% in both groups with no significant difference (p=0.442).

**Conclusion:** Results of the study showed that most of the patients found with non-autoimmune thyroid disease. The most common histopathological diagnosis postoperatively was simple multinodular goiter. Statistically insignificant difference of wound infection, bleeding, temporary vocal cord palsy and permanent vocal cord palsy was found between the both groups.

**Keywords:** ATD, Thyroidectomy, Vocal cord palsy, Hypoparathyroidism

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Please cite this article in press Tariq Jamil et al., *Comparison Of Post-Operative Complications Between Autoimmune Thyroid Disease And Non-Autoimmune Thyroid Disease Undergoing Total Thyroidectomy.*, Indo Am. J. P. Sci, 2019; 06(09).

**INTRODUCTION:**

The thyroid gland is a butterfly-shaped organ located in the base of neck. It releases hormones that control metabolism. Enlargement of it is called goiter which is common disease and is commonly benign. Goiter may be simple, toxic, inflammatory or neoplastic.<sup>1</sup> Hashimoto thyroiditis and Graves' disease are inflammatory thyroid diseases that mediated through autoimmune mechanisms, as well as sub-acute thyroiditis which result from other inflammatory influences considered to be inflammatory thyroid disease.<sup>2</sup> ATD is characterized by enlarged thyroid gland with severe inflammatory reaction between the thyroid capsule and surrounding tissues.<sup>3,4</sup>

As a result of this reaction, dense, adherent connective tissue is formed compressing and obscuring the critical structures related to thyroid gland and making the thyroid surgery more difficult.<sup>5</sup>

In Graves' disease, TSH receptor-antibodies develop, which stimulate the thyroid gland, and commonly affect females with peak incidence between 20-40 years old.<sup>6</sup>

Graves' disease management includes multiple lines: e.g. anti-thyroid drugs. In these patients, when drug therapy fails or in recurrent disease thyroidectomy or radioiodine ablation is considered.<sup>7</sup>

In 1912, Hakura Hashimoto was the first one who described Hashimoto's thyroiditis (HT). In the United States HT affect 5% to 10% of the female population during childbearing age. It is an autoimmune disease which characterized by increased serum thyroid autoantibodies as anti-thyroid peroxidase antibodies. Patients with HT have various clinical manifestations and 20% develop hypothyroidism.<sup>8</sup> Asymptomatic presentation is common in HT which does not need any treatment while patients with hypothyroidism are treated with levothyroxine. In case of suspicion of cancer or compressive symptoms surgical treatment is recommended.<sup>8</sup>

Thyroidectomy for ATD is technically challenging and because of the dense inflammatory process, the postoperative complication rates are high.<sup>5</sup>

Hypoparathyroidism is the most common complication which can occur transiently or permanently especially in patients with ATD during thyroidectomy as a result of trauma or disruption of the blood supply to the parathyroid glands. Hoarseness of voice because of the recurrent laryngeal nerve

(RLN) injury is another recognized complication of thyroidectomy in ATD.<sup>3</sup>

The aim of this study was to assess if the autoimmune thyroid disease is a risk factor for postoperative complications after total thyroidectomy compared to non-autoimmune thyroid disease.

**MATERIAL AND METHODS:**

This prospective study was conducted at Department of Surgery Nishtar Hospital, Multan from November 2018 to May 2019 over the period of 6 months. Total 207 patients with benign thyroid disease necessitate surgery either male or female were selected.

Exclusion criteria were recurrent goiter; malignant goiter; patients with vocal cord immobility diagnosed preoperatively; patients with calcium metabolic disorders e.g. hypo or hyperparathyroidism; patients with early complication and missing the follow-up; patients underwent hemithyroidectomy for pathology limited in one lobe.

All patients were subjected preoperatively to history taking, examinations (general and local) and investigations which include routine labs, thyroid profile (Free T3, Free T4, and TSH), neck ultrasonography, and routine chest X-ray.

Study was approved by the ethical committee and written informed consent was taken from every patient. Total thyroidectomy was performed in all selected cases.

All patients were under observation postoperatively for 24-48 hours for postoperative complications. The patient who was suspected to have recurrent laryngeal nerve injury underwent indirect or direct laryngoscope within the first 14 days after surgery then 3, 6 months later. Vocal cord palsy is considered permanent if symptoms persist more than 6 months.<sup>7</sup>

Postoperative calcium level was measured in which normal range (8.4–10.4 mg/dl) so postoperative hypocalcaemia occur when serum calcium level less than 8.4 mg/dl. Hypoparathyroidism is considered permanent if replacement of calcium was started after surgery and lasted for more than 6 months.<sup>7</sup>

Then every patient was followed up in outpatient clinic after one week then every 4 weeks for 6 months

All the collected data was entered in SPSS version 18 and analyzed. Mean and SD was calculated for

numerical data frequencies and percentages were calculated for categorical data.

