

Analysis of the results of the surgical treatment of thyroid and parathyroid diseases

Vladimir F. Kulikovskiy*, Alexander V. Soloshenko, Andrei L. Iarosh, Alexander A. Karpachev, Sergei B. Nikolaev, Alexandra A. Korjova, Gnashko V. Angela, Svetlana S. Gorelik

ABSTRACT

Aim: Diseases of the thyroid gland take an important place in the structure of the endocrine system's pathology. **Materials and Method:** To determine the optimal tactics of the surgical treatment for various diseases of the thyroid and parathyroid glands a retrospective analysis of the results of surgical treatment of 727 patients was performed between 2014 and 2016 in the Surgical Department No 1, Belgorod Regional Clinical Hospital of St. Joasaph. **Results and Discussion:** Patients were admitted after an endocrinological out-patient examination with such clinical diagnoses: Nodular euthyroid goiter 371 (51%), diffuse-nodal euthyroid goiter 15 (2.1%), diffuse euthyroid goiter 2 (0.3%), diffuse toxic goiter 132 (18.2%), diffuse-nodal toxic goiter 36 (5.0%), nodal toxic goiter 97 (13.3%), autoimmune thyroiditis 9 (1.2%), thyroid cancer 33 (4.5%), recurrent goiter 27 (3.7%), and parathyroid adenoma 5 (0.7%). In all nosological groups, females have traditionally predominated. The diagnostic tests included an ultrasound of the thyroid gland, T3, T4, TSH, and, if necessary, computed tomography scan. Further, during the choose of the treatment tactic, we adhered to the principle of maximum surgical radicalism, especially in the treatment of patients with toxic and multinodular goiter forms, since unjustified leaving of the thyroid tissue can lead to the risk of the recurrence of the disease. According to the results of our work, the percentage of thyroidectomies in the past 3 years (2014–2016) was 70.1%. **Conclusion:** At the same time, an increase in the percentage of radical operations did not lead to a significant increase in the segment of the specific complications (injury of the recurrent laryngeal nerve-1.65%, bleeding-0.4%, hypoparathyroidism-2.5%).

KEY WORDS: Parathyroid glands, Surgical treatment, Thyroid gland

INTRODUCTION

Among the endocrine pathology, diseases of the thyroid gland are in second place after diabetes mellitus. According to the WHO, about 2 billion people live in the conditions of iodine deficiency, which leads to the various diseases of the thyroid gland.^[1,2]

Nodular goiter refers to the most common pathology of the thyroid gland. It can be determined by palpation in not <2–5% of the general population. In the iodine deficiency areas, the prevalence of a nodular goiter can reach 7–20%. With age, the prevalence of the nodular goiter increases: In women, the nodular goiter occurs 5–10 times more often than in men. In the structure of the nodular goiter, a colloidal goiter occurs in about 85–90%, adenomas-5–8%, and malignant tumors.^[3]

Thyroid cancer is a malignant tumor that grows from the epithelium of the thyroid gland. This is the most common malignant tumor of the endocrine organs. It is known that thyroid cancer is 3–3.5 times more common in women than in men. The peak incidence of the thyroid cancer, according to various authors, is 41–45 year-old. The annual increase in the incidence of thyroid cancer in different countries varies from 2 to 12%.^[4,5] In the treatment of thyroid diseases, the surgical method still plays a leading role. Despite the proven technique of performing, thyroid surgery remains one of the most difficult in surgery and is accompanied by a large number of specific complications developing after these operations. Hence, according to the literature, the frequency of the laryngeal paralysis due to the injury to the recurrent laryngeal nerve can reach up to 20%, which, however, is rarely diagnosed by surgeons intraoperative, and suspicions appear only with the development of a significant clinical picture. Another serious complication is

Access this article online

Website: jprsolutions.info

ISSN: 0974-6943

Department of Hospital Surgery, Institute of Medicine, Belgorod State University, Pobeda str. 85, Belgorod, 308015, Russia

*Corresponding author: Vladimir F. Kulikovskiy, Honored Doctor of the Russian Federation, Institute of Medicine, Belgorod State University, Pobeda str. 85, Belgorod, 308015, Russia. E-mail: yarosh_a@bsu.edu.ru

Received on: 25-09-2017; Revised on: 18-10-2017; Accepted on: 08-12-2017

post-operative hypoparathyroidism. Transient post-operative hypoparathyroidism develops in 6.9–46% of cases and is characterized by the restoration of a normal phosphoric-calcium metabolism within 1 year after the operation. Even in the hands of experienced surgeons, the incidence of persistent post-operative hypoparathyroidism ranges from 0.9 to 1.6%. Post-operative hemorrhages according to the literature occur in 0.1–9.0% of the cases.^[6-10]

