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Research Article

ANALYSIS OF THE RESULTS OF SURGICAL TREATMENT OF THYROID NODULES

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ABSTRACT

The study included the results of treatment of 368 patients with benign thyroid nodules who were admitted to the surgi-cal department of the multidisciplinary clinic of Samarkand State Medical University in the period from 2010 to 2023. Depending on the volume of the thyroid gland to be removed, the following types of operations were performed: Thy-roidectomy, Subtotal resection of the thyroid gland, Hemithyroidectomy with partial resection of the other lobe of the thyroid gland, Hemithyroidectomy, Partial resection of the thyroid gland. The developed algorithm for choosing tactics for surgical treatment of thyroid nodules, taking into account the volume of removal of the thyroid gland according to the conclusion of fine-needle aspiration biopsy or express bopsy, made it possible to improve the quality of care provid-ed by reducing the frequency of immediate postoperative complications from 14.8% (40 patients in the group compari-son) to 2.9% (4 patients in the main group) ($\chi 2$ criterion = 4.954; Df=1; p=0.027) and unsatisfactory results in the long-term postoperative period from 32.1% (52 patients in the comparison group) to 11, 3% (in 12 patients in the main group) ($\chi 2$ criterion = 4.692; Df = 1; p = 0.031).

KEYWORDS

Nodular goiter, surgical treatment, relapse.

INTRODUCTION

Treatment of thyroid nodules (TNO) is a complex surgical problem. The most common method of surgery remains strumectomy with various options for removing thyroid nodules (TG), which is performed in

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the vast majority of cases (90.6%) of PTG [1, 2, 3, 7, 10]. "However, a fairly high frequency of post-operative complications and numerous cases of postoperative relapses of the disease (15-44%), postop-erative hypothyroidism (25 - 63%) indicatelack of effectiveness and reliability of common surgical tac-tics" [4, 6, 8, 9, 12, 13].

The analysis of the literature also indicates that at the present time, treatment and diagnostic tactics for PTG is one of the pressing and unresolved problems of modern healthcare [5, 11]. In this regard, there is a need to revise the criteria for the radicality of surgical intervention for PTO, depending on the information content of visualization methods and morphological studies, which allow, at the preoperative stage, to assess the features of the structure of the node and identify signs of disease aggression, and therefore, optimization of the diagnostic algorithm in order to select the most radical tactics of surgical treatment in each specific case.

Purpose of the study

Improving the results of surgical treatment of patients with parathyroid gland.

METHODS

The study included the results of treatment of 368 patients with benign PTG who were admitted to the surgical department of the multidisciplinary clinic of Samarkand State Medical University in the period from 2010 to 2023. Our study did not include patients with toxic forms of PTO.

The patients were conditionally divided into two groups. In 2010-2018 230 (62.5%) patients were operated on and made up the comparison group, the main group - 138 (37.5%) patients operated on in the period 2019 - 2023. The comparison group was also conditionally divided into two subgroups: sub-group 1 consisted of 127 (55.2%) patients operated on in the period 2010-2014, subgroup 2 - 103 (44.8%) - patients operated on in 2015 - 2018.

The examination of patients with parathyroid gland met the clinical standards recommended by WHO and the Ministry of Health of the Republic of Uzbekistan: - general clinical (examination of the neck area, palpation of the thyroid gland); - general clinical laboratory tests; - determination of the level of thyroid hormones (TSH, T3, T4); - examination by an endocrinologist; - examination by an ENT doc-tor in case of phonation disturbance.

Morphological studies of the parathyroid gland included fine-needle aspiration biopsy, intraopera-tive express biopsy, and routine histological examination of removed thyroid tissue. At the same time, in the comparison group (230 patients), TPAB and a final histological examination of the removed thyroid specimen were performed to determine the likelihood of malignancy of the node. In the main group of patients (138 patients), in addition to determining the factor of possible thyroid cancer, the nature of be-nign changes in nodular and perinodular tissue was differentiated. The algorithm for morphological stud-

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ies in the main group of patients also included an intraoperative express biopsy of thyroid tissue.