### RESULTS:

Total 207 patients with benign thyroid diseases were selected and total thyroidectomy was performed in selected. Patients were divided into two groups A (autoimmune thyroid disease) & B (non-autoimmune thyroid disease) based on postoperative histopathological findings. Group A consisted on 73 patients and group B consisted on 134 patients. Mean age in group A was  $40.15 \pm 10.2$  years and in group B was  $42.6 \pm 9.6$  years. In group A, male patients were 20 (27%) and female patients were 53 (73%). (Fig. 1) In group B, male patients were 36 (37%) and female patients were 98 (73%). (Fig. 2)

The most common histopathological diagnosis postoperatively in our study was simple multinodular goiter (40.1%) followed by Graves' disease 52 (25.1%), Secondary toxic goiter in 46 (22.2%),

Hashimoto thyroiditis (ATD) in 21 (10.1%) and Colloid goiter in 5 (2.5%) patients. (Table 1).

The wound infection was 1.4% and 1.5% in both groups respectively with no significant difference among studied groups ( $p=0.58$ ) The postoperative bleeding was 2.7% and 1.5% in both groups with no significant difference ( $p=0.442$ ). Three patients in group A was suffering from temporary vocal cord palsy (4.1%), one of them became permanent (1.4%) while in group B there was two patients suffering from temporary vocal cord palsy (1.5%), one of them became permanent (0.7%) with no significant difference among the studied groups ( $p=0.582$ ).

There was a statistically significant difference between both groups regarding temporary hypoparathyroidism which was 9.5% in ATD group while in non-ATD group was 2.9% ( $p=0.047$ ) Also permanent hypoparathyroidism was 4.1% in ATD group while in non-ATD group was 0.7% ( $p=0.027$ ) with significantly higher rate in ATD group. (Table 2)