MATERIAL AND METHODS

In work, a retrospective analysis of the surgical treatment of 727 patients with thyroid and parathyroid disease was performed from 2014 to 2016 in the Surgical Department of Belgorod State University. Among them were 74 men (10.2%) and 653 (89.8%) women. The average age of patients was 49.4 ± 12.9 years, for men 48.3 ± 12.5 years, for women 49.5 ± 12.9 years. Statistically significant differences in the age of patients between men and women have not been identified. 726 patients were underwent the routine procedure; one patient was admitted and operated urgently with a clinic of a stenosis of the larynx and respiratory failure due to extra organ compression and laryngeal paralysis caused by a large goiter.

At the admission patients often complained of a feeling of lack of air, shortness of breath, the presence of a knot or a foreign body on the front surface of the neck, palpitations. The variety of the diagnostic tests included an ultrasound of the thyroid gland, T3, T4, TSH, if necessary computed tomography scan. The minimum volume of the thyroid was 5.36 cm^3 , the maximum was 296 cm^3 . The scope of surgical intervention depended on the results of the clinical and instrumental research methods and an intraoperative situation.

RESULTS AND DISCUSSION

All patients were admitted to the hospital after an out-patient endocrinological examination with clinical diagnoses: Nodular euthyroid goiter 371 (51%), diffuse-nodular euthyroid goiter 15 (2.1%), diffuse euthyroid goiter 2 (0.3%), diffuse toxic goiter 132 (18.2%), diffuse-nodal toxic goiter 36 (5.0%), nodular toxic goiter 97 (13.3%), autoimmune thyroiditis 9 (1.2%), thyroid cancer 33 (4.5%), recurrent goiter 27 (3.7%), and parathyroid adenoma 5 (0.7%).

155 (21.3%) patients had concomitant pathology, among which cardiovascular pathology was predominated. In elderly and senile patients with severe concomitant diseases, all indications and contraindications to the operation were weighed, operative risk assessed and in each case the issue was solved individually. In the most cases, with

absolute indications for surgery, the rejection to make an operation was a rare exception. Thus, we did not find any contraindications to thyroid surgery, or they were temporary. Severe cardiovascular diseases (heart diseases, hypertension, and atherosclerosis), complicated by edema, stagnant liver, ascites, were subject to pre-treatment for compensation. Temporary contraindications included acute infections (influenza, angina, and pneumonia) and acute purulent diseases.

The structure of the performed surgical interventions on the thyroid is presented in the following way: Hemithyroidectomy-172 (23.8%), subtotal resection of thyroid gland-45 (6.2%), and thyroidectomy-505 (70%).^[1]

According to the post-operative pathohistological examination of the nodular, diffuse-nodular, diffuse euthyroid goiters were observed in 388 patients. Among them, a different degree of lymphocyte infiltration of thyroid tissue along with macro-follicular outgrowth was noted in 239 (61.5%) of cases. Along with colloidal nodes, in 44 (11.3%) patients, tumor sites were found in a histological study: Follicular adenoma 49 (12.6%), B-cell adenoma in 10 (2.6%), A-cell adenoma in 1 patient (0.25%), and cancer in 12 (3.1%) patients. Different types of thyroiditis including lymphomatous, giant cell thyroiditis, and Hashimoto's thyroiditis were found in 30 (7.7%) patients. Nodular goiter with an autoimmune component was presented in 22 (5.7%) patients.

Thyrotoxic goiter in the analyzed group of patients was observed in 265 patients, 138 (52.1%) of them had nodal (multinodular) goiter, including follicular adenoma in 34 (12.8%) cases, B-cell adenoma in 4 (1.5%) cases, diffuse toxic goiter in 62 (23.4%) cases, toxic thyroid adenoma in 14 (5.3%) cases, autoimmune thyroiditis with nodulation 13 (4.9%) cases, papillary thyroid cancer in 6 (2.2%) cases, and A-cell adenoma in 1 (0.3%) case.