Depending on the volume of the thyroid gland to be removed, the following types of operations were performed: Thyroidectomy, Subtotal resection of the thyroid gland, Hemithyroidectomy with partial resection of the other lobe of the thyroid gland, Hemithyroidectomy, Partial resection of the thyroid gland (Table 1).

Table 1.
Performed surgeries for PTG

Type of surgery	Number of operations performed			
	Main group	Comparison group		Total
		1 subgroup	2 subgroup	
Thyroidectomy	10	4	15	29(7.9%)
Subtotal resection of the thyroid gland	54	23	62	139(37.8%)
Hemithyroidectomy with partial resection of another lobe of the thyroid gland	23	18	9	50(13.6%)
Hemithyroidectomy	37	51	12	100(27.1%)
Partial resection of the thyroid gland	14	31	5	50(13.6%)
Total:	138	127	103	368(100%)

127 patients 1 - subgroup of the comparison group underwent the following operations: thyroidec-tomy in 4 patients, subtotal resection in 23 patients, hemithyroidectomy with partial resection of the other lobe in 18 patients, hemithyroidectomy in 51 patients and partial resection of the thyroid gland in 31 pa-tients, i.e. In 78.7% of cases, organ-preserving operations were performed.

103 patients of the 2nd subgroup of the comparison group underwent the following operations: thyroidectomy in 15 patients, subtotal resection in 62 patients, hemithyroidectomy with partial resection of the other lobe in 9 patients, hemithyroidectomy in 12 patients and partial resection of the thyroid gland in 5 patients. In this subgroup, preference is given to performing more radical surgical interven-tions. As can be seen from Table 1, in this subgroup, radical operations were performed in 74.7% of cases: thyroidectomy was performed in 14.6% and subtotal resection in 60.2% of cases.

138 patients of the main group underwent the following operations: thyroidectomy in 10 patients, subtotal resection of the thyroid gland in 54 patients, hemithyroidectomy with partial resection of the other lobe in 23 patients, hemithyroidectomy in 37 patients and partial resection of the thyroid gland in 14 patients. In the main group of patients, 53.6% underwent organ-preserving operations, 46.4% under-went radical operations, i.e. approximate ratio 1:1.

RESULTS

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The results of surgical treatment of PTG in the immediate postoperative period were assessed by the following indicators: bleeding during and in the postoperative period, the course of the postoperative period, the presence of signs of paresis of the recurrent laryngeal nerve, the presence of convulsions, the nature of healing of the surgical wound, the length of stay of patients in the hospital (bed/day) , duration of operation (min.), increased body temperature, signs of peritracheal and subcuta-neous hematomas according to ultrasound data.

Improving the choice of tactics for surgical treatment of parathyroid gland, surgical technique, re-ducing the trauma of surgical access and other innovations developed and implemented within the framework of this study could not but affect the immediate results of managing this category of patients. So, compared to 2015-2018. the frequency of immediate postoperative complications decreased from 33.0 to 5.1%, i.e. 6 times (Table 2). Complications such as bleeding (5 times), paresis of the recurrent laryngeal nerve (3 times), hypoparathyroidism (15 times) became much less common; there were no such dangerous complications as persistent paralysis of the recurrent laryngeal nerve and asphyxia, inThe duration of inpatient treatment was reduced by 2 times – from10.2±1.2 to 5.9±0.3 days (Table 3).

Table 2.

