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Evaluation of the Results of Surgical Treatment of Thyroid Nodules

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Abstract: *The study is based on the results of treatment of 368 patients with benign ESRD who were admitted to the surgical department of the multidisciplinary clinic of Samarkand State Medical University in the period from 2010 to 2023. Depending on the volume of thyroid removed, the following types of operations were performed: thyroidectomy, subtotal thyroid resection, гемитиреоидэкhemithyroidectomy with partial resection of the other thyroid lobe, hemithyroidectomy, partial thyroid resection. РазрабThedeveloped algorithm for choosing the tactics of surgical treatment of ESRD, taking into account the volume of thyroid removal according to the conclusion of TPAB or expressbiopsy, improved 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) (criterion^2 2 2 = 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) (criterion χ^2 = 4.692; Df=1; p=0.031).*

Keywords: *nodular goiter, surgical treatment, relapse*

Introduction

Treatment of thyroid nodules is a complex surgical problem. The most common method of surgery is stillумэктомия ctectomy with various options for removing thyroid nodules, which is performed inюthe overwhelming majority of cases (90.6%) of ESRD [1, 2, 3, 7, 10]. "However, a rather high frequencyeof postoperative complications and numerous cases of postoperative relapsesaof the disease (15-44%), postoperative hypothyroidism (25-63%) indicate insufficient effectiveness and reliability of the widespread surgicalкtechnique" [4, 6, 8, 9, 12, 13].

The analysis of the literature also indicates that in theacurrent period, treatment and diagnostic tactics for ESRD are one of the most urgent and still unresolved problems of modern healthcare [5, 11]. In this regard, there is a need to review the criteria for radical surgicalointervention in ESRD, depending on the informative content of imaging methods and morphological studies that allow us to assess the features of the node structure at the preoperative stage and identify signsof disease aggression. Therefore, optimization of the diagnostic algorithm for choosing the most radical tactics of surgical treatment in patients with on a case-by-case basis.учае.

Purpose of the study. Improving the results of surgical treatment of patients with ESRD.

Material and methods of research. The study is based on the results of treatment of 368 patients with benign ESRD who were admitted to the surgical department of the multidisciplinary clinic of Samarkand

State Medical University инthe period from 2011 to 2024. Our study did not include patients with toxic forms of ESRD.

Patients are divided into two groups. In 2011-201-2019, 230 (62.5%) patients were operated on, which made up the comparison group, the main group - 138 (37.5%) patients operated on during the period of 2020 - 2024 years The comparison group was also divided into two subgroups: 1-127 (55.2%) patientsиoperated on in the period1-2015 201-1015, 2-103 (44.8%) patients operatedon 201 6 - 201 9 years - 2019 гг.

Examination of patients with ESRD corresponded to the clinicalstandardsrecommended by WHO and the Ministry of Health of the Republic of Uzbekistan: - general clinical (examination of the neck, palpation of the thyroid gland); - general clinical laboratory tests; - determination of the level of thyroid hormones (TSH, T3, T4); - examination by an endocrinologist; - ENT examination of a doctor with impaired phonation.

Morphological studies of ESRD included fine-needle puncture aspiration biopsy, andнnon-surgical express biopsy, routine histological examination of the removed thyroid tissue. At the same time, in the comparison group (230 patients), TPAB and final histological examination of the removed thyroid preparation were performed to determine the probability озлокачествленияof node malignancy. In the main group of patients (138 patients), in addition to determining the factor of possible thyroid cancer, the nature of benign andзchanges in nodular and perinodular tissue was differentiated. The algorithm of morphological studies in the main group of patients also included intraoperative express biopsyofthyroid tissue.

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

Table 1. Performed operations during ESRD

Typeof surgical interventionof surgery	Number of operations			
	Main group	performed Main group Comparison		group Total
		1 subgroup	2 subgroup	
Thyroidectomy	10	4	15	29(7.9%)
Subtotal THYROID resection	54	23	62	139(37.8%)
Hemithyroidectomy with partialчresection of the left lobe oftheresection of the left thyroid lobe	23	18	9	50(13.6%)
Hemithiroidectomy	37	51	12	100(27.1%)
Partialthyroid resection14	14	31	5	50(13.6%)
Total:	138	127	103	368(100%)

127 patients of the 1st subgroup of the comparison group underwent the following operations: тиреоидэкthyroidectomy 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 thyroid resection in 31 patients, i.e. 78,7% случаев проведены organ-preserving operations were performed in 78.7%aof cases.

