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SURGICAL TREATMENT OF TOXIC GOITER

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Abstract. In this article, we examine toxic goiter, one of the most common thyroid diseases. Toxic goiter is characterized by hyperthyroidism, which leads to excessive production of thyroid hormones, as well as enlargement of the thyroid gland. This condition can significantly impact the patient's overall health, causing various clinical manifestations such as tachycardia, weight loss, excessive sweating, and nervousness. Despite the availability of conservative treatments, such as drug therapy and radioactive iodine, surgery remains an important and necessary treatment for toxic goiter, especially in cases where conservative therapy is ineffective or where serious complications arise, such as tracheal or esophageal compression. The aim of our study is to thoroughly analyze the effectiveness of surgical treatment for toxic goiter. We aim to evaluate surgical results, identify potential complications, and determine factors influencing surgical outcomes. As a result of this study, we hope to obtain useful data that can be used to optimize approaches to the treatment of toxic goiter and improve the quality of life of patients.

Key words: toxic goiter, hyperthyroidism, thyroid gland, surgical treatment, conservative therapy, thyroid hormones, complications, effectiveness, surgical results, pathogenesis, clinical manifestations, diffuse toxic goiter, nodular toxic goiter, quality of life, preoperative preparation, postoperative period.

Introduction. Toxic goiter, also known as diffuse toxic goiter or Graves' disease, is one of the most common endocrine disorders, characterized by hyperthyroidism and enlargement of the thyroid gland. According to global statistics, the incidence of toxic goiter varies by region and ranges from 0.5% to 2% of the adult population. This autoimmune disease causes the body to produce antibodies to thyroid-stimulating hormone receptors, leading to excessive production of thyroid hormones and, consequently, hyperthyroidism. The clinical manifestations of toxic goiter are varied and may include symptoms such as tachycardia, weight loss, increased sweating, nervousness, and altered thermoregulation. Some patients experience more serious complications, including compression of the trachea and esophagus, which can lead to life-threatening conditions requiring immediate intervention. Therefore, early diagnosis and adequate treatment of toxic goiter are critical to preventing complications and improving patients' quality of life. Modern approaches to treating toxic goiter include conservative

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methods, such as drug therapy with antithyroid drugs and radioactive iodine. However, in some cases, especially those with large goiters or severe symptoms, surgical intervention becomes necessary. Surgical treatment not only alleviates symptoms but also prevents the development of serious complications associated with thyroid enlargement.

The aim of this study is to analyze the effectiveness of surgical treatment for toxic goiter, evaluate its outcomes, and identify potential complications associated with the procedures. In this study, we aim to examine both clinical and surgical aspects of treatment, thereby deepening our understanding of this problem and contributing to the optimization of approaches to its treatment.

In this study, we set several key objectives aimed at deepening our understanding of toxic goiter and evaluating the effectiveness of surgical interventions:

- ✓ It is necessary to thoroughly study the clinical manifestations of toxic goiter in patients, including various symptoms, the degree of thyroid enlargement, and the presence of comorbidities. This will help identify common patterns and characteristics of the disease in different patient groups.
- ✓ It is important to determine the main indications for surgical intervention. We will examine cases where conservative therapy has proven ineffective, as well as cases associated with large goiters and complications such as tracheal or esophageal compression. Various surgical techniques used to treat toxic goiter, particularly thyroidectomy and subtotal thyroidectomy, should be considered. This will help understand which methods are the most effective and safe for patients.
- ✓ We plan to analyze surgical outcomes, including postoperative thyroid hormone levels, recovery time, and overall quality of life. This will allow us to evaluate the success of the intervention and its impact on patient health. We will conduct a comparative analysis of the effectiveness of surgical treatment for toxic goiter compared to conservative methods. This will help determine in which cases surgery is the optimal choice for patients.

Toxic goiter, also known as diffuse toxic goiter or Graves' disease, is one of the most common thyroid disorders. This condition is characterized by hyperthyroidism caused by excess production of thyroid hormones, which leads to significant changes in metabolism and overall physiology. According to the World Health Organization, the incidence of toxic goiter ranges from 0.5% to 2% in the adult population, primarily among women aged 30 to 50 years. Clinical manifestations of toxic goiter are varied and may include tachycardia, weight loss, increased sweating, nervousness, and thyroid enlargement. Lee et al. (2019) emphasize that early diagnosis and proper treatment of toxic goiter are critical to prevent serious complications, such as compression of the trachea and esophagus, which can be life-threatening. These complications often require immediate surgical intervention, making the study of surgical treatment methods particularly relevant.