**Fig. 1: Gender distribution of group A**

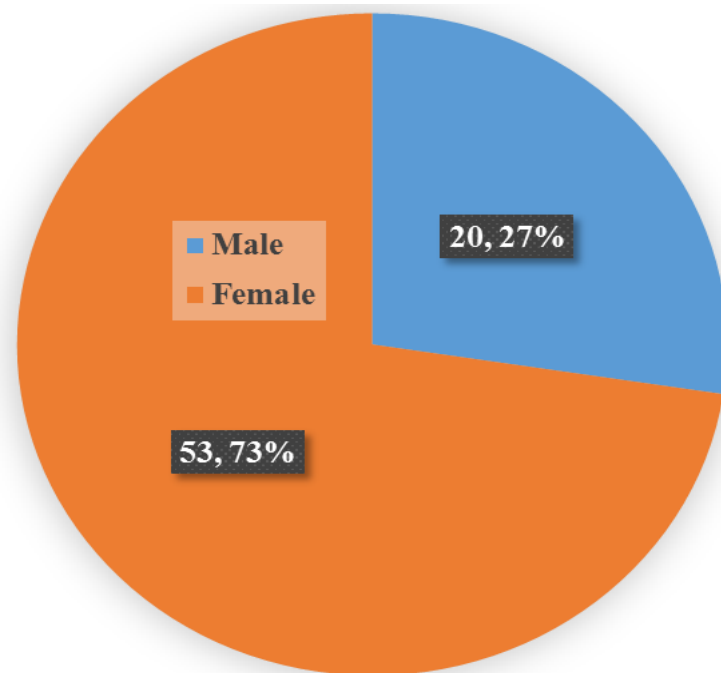


Fig. 2: Gender distribution of group B

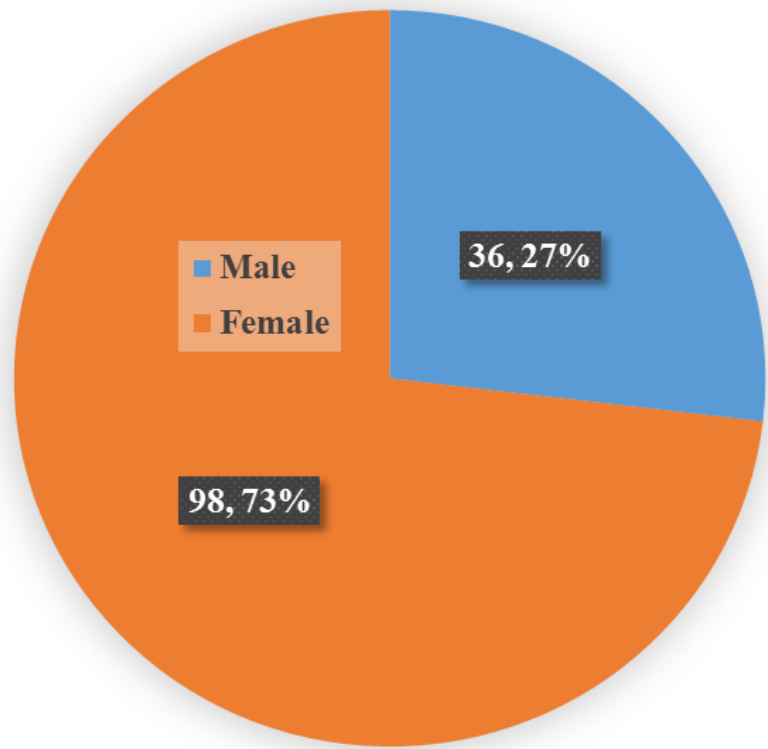


Table 1: Postoperative histopathological findings among the studied patients.

Histopathology	Number	Percentage (%)
Simple multinodular goiter (MNG)	83	40.1
Graves' disease (ATD)	52	25.1
Secondary toxic goiter	46	22.2
Hashimoto thyroiditis (ATD)	21	10.1
Colloid goiter	5	2.5

Table 2: Postoperative complications among the studied groups.

Complications	Group A	Group B	P value
	N (%)	N (%)	
Wound infection	1 (1.4)	2 (1.5)	0.58
Bleeding	2 (2.7)	2 (1.5)	0.442
Temporary vocal cord palsy	3 (4.1)	2 (1.5)	0.237
Permanent vocal cord palsy	1 (1.4)	1 (0.7)	0.582
Temporary hypoparathyroidism	7 (9.5)	4 (2.9)	0.047*
Permanent hypoparathyroidism	3 (4.1)	1 (0.7)	0.027*

**DISCUSSION:**

About 3–5% of the populations in Europe have thyroid gland diseases. A high prevalence of these disorders includes ATD such as Graves' disease and Hashimoto thyroiditis.<sup>7</sup>

Surgery is indicated in certain cases of ATD: e.g. failure of medical treatment, recurrent disease, suspicion of cancer or compressive symptoms.

The mean age in our study were  $40.15 \pm 10.2$  and  $42.6 \pm 9.6$  in both groups respectively with slightly younger age in group A than group B with no significant difference and this is disagreed with McManus et al and Thomusch et al in which both studies demonstrate significant difference with also younger age in ATD group.<sup>3,7</sup>

Our study found that patients with thyroid disorders whether autoimmune or non-autoimmune were significantly more female than male with no significant difference between both groups, which is consistent with other published literatures.<sup>3,7,9-11</sup>

Most of the patients in our study were diagnosed as simple multinodular goiter (40.1%) while Graves' disease was the second common diagnosis (25.1%) then secondary toxic goiter (22.2%) then Hashimoto thyroiditis (10.1%) this is agreed with Thomusch et al in that the MNG was the higher incidence among the studied patients but the Hashimoto thyroiditis was higher than graves' disease.<sup>7</sup>

Regarding general postoperative complications (wound infection and postoperative bleeding) there was no significant difference between both groups this is agreed with several studies.<sup>3,9,12,13</sup>

In our study the postoperative transient and permanent vocal cord palsy in the two groups was comparable with no significant difference and this is agreed with several studies.<sup>7,4,15,16</sup>

McManus et al demonstrate in his study that there was no significant difference between the two groups regarding transient vocal cord palsy while there was significant difference when looking at permanent vocal cord palsy between the studied groups.<sup>3</sup>

However, the postoperative transient and permanent hypoparathyroidism was significantly higher in group A compared with that for group B after thyroidectomy and this is agreed with Thomusch et al.<sup>7</sup>

The explanation for higher rate of hypoparathyroidism whether transient or permanent in ATD following surgery related to the severe fibro-vascular inflammatory reaction which obscures the surgical field and makes the preservation parathyroid blood supply more difficult.

In contrast to our study McManus et al demonstrated in his study that there was no significant difference between the two groups regarding permanent hypoparathyroidism while there was significant difference regarding transient hypoparathyroidism between the studied groups.<sup>3</sup>

Thus surgery in ATD is a challenging procedure because there is dense inflammatory process surrounding the thyroid gland and makes the gland firmly adherent to the surroundings. Surgery stills a line of treatment for ATD in selected cases as failure of medical treatment, suspicion of malignancy or presence of compressive symptoms.<sup>5</sup> Also recurrence of the disease after medical treatment is an indication for surgery in ATD.<sup>17</sup>

**CONCLUSION:**

Results of the study showed that most of the patients found with non-autoimmune thyroid disease. The most common histopathological diagnosis postoperatively was simple multinodular goiter. Statistically insignificant difference of wound infection, bleeding, temporary vocal cord palsy and permanent vocal cord palsy was found between the both groups.

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