

Factor Analysis of Recurrence of Toxic Forms of Goiter

Zayniyev Alisher Faridunovich

Samarkand State Medical University, Uzbekistan

Abstract Relevance. At present, one of the most urgent problems of surgical treatment of patients with toxic goiter remains and it is connected, first of all, with the development of recurrences in the postoperative period. **Purpose of the study:** Determination of factors influencing the incidence of recurrence of toxic goiter. **Materials and methods:** The long-term results of surgical treatment were studied in 147 patients with toxic goiter operated in the surgical department of the multidisciplinary clinic of Samarkand State Medical University. All patients underwent cytologic and postoperative histologic examination before surgery. **Results:** In most cases follicular colloid goiter with signs of hyperfunction was verified in 62 patients (42,2%) and mixed micro- and macrofollicular goiter with signs of hyperfunction in 49 patients (33,3%), nodular or multinodular goiter with signs of hyperfunction was observed in 36 patients (24,5%). The volume of operation most often (45,6%) corresponded to subtotal resection according to Nikolayev with thyroid tissue in the volume of 6-8 g, in 35,4% of patients subtotal resection of thyroid gland according to Drachinsky with tissue up to 4 g on one side was performed and in 21,4% of patients thyroidectomy was performed. Duration of the disease of toxic goiter up to 2 years was determined in 11 (7,5%) patients, from 2 to 5 years in 34 (23,1%), from 5 to 7 years in 52 (35,4%), from 7 to 10 years in 13 (8,8%) and 37 (25,2%) patients with the disease duration more than 10 years. **Conclusions:** It was revealed that the recurrence rate depends on the duration of the disease, morphologic structure of the thyroid gland, the volume of surgical intervention and the level of antibody to thyroperoxidase.

Keywords Toxic goiter, Thyroidectomy, Subtotal thyroid resection, Recurrence

1. Introduction

Diffuse toxic goiter (DTZ) is a disease characterized by increased production of thyroid hormones and diffuse enlargement of the thyroid gland (thyroid) of varying degrees. The incidence of new cases of DTZ varies from 30 to 200 per 100,000 population per year [3]. In regions with normal iodine supply DTZ is the most frequent cause of persistent thyrotoxic state, and in iodine-deficient regions DTZ competes with functional autonomy of the thyroid in the etiologic structure of toxic goiter [2,4]. Currently, one of the most urgent remains the problem of surgical treatment of patients with toxic goiter, and this is primarily due to the development of recurrences in the postoperative period. There are supporters of radical and organ-preserving operations. When performing organ-preserving surgeries, researchers point out the need to preserve part of the gland tissue to prevent postoperative hypothyroidism, which will avoid taking thyroid medications [2]. Proponents of radical surgeries consider organ-preserving operations unreasonable, as it increases the risk of disease recurrence up to 25-40% [1,4,6]. Ismailov S.I. et al. argue that the etiology and morphologic structure of

toxic goiter play the main role in the pathogenesis of relapse development rather than the volume of the performed surgery [3,8]. The lack of a unified point of view on the factors determining the risk of postoperative recurrences in toxic goiter served as a basis for the study.

2. Purpose of the Study

Determination of factors affecting the incidence of recurrence of toxic goiter.

The long-term results of surgical treatment were studied in 147 patients with toxic goiter operated in the surgical department of the multidisciplinary clinic of Samarkand State Medical University. The age of patients at the time of surgery was from 13 to 74 years, the average age was 36.4 ± 7.2 years. Among them 132 (89.8%) were women, 15 (10.2%) were men. Thyrotoxicosis was noted in 123 patients (83,7%), functional autonomy of thyroid gland was revealed in 24 (16,3%). All patients underwent cytologic and postoperative histologic examination before surgery.

In most cases, follicular colloid goiter with signs of hyperfunction was verified in 62 patients (42.2%) and mixed micro- and macrofollicular goiter with signs of hyperfunction in 49 patients (33.3%), nodular or multinodular goiter with signs of hyperfunction was observed in 36 patients (24.5%) (Table 1).