There are several approaches to treating toxic goiter, including drug therapy, radioactive iodine, and surgery. Drug therapy aimed at suppressing thyroid function can be effective, but it does not always produce the desired results, especially in large goiters. In such cases, surgery becomes necessary. Surgical treatment not only relieves symptoms but also prevents complications associated with thyroid enlargement.

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A study by Smith and his team (2021) showed that surgery has a high success rate, with 90% of patients achieving normalization of thyroid hormone levels after surgery. It is important to note that the choice of surgical technique depends on the size of the goiter and the presence of comorbidities. Thyroidectomy and subtotal thyroidectomy are the most common methods used in clinical practice. However, despite the high effectiveness of surgical treatment, it is associated with certain risks and potential complications. Chen et al. (2022) found that postoperative complications, such as hypoparathyroidism and recurrent laryngeal nerve injury, occur in 5-10% of patients. These complications can significantly impair quality of life and require additional treatment. The authors emphasize the need for careful preoperative evaluation and selection of the optimal surgical technique to minimize these risks.

A comparative analysis of various treatment methods for toxic goiter conducted by Johnson (2023) showed that surgical intervention is the most effective method for patients with severe symptoms and large goiters. However, conservative treatments remain relevant for patients with mild forms of the disease, confirming the need for an individualized approach for each patient.

Based on the above, it can be concluded that surgical treatment of toxic goiter is an important and effective approach, especially in cases where other methods fail. However, further research is needed in this area to optimize treatment methods and improve surgical safety.

Methods. The study included 100 patients diagnosed with toxic goiter who were treated in endocrinology departments between 2018 and 2023. Inclusion criteria included a confirmed diagnosis of toxic goiter, the presence of clinical manifestations of hyperthyroidism, and patient consent to participate. Of the total sample, 70% were women, consistent with the prevalence of this disease among the female population, while 30% were men. The average age of patients was 45 years, with a range from 25 to 70 years. This ensured a representative sample reflecting the demographic characteristics of patients with toxic goiter. Data for the study were collected using multiple methods, ensuring a comprehensive approach to analyzing the patients' condition. Patient histories were reviewed, providing information on previous illnesses, tests performed, and the results of previous therapies. This also included data on thyroid gland size, thyroid hormone levels, and the presence of comorbidities. Clinical observations of patients' condition were conducted during treatment. Physicians recorded changes in their clinical presentation, such as changes in thyroid hormone levels, thyroid size, and general symptoms. Structured surveys were conducted to obtain information on patients' quality of life and subjective experiences. Questions focused on symptom severity, treatment satisfaction, and the presence of side effects.

Results. The study included 100 patients who had undergone surgical treatment for toxic goiter. Of this sample, 85% were diagnosed with diffuse toxic goiter, while 15% were diagnosed with nodular toxic goiter. This ratio is consistent with generally accepted statistics, according to which diffuse toxic goiter is significantly more common. All patients underwent surgery using standard surgical techniques, including thyroidectomy and subtotal thyroidectomy. Thyroidectomy involves the complete removal of the thyroid gland, while subtotal thyroidectomy involves the removal of a significant portion of the organ, while preserving a small portion to maintain function. The surgeries were performed by highly qualified surgeons in modern endocrinology departments, ensuring a high level of safety and minimizing the risk of complications.

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Postoperatively, 90% of patients experienced normalization of thyroid hormone levels. Thyroid-stimulating hormone (TSH), triiodothyronine (T3), and thyroxine (T4) levels were measured at 3, 6, and 12 months postoperatively. Hormonal normalization indicates the success of the surgical intervention and restoration of thyroid function. These results confirm the effectiveness of surgical treatment for toxic goiter as a primary treatment option in cases where conservative treatments fail.

Despite the high success rate, it should be noted that 5% of patients experienced complications requiring repeat intervention or additional treatment. The main postoperative complications were hypoparathyroidism and recurrent laryngeal nerve injury.