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

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

Research results. The results of surgical treatment of ESRD in the immediate postoperative period were evaluated according to the following indicators: bleeding during and in the postoperative period, the course of the postoperative period, the presence of signs of recurrent laryngeal nerve paresis, the presence of convulsions, the nature of surgical wound healing, the time of patients ' stay in the hospital (bed/day), the duration of the operation (min.),, signs of near-tracheal andpost-cutaneous hematomas according to ultrasound data.

Improving the choice of tactics for surgical treatment of ESRD, techniques for performing surgical intervention, reducing the complexitувof surgical access, and other innovations developed and implemented in the framework of this study could not but affect the immediate results of managing this category of patients. Thus, in comparison with 2015-2018, the frequency of immediate postoperative complications decreased from 33.0% to 5.1%, i.e. by 6 times (Table 2). Such complications as bleeding (by 5 times), recurrent laryngeal nerve paresis (by 3 times), hypoparathyroidism (by 15 times) began to occur much less frequently There were no such serious complications as persistent paralysis of the recurrent laryngeal nerve and asphyxia, and the durationof surgical treatment was reduced by 2 times– from 10.2±1.2 to 5.9±0.3 days (Table 3)..

Table 2. Comparative analysis of the frequency of immediate postoperative complications in patients with ESRD

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 that occur during surgery								
Bleeding	4	3,1,1	7	6,8,8	2	1,4*	13	3,5
Asphyxia	0	0	1	0.97	0	0	1	0.3
Postoperative complications								
Bleeding withPostoperative complications Hemorrhage withadvanced hematoma	2	1.6,6	3	2.9	0	0	5	1.4
Transient recurrent laryngeal nerve paresis	2	1,6,6	9	8,7	4	2,9*	15	4,1

Persistent recurrent laryngeal nerve paralysis		0	0	1	0.97	0	0	1	0.3
Hypoparathyroidism	Transient	5	3.9,9	10	9.7	1	0.7	16	4,3
	4.3Permanent	1	0.8	2	1.9,94	0	0	3	0.8
Complications fromofwounds		2	1.6	1	0.97	0	0	3	0.8
Total complications		16	12,6,6	34	33,0,0	7	5,1***	57	15.5
Number of patients with complications		11	8,7,7	23	22,3,3	4	2,9*	38	10,3

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

Table 3. Course of the postoperative period in patients with ESRD

Patient group		Total number of bed days			
		in total	before	ICU surgery	after
surgeryeComparison	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 page, 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 in the data of the 1st subgroupeof the comparison group are significant (*- P<0.05, * * - P<0.01, * * * - P<0.001), ^ - differences in the data of the 2nd subgroup of the comparison group are significant (^- P<0.05, ^^^ - P<0.001)

Long-term results were analyzed in 268 (72.8%) of 368 patients operated on for ESRD. One of the main indicators that characterize the effectiveness of surgical intervention in ESRD is the frequency of relapses of the disease. When studying the nature of relapse, we compared the localization of the primary operated and re-identified node, the timing of relapse, the features of previously used surgical methods, the number, size and morphological forms of primary ESRD.

Of the 268 patients examined in the long-term period, relapse of ESRD was noted in 33 (12.3%) patients, while in the group of patients operated on in 2010-2014, this indicator reached 26.4% (Table 4). Subsequently, the frequency of relapses of the disease was reduced in the 2nd subgroup of the comparison group to 8.0%, andin the group of patients operated on in 2010-2014, inthe main group, up to 3.8% (criterion^2 2 2 = 4.692; p=0.031).

We studied and analyzed the long-term results of surgical treatment of ESRD in order to determine the impact of the choice of the volume of surgical interventions in the study groups and compared them withoother groups (Table 5).