* Corresponding author:

sammi-xirurgiya@yandex.com (Zayniyev Alisher Faridunovich)

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Table 1. Distribution of patients with toxic goiter depending on morphologic form

Morphologic form of toxic goiter	Number of patients	
	abs.	relatively, %
Follicular colloid goiter with signs of hyperfunction	62	42,2
Mixed micro- and macrofollicular goiter with signs of hyperfunction	49	33,3
Nodular or multinodular goiter with signs of hyperfunction	36	24,5
Total	147	100

The volume of operation most often (45,6%) corresponded to subtotal resection according to Nikolayev with thyroid tissue remaining in the volume of 6-8 g, 35,4% of patients underwent subtotal thyroid resection according to Drachinsky with tissue remaining up to 4 g on one side and 21,4% of patients underwent thyroidectomy (Table 2).

Table 2. Distribution of patients with toxic goiter depending on the volume of surgery

Scope of operation	Number of patients	
	abs.	relatively, %
Subtotal resection of the thyroid gland according to Nikolaev	67	45,6
Subtotal thyroid resection according to Drachinsky's procedure	52	35,4
Thyroidectomy	28	19,0
Total	147	100

Duration of toxic goiter disease up to 2 years was determined in 11 (7,5%) patients, from 2 to 5 years in 34 (23,1%), from 5 to 7 years in 52 (35,4%), from 7 to 10 years in 13 (8,8%) and 37 (25,2%) patients with disease duration more than 10 years. The highest recurrence rate was observed in patients with disease duration more than 10 years - 37,8%, and no recurrence was observed in patients with disease duration up to 2 years. Recurrence of the disease with disease duration from 2 to 5 years was detected in 2 (5,9%), from 5 to 7 years in 7 (11,5%), from 7 to 10 years in 4 (30,5%) patients

(Fig. 1.).

Thus, there is a direct correlation between the recurrence rate of toxic goiter and the duration of the disease before surgery, i.e. the longer the disease, the greater the recurrence rate.

In order to reveal the influence of morphologic form on the frequency of toxic goiter recurrence we analyzed histologic studies of removed thyroid tissues (Table 3).

Table 3. Distribution of patients with recurrences depending on the morphologic form of toxic goiter

Morphologic form of toxic goiter	n	Number of patients with recurrences	
		abs.	relatively, %
Follicular colloid goiter with signs of hyperfunction	62	15	24,2
Mixed micro- and macrofollicular goiter with signs of hyperfunction	49	5	10,2
Nodular or multinodular goiter with signs of hyperfunction	36	2	5,6
Total	147	22	15,0

Of 62 cases of follicular colloid goiter with signs of hyperfunction, recurrences were found in 15 patients (24.2%). In 49 patients operated on for mixed micro- and macrofollicular goiter with signs of hyperfunction recurrence was found in 5 patients (10,2%). The lowest recurrence rate was determined in nodular or multinodular goiter with signs of hyperfunction, in 2 observations (5.6%).

The obtained results indicate that the most frequent morphologic structure of recurrent toxic goiter corresponds to follicular colloid goiter with signs of hyperfunction.

During the observation period the recurrence of the disease was absent in patients operated in the volume of thyroidectomy, the recurrence after subtotal thyroid resection according to Drachinsky, performed in 52 patients, developed in 7 patients (13,5%), from 67 patients after subtotal thyroid resection according to Nikolayev the recurrence was revealed in 15 observations (22,4%) (Table 4).