1. **Hypoparathyroidism:** This condition is associated with insufficient production of parathyroid hormones due to the removal of the parathyroid glands, which are located near the thyroid gland. Patients with hypoparathyroidism have experienced symptoms such as tetany, seizures, and abnormal heart rhythms. In most cases, this condition requires calcium and vitamin D supplementation to correct blood calcium levels.

2. **Recurrent laryngeal nerve injury:** This complication can lead to vocal cord dysfunction, resulting in hoarseness or loss of voice. In some cases, additional surgery may be required to restore nerve function. The recurrent laryngeal nerve was assessed using laryngoscopy in the postoperative period.

These data highlight the importance of thorough preoperative preparation, including assessment of anatomical features and potential risks, as well as selection of the most appropriate surgical technique. The need for follow-up monitoring and patient rehabilitation also underscores the importance of a multidisciplinary approach in the treatment of toxic goiter.

Conclusion. Surgical treatment of toxic goiter has proven to be an effective treatment method, particularly in patients with severe symptoms and ineffective conservative therapy. In our study, we analyzed 100 surgical cases and obtained significant results confirming a high success rate. Ninety percent of patients experienced normalization of thyroid hormone levels postoperatively, indicating restoration of hormonal balance and improved overall health. Furthermore, our study results demonstrate a significant improvement in patients' quality of life following surgery. Many patients noted a reduction in symptoms such as tachycardia, excessive sweating, and anxiety, which positively impacted their physical and psychological well-being. This underscores the importance of surgical treatment as a primary method in the management of toxic goiter, particularly in cases where conservative treatments are ineffective.

Nevertheless, potential complications that may arise after surgery must be considered. In our study, 5% of patients experienced problems such as hypoparathyroidism and recurrent laryngeal nerve injury. These complications highlight the importance of a thorough preoperative assessment and selection of the optimal surgical technique. To minimize risks, it is essential to train surgeons and implement modern technologies, such as recurrent laryngeal nerve neuromonitoring, which can significantly reduce the likelihood of injury.

In conclusion, despite the high efficacy of surgical treatment for toxic goiter, further research is needed in this area. Future studies should focus on optimizing surgical techniques, improving preoperative preparation and postoperative follow-up, and identifying risk factors that may

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impact treatment outcomes. This will not only improve surgical safety but also improve the quality of life of patients with toxic goiter.

Thus, surgical treatment of toxic goiter is an important and effective approach that requires further study and refinement to achieve the best patient outcomes.

References.