Malignant neoplasms according to the histological examination of the surgical material were detected in 33 patients. Herewith, at the admission the diagnosis of thyroid cancer was confirmed only in 16 (48.5%) cases, in other cases, the diagnosis was confirmed after the pathohistological examination of the operating material. Among the histological forms, follicular cancer was observed in 2 (6%) patients, papillary cancer in 30 (90%), and cancer of the papillary-follicular structure in 1 patient.^[5]

The type of surgical interventions in the disease of the parathyroid is as follows: Parathyroidectomy-1, thyroidectomy-3, and hemithyroidectomy-1. In one case, the adenoma of the parathyroid gland was combined with papillary thyroid cancer, in two

with nodal euthyroid goiter, which required the implementation of thyroidectomy.

In all cases, primary hyperparathyroidism was observed, in one of them in severe form, with severe osteodystrophy. The level of parathyroid hormone ranged from 68 to 136 U/l.

The analysis of complications after thyroid and parathyroid surgery showed that the incidence of an injury to the recurrent laryngeal nerve was in 12 (1.65%) patients, in two cases tracheostomy were required, in one case it was planned preoperatively, bleeding in the post-operative period was observed in 3 (0.4%) patients, and post-operative hypoparathyroidism, which required drug correction, in 18 (2.5%) patients.^[8] Statistically significant dependencies of the number of complications with the duration of the disease, the size of the gland were not revealed. All the observed complications occurred in women.

CONCLUSION

The spread of thyroid diseases has been increasing in the recent decades, which is associated with an improved diagnosis and detection of this pathology. Hence, according to our data, the prevailing number of the patients, who were operated due to benign thyroid diseases, was patients with a nodal, diffuse-nodular, and diffuse euthyroid goiter 388 (53.3%). On second place were patients with a toxic form of a goiter 265 (36.4%). Among the patients, females traditionally predominated in all nosological groups. During the thyroid operations individual approach should be fundamental as the choice of treatment strategy, but in our work, we adhere to the principle of maximum surgical radicalism, especially in the treatment of patients with toxic goiters and multinodular forms, as an unjustified abandonment

of tissue may result in the risk of the recurrence of the disease. Hence, due to the results of our work the percentage of total thyroidectomy during the past 3 years (2014–2016.) was 70.1%. Moreover, increasing the percentage of radical operations due to our data has not led to a significant increase in the proportion of specific complications (injury of the recurrent laryngeal nerve-1.65%, bleeding-0.4%, and hypoparathyroidism-2.5%).

REFERENCES

1. Chen AY, Bernet VJ, Carty SE, Davies TF, Ganly I, Inabnet WB 3rd, *et al.* American thyroid association statement on optimal surgical management of goiter. *Thyroid* 2014;24:181-9.
2. Lin YS, Wu HY, Yu MC, Hsu CC, Chao TC. Patient outcomes following surgical management of multinodular goiter: Does multinodularity increase the risk of thyroid malignancy? *Medicine (Baltimore)* 2016;95:e4194.
3. Wienhold R, Scholz M, Adler JR, G Nster C, Paschke R. The management of thyroid nodules: A retrospective analysis of health insurance data. *Dtsch Arztebl Int* 2013;110:827-34.
4. Calò PG, Medas F, Santa Cruz R, Podda F, Erdas E, Pisano G, *et al.* Follicular nodules (Thy3) of the thyroid: Is total thyroidectomy the best option? *BMC Surg* 2014;14:12.
5. Mitchell AL, Gandhi A, Scott-Coombes D, Perros P. Management of thyroid cancer: United kingdom national multidisciplinary guidelines. *J Laryngol Otol* 2016;130:S150-60.
6. Diaconescu MR, Glod M, Costea I. Clinical features and surgical treatment of thyroid pathology in patients over 65 years. *Chirurgia (Bucur)* 2016;111:120-5.
7. Quérat C, Germain N, Dumollard JM, Estour B, Peoc'h M, Prades JM. Surgical management of hyperthyroidism. *Eur Ann Otorhinolaryngol Head Neck Dis* 2014;132:63-6.
8. Dralle H, Stang A, Sekulla C, Rusner C, Lorenz K, Machens A, *et al.* Surgery for benign goiter in germany: Fewer operations, changed resectional strategy, fewer complications. *Chirurg* 2014;85:236-45.
9. Kandil E, Noureldine SI, Abbas A, Tufano RP. The impact of surgical volume on patient outcomes following thyroid surgery. *Surgery* 2013;154:1346-52.
10. Miccoli P, Frustaci G, Fosso A, Miccoli M, Materazzi G. Surgery for recurrent goiter: Complication rate and role of the thyroid-stimulating hormone-suppressive therapy after the first operation. *Langenbecks Arch Surg* 2015;400:253-8.