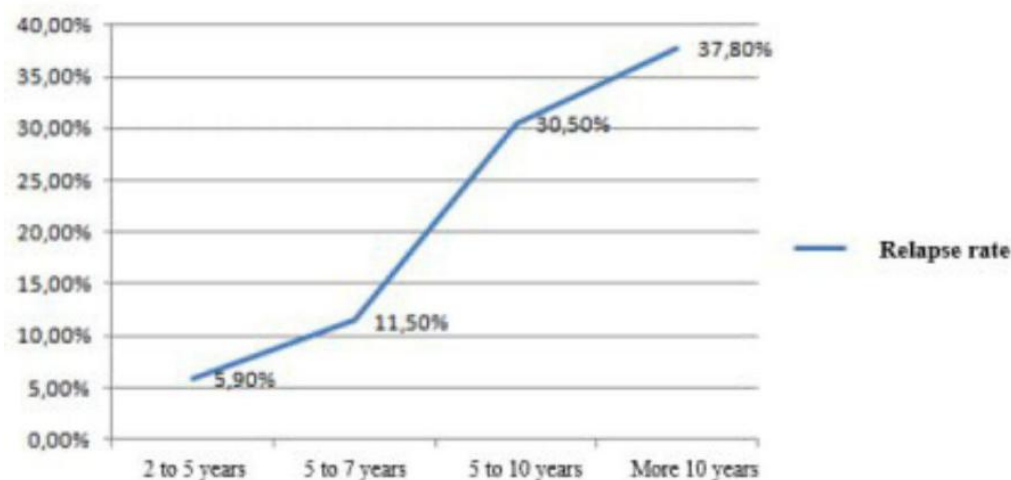
**Figure 1.** Dependence of toxic goiter recurrence on the duration of the disease

Table 4. Distribution of patients with recurrences of nodular goiter depending on the volume of surgery

Scope of operation	n	Number of recurrences	
		abs.	%
Subtotal resection of the thyroid gland according to Nikolaev	67	15	22,4
Subtotal thyroid resection according to Drachinsky's procedure	52	7	13,5
Thyroidectomy	28	0	0
Total	147	22	15,0

From 147 patients with toxic goiter the initial level of antibodies to thyroperoxidase (AB TPO) up to 35 mU/dl was determined in 63 patients, 3 (4,8%) of them developed relapse of toxic goiter. AT TPO in the range of 50 - 100 mU/dl before the operation was determined in 39 patients, relapse of the disease was observed in 6 (15,4%) patients. In 45 patients with initial value of antibodies to thyroperoxidase more than 100 mU/dl, relapse of toxic goiter developed in 13 (28,9%) patients.

Thus, there is a clear pattern of recurrence rate with the initial level of AB TPO before surgery. The higher the level of thyroperoxidase antibodies in patients, the higher the recurrence of toxic goiter in the postoperative period (Table 5).

Table 5. Recurrence rate of toxic goiter as a function of baseline AB TPO level

AB TPO level	Number of patients abs.	Recurrence rate abs. (%)
≤ 35 m/l	63	3 (4,8%)
50 – 100 m/l	39	6 (15,4%)
≥ 100 мЕд/л	45	13 (28,9%)
Total	147	22 (15%)

3. Conclusions

Based on factor analysis of the long-term results of surgical treatment of toxic goiter defined:

1. There is a direct correlation between the recurrence

rate of toxic goiter and the duration of the disease before surgery, i.e. the longer the disease, the higher the recurrence rate. The highest recurrence rate was observed in patients with disease duration more than 10 years - 37,8%.

2. The morphologic structure of the thyroid gland also affects the frequency of toxic goiter recurrence. The highest recurrence rate was determined in follicular colloid goiter with signs of hyperfunction - 24.2%.
3. The recurrence of the disease depended on the volume of surgical intervention. Patients operated on in the volume of thyroidectomy had no recurrence of the disease.
4. There is a clear pattern of recurrence rate with the initial level of AB TPO before surgery. The higher the level of antibodies to thyroperoxidase in patients, the higher the recurrence of toxic goiter in the postoperative period.

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REFERENCES

- [1] The change in surgical practice from subtotal to near-total or total thyroidectomy in the treatment of patients with benign multinodular goiter / S. Tezelman [et al.] // Wld J. Surg. - 2009. - Vol. 33, № 3. - P. 400-405.
- [2] Delbridge L. // Aust. N. Z. J. Surg. 1999. Vol. 69, № 1. P. 34–36.
- [3] Sultanbayevich B. A., Suvonkulovich T. A., Ibodullayevich A. A. Tactics of treatment of thyroid nodules based on the grading scale // Academy. – 2020. – №. 4 (55). – C. 100-104.
- [4] Zayniyev A. F. et al. Results of differentiated surgical treatment of benign origin thyroid nodules // Annals of the Romanian Society for Cell Biology. – 2021. – C. 1962-1969.