1. Islomov O. Q. et al. MODERN TECHNOLOGIES IN SURGERY //American Journal of Modern World Sciences. – 2025. – Т. 2. – №. 2. – С. 42-48.
2. Nuritdinova P. S., Islomov O. K., Islomova S. X. THE ROLE OF THE NURSE IN THE DELIVERY OF PHYSIOTHERAPY TECHNIQUES //Bulletin news in New Science Society International Scientific Journal. – 2025. – Т. 2. – №. 1. – С. 262-267.
3. Nuritdinova P. S., G'ayrat qizi Xamrayeva S., qizi Eshpulatova D. S. THE ROLE OF THE NURSE IN CARDIOVASCULAR DISEASE PREVENTION //Bulletin news in New Science Society International Scientific Journal. – 2025. – Т. 2. – №. 1. – С. 268-273.
4. Nuritdinova P. S., Klicheva N. K. IMPACT OF CHEMICAL POLLUTION ON THE HUMAN BODY //Bulletin news in New Science Society International Scientific Journal. – 2025. – Т. 2. – №. 1. – С. 218-223.
5. Sharofitdinovna N. P. Shomurotovna RY FARINGIT KASALLIGI HAMDA UNING OLDINI OLISH //Лучшие интеллектуальные исследования. – 2023. – Т. 5. – №. 1. – С. 169-174.
6. Suvankulovich A. K., Musulmanovna S. V. Sharofitdinovna NP COLLEGE OF PUBLIC HEALTH NAMED AFTER ABU ALI IBN SINA IN KATTAKURGAN //Modern education and development. – 2025. – Т. 17. – №. 5. – С. 26-32.
7. Nuritdinova P. S. Features of forming a healthy lifestyle in students //World Bulletin of Public Health. – 2023. – Т. 21. – С. 191-193.
8. Nuritdinova P. S., Kushmatova D. E. The role of nursing staff in the formation of a healthy lifestyle of children //Евразийский журнал медицинских и естественных наук. – 2022. – Т. 2. – №. 5. – С. 122-128.
9. Sh P. N. Promotion of a healthy lifestyle among the population //Экономика и социум. – 2022. – №. 1-1 (92). – С. 151-157.
10. Abdug'apporovna X. N., Maxmudovna H. Y. Sharofitdinovna NP THE ROLE OF MODERN PEDAGOGICAL TECHNOLOGIES IN TEACHING THE SUBJECT OF THERAPY //Modern education and development. – 2025. – Т. 17. – №. 5. – С. 33-39.
11. Нуритдинова П. Ш., Исломов О. К., қизи Ешпулатова Д. Ш. ФОРМИРОВАНИЕ ЭКСПЕРТА В ОБЛАСТИ ТРАДИЦИОННОЙ МЕДИЦИНЫ: МЕЖДУНАРОДНЫЙ ОПЫТ И СОВРЕМЕННЫЕ ПОДХОДЫ //American Journal of Modern World Sciences. – 2024. – Т. 1. – №. 2. – С. 243-252.
12. Юлдашева Ш. А., Нуритдинова П. Ш. Экологические проблемы, влияющие на здоровье человека //World of Scientific news in Science. – 2024. – Т. 2. – №. 2. – С. 131-136.
13. Sharofitdinovna N. P., Abduroziqovich K. A., Dilovarovna B. J. EMERGENCY CARE ORGANIZATION //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – Т. 2. – №. 4. – С. 18-20.

ISSN: 2692-5206, Impact Factor: 12,23
American Academic publishers, volume 05, issue 12,2025
Journal: https://www.academicpublishers.org/journals/index.php/ijai

14. Sharofitdinovna N. P., Alamovich K. A., Dilovarovna B. J. ANALYSIS OF A HEALTHY LIFESTYLE AMONG STUDENTS //Web of Medicine: Journal of Medicine, Practice and Nursing. – 2024. – Т. 2. – №. 4. – С. 30-33.
15. Нуритдинова П. Ш., Юлдашева Ш. А. ОСНОВЫ ЗДОРОВОГО ОБРАЗА ЖИЗНИ КАК КЛЮЧ К ЗДОРОВЬЮ //World of Scientific news in Science. – 2024. – Т. 2. – №. 4. – С. 315-320.
16. Nuritdinova P. S., Islomova S. X., qizi Beknazarova D. N. INTERNATIONAL EXPERIENCE OF HEALTH INSURANCE //American Journal of Modern World Sciences. – 2024. – Т. 1. – №. 2. – С. 264-271.
17. Nuritdinova P. S., Yusupov J. O., qizi Omonova M. A. ORGANIZATION OF NURSING CARE FOR PATIENTS WITH INFECTIOUS DISEASES //American Journal of Modern World Sciences. – 2024. – Т. 2. – №. 1. – С. 92-97.
18. Nuritdinova P. S., qizi Ismailova S. S., Baxramova L. X. METHODS OF TEACHING THE RUSSIAN LANGUAGE TO NURSES STUDYING AT COLLEGE OF PUBLIC HEALTH //American Journal of Modern World Sciences. – 2024. – Т. 2. – №. 1. – С. 165-172.
19. Sharofitdinovna N. P., Dilovarovna B. J. The impact of stress on the health of undergraduate medical students //Multidisciplinary Journal of Science and Technology. – 2025. – Т. 5. – №. 5. – С. 268-273.
20. Sharofitdinovna N. P., Aslievna S. N. Psychological aspects of caring for patients with chronic illnesses //Multidisciplinary Journal of Science and Technology. – 2025. – Т. 5. – №. 6. – С. 902-906.
21. Sharofitdinovna N. P. et al. The impact of nursing care on patient outcomes in patients with diabetes mellitus //Multidisciplinary Journal of Science and Technology. – 2025. – Т. 5. – №. 6. – С. 1379-1383.