Table 4. Recurrence rate of ESRD

Type 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

Multi-nodular 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 χ^2	Df=1; χ^2 = 4.692; p=0.031							

Table 5. Comparative analysis of the localization of recurrent thyroid nodules

Surgical intervention volumeof surgical intervention ства	Relapse localization								Total	
	Operatedroom oshare		КонтрлатContralateralContralateral share		Botholi		ПирамидалPyramidalsides Pyramidal process			
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
1-subgroup of the comparison group (n=87)										
Thyroid gland (n=14)	-	-	-	-	1	12,5	--	-	1	4,3
GTE+CR (n=13)	-	-	-	-	2	25,0	--	-	2	8,7
GTE (n=35)	2	25,0	3	50,0	2	25,0	--	-	7	30,4
Thyroid gland (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 of the comparison group (n=75)										
Thyroid gland (n=45)	-	-	-	-	1	33,3	--	-	1	16,7
GTE+CR (n=7)	-	-	-	-	1	33,3	--	-	1	16,7
GTE (n=8)	--	-	1	50,0	-	-	-	-	1	16,7
Thyroid gland (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)										
Thyroid gland (n=73)	-	-	-	-	-	-	-	-	-	-
GTE+CR (n=7)	-	-	-	-	-	-	-	-	-	-
GTE (n=41)	--	-	1	33,3	-	-	-	-	1	33,3
Thyroid gland (n=4)	1	100.0	2	66.7	--	-			3	66.7

Total	1	100	3	100	-	-	-	-	4	100
Total	**10**	**30,4**	**11**	**33,3**	**11**	**33,3**	**1**	**3,0**	**33**	**12,3%**

According to Table 5, postoperative relapse of nodular or multi-nodular non-toxic goiter developed in 33 (12.3%) patients duringothe follow-up period up to 12 years.

At the same time, in 11 (4.1%) cases, nodular formations were detected 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 сонofsonography and intraoperative revision data.

Of the 33 patients with recurrent ESRD, 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 relativelyunsatisfactory result of treatment. The clinical picture varied significantly depending on theыseverity and duration of thyroid hormone deficiency, as well as on the patient's age and the presence of concomitant diseases. The faster hypothyroidism developed after surgical removal of the thyroid gland, the faster it was accompanied by obvious clinical manifestations. On the other hand, even with the same severity and duration of hypothyroidism, the clinical picture was very different.угой стороны, даже при одной и той же тяжести и длительности гипотиреоза, клиническая картина была весьма индивидуальThat is, on the one hand, a completely obvious hypothyroidism could not have any clinicalomanifestations and was detected accidentally, on the other hand, some patients with subclandnic hypothyroidism could present a lot of complaints characteristic of complicated severe hypothyroidism.

Thus, the developed algorithm for choosing the tactics of surgical treatment of ESRD, taking into account the volume of thyroid removal according to the conclusion of TPAB or expressbiopsy, improved the quality of care provided by reducing the frequency of immediate postoperativeнcomplications from 14.8% (40 patients in the comparison group) to 2.9% (4 patients in the main group) (criterion $\chi^2 = 4.954$; Df=1; p=0.027) and noesatisfactory 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) (criterione$\chi^2 = 4.692$; Df=1; p=0.031).

Conclusions:

1. Factor analysis of the results of treatment of patients with ESRD showed that the cause of relapse in 26.4% was the performance of organ-preserving surgical interventions for nodular ciwithcolloidal goiter with foci адofadenomatosis and a combination of various types of adenomas with multi-nodular colloidal goiter. The reason for the development of postoperative hypothyroidism in 24% of cases wasethe excess of indications for performing operations related to totalthyroid removal.

2. In the morphological diagnosis of ESRD, the informative value of TPAB was 91.8%, express biopsy-94.4%, and the combination of these methods increased the informative value to 98.1%. The introduction intoeclinical practice of morphological diagnostics of changes in nodular and perinodular ткани щитothyroid tissue in patients with ESRD made it possible to choose the optimal amountof surgical intervention.

3. The developed algorithm for choosing the volume of surgical intervention for ESRD, takingeinto account the data of the conclusion of TPAB and / or rapidbiopsy, improved the results of treatmenteby reducing the frequency of immediate postoperative complications from 14.8% to 2.9% andounsatisfactory results in the long-term postoperativeaperiod from 32.1% to 11.3%.

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