Comparative analysis of the frequency of immediate postoperative complications in patients with PTG

Type of complication		Group of patients						Total, n=368	
		Comparison group				main, n=138			
		1-subgroup, n=127		2-subgroup, n=103					
		abs.	%	abs.	%	abs.	%	abs.	%
Complications arising during surgery									
Bleeding		4	3.1	7	6.8	2	1.4*	13	3.5
Asphyxia		0	0	1	0.97	0	0	1	0.3
Complications that occur after surgery									
Bleeding with development of hematoma		2	1.6	3	2.9	0	0	5	1.4
Transient paresis of the recurrent laryngeal nerve		2	1.6	9	8.7	4	2.9*	15	4.1
Persistent recurrent laryngeal nerve palsy		0	0	1	0.97	0	0	1	0.3
Hypoparathyroidism	Transitory	5	3.9	10	9.7	1	0.7	16	4.3
	Permanent	1	0.8	2	1.94	0	0	3	0.8
Complications from the wound		2	1.6	1	0.97	0	0	3	0.8
Total complications		16	12.6	34	33.0	7	5.1***	57	15.5
Number of patients with complications		eleven	8.7	23	22.3	4	2.9*	38	10.3

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Note: * - differences relative to the comparison group data are significant (* - P<0.05, *** - P<0.001)

Table 3.
The course of the postoperative period in patients with PTG

Group of patients		Number of bed days			
		Total	before surgery	ICU	after operation
Comparison group	1-subgroup, n=127	10.2±1.2	3.0±0.3	2.1±0.1	6.2±1.2
	2-subgroup, n=103	9.4±0.6***	2.3±0.3**	1.7±0.1**	5.4±0.5***
Main, n=138		5.9±0.3***^^^	2.0±0.2**	1.0±0.1*	2.9±0.3***^^^
Total, n=368		14.9±0.7	3.5±0.2	2.9±0.1	7.4±0.5

Note: * - differences relative to the data of the 1st subgroup of the comparison group are significant (* - P<0.05, ** - P<0.01, *** - P<0.001), ^ - differences relative to the data of the 2nd subgroup comparison groups are significant (^ - P<0.05, ^^^ - P<0.001)

Long-term results were analyzed in 268 (72.8%) of 368 patients operated on for PTG. One of the main indicators characterizing the effectiveness of surgical intervention for PTG is the frequency of dis-ease relapses. When studying the nature of the relapse, the localization of the initially operated and re-identified node, the timing of the relapse, the features of previously used methods of surgical interven-tion, the number, size and morphological forms of primary PTC were compared.

Of 268 patients examined long-term, recurrence of PTG was observed in 33 (12.3%) patients, while in the group of patients operated on in 2010-2014, this figure reached 26.4% (Table 4). Subse-quently, the frequency of disease relapses was reduced in the 2nd subgroup of the comparison group to 8.0%, and in the main group to 3.8% ($\chi 2$ criterion = 4.692; p = 0.031).

We studied and analyzed the long-term results of surgical treatment of PTG in order to determine the influence of the choice of the volume of surgical interventions in the study groups and compared them with each other (Table 5).

Table 4.
Recurrence rate of PTC

Nature of relapse	Comparison group				Main group n=106		Total n=268	
	1-subgroup n=87		2-subgroup n=75					
	abs.	%	abs.	%	abs.	%	abs.	%
Nodular goiter	10	11.5	2	2.7	1	0.9	13	4.8
Multinodular goiter	13	14.9	4	5.3	3	2.9	20	7.5
Total	23	26.4	6	8.0	4	3.8	33	12.3
Criterion$\chi 2$	Df=1;$\chi 2$ = 4.692; p=0.031							

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Table 5.
Comparative analysis of the localization of recurrent nodes in the thyroid gland

Scope of surgery	Localization of relapse								Total	
	Operated lobe		Contralateral lobe		Both beats		Pyramidal process			
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
1-subgroup of the comparison group (n=87)										
STC (n=14)	-	-	-	-	1	12.5	-	-	1	4.3
GTE+PR (n=13)	-	-	-	-	2	25.0	-	-	2	8.7
GTE (n=35)	2	25.0	3	50.0	2	25.0	-	-	7	30.4
PTC (n=23)	6	75.0	3	50.0	3	37.5	1	100	13	56.5
Total	8	100	6	100	8	100	1	100	23	100
2-subgroup comparison group (n=75)										
STC (n=45)	-	-	-	-	1	33.3	-	-	1	16.7
GTE+PR (n=7)	-	-	-	-	1	33.3	-	-	1	16.7
GTE (n=8)	-	-	1	50.0	-	-	-	-	1	16.7
PTC (n=4)	1	100.0	1	50.0	1	33.3			3	50.0
Total	1	100	2	100	3	100	-	-	6	100
Main group (n=106)										
Sthyroidism (n=73)	-	-	-	-	-	-	-	-	-	-
GTE+PR (n=7)	-	-	-	-	-	-	-	-	-	-
GTE (n=41)	-	-	1	33.3	-	-	-	-	1	33.3
PTC (n=4)	1	100.0	2	66.7	-	-			3	66.7
Total	1	100	3	100	-	-	-	-	4	100
Total	**10**	**30.4**	**eleven**	**33.3**	**elev en**	**33.3**	**1**	**3.0**	**33**	**12.3%**

According to Table 5, postoperative relapse of nodular or multinodular nontoxic goiter developed in 33 (12.3%) patients during follow-up periods of up to 12 years.

Moreover, in 11 (4.1%) cases, nodular formations were identified in the thyroid tissue, where at the time of the primary operation there were no signs of nodular transformation, which was confirmed by the results of sonography and intraoperative revision data.

Of 33 patients with recurrent PTG, relapse occurred in the operated lobe in 10 (30.4%) cases, in the contralateral lobe in 11 (33.3%) cases, relapse in both lobes occurred in 11 (33.3%) cases and in the pyramidal process in 1 (3.0%) case.

Hypothyroidism in the long-term postoperative period is also considered a relatively unsatisfactory result of treatment. The clinical picture varied significantly depending on the severity and duration of thyroid hormone deficiency, as well as on the age of the patient and the presence of concomitant diseas-es. The faster hypothyroidism developed after surgical removal of the thyroid gland, the faster it was ac-companied by obvious clinical manifestations. On the other hand, even with the same severity and dura-tion

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of hypothyroidism, the clinical picture was very individual. That is, on the one hand, completely obvious hypothyroidism could not have any clinical manifestations and was discovered by chance, on the other hand, some patients with subclinical hypothyroidism could present a lot of complaints charac-teristic of complicated severe hypothyroidism.

Thus, the developed algorithm for choosing tactics for surgical treatment of PTG, taking into ac-count the volume of thyroid removal according to the conclusion of TPAB or express bopsy, made it possible to improve the quality of care provided by reducing the frequency of immediate postoperative complications from 14.8% (40 patients in the comparison group) to 2 .9% (4 patients in the main group) ($\chi 2$ criterion = 4.954; Df=1; p=0.027) and unsatisfactory results in the long-term postoperative period from 32.1% (52 patients in the comparison group) to 11.3% (in 12 patients in the main group) ($\chi 2$ crite-rion = 4.692; Df=1; p=0.031).

CONCLUSIONS

- Factor analysis of the results of treatment of patients with PTO showed that the cause of re-lapse in 26.4% was the performance of organ-preserving surgical interventions for nodular cystic colloid goiter with foci of adenomatosis and a combination of various types of adenomas with multinodular col-loid goiter. The cause of the development of postoperative hypothyroidism in 24% of cases was exceed-ing the indications for performing operations associated with total removal of the thyroid gland.
- In the morphological diagnosis of PTG, the information content of TPAB was 91.8%, express biopsy was 94.4%, the combination of these methods increased the information content to 98.1%. The introduction into clinical practice of morphological diagnosis of changes in the nodular and perinodular tissue of the thyroid gland in patients with PTG has made it possible to select the optimal volume of sur-gical intervention.
- The developed algorithm for selecting the volume of surgical intervention for PTG, taking into account the data from the conclusion of TPAB and/or express bopsy, made it possible to improve treat-ment results by reducing the frequency of immediate postoperative complications from 14.8% to 2.9% and unsatisfactory results in the long-term postoperative period from 32 .1% to 11.3%.

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