EUROPEAN INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH AND MANAGEMENT STUDIES

VOLUME03 ISSUE07
DOI: https://doi.org/10.55640/eijmrms-03-07-12 Pages: 74-85

RESULTS OF CLINICAL AND AUDIOMETRIC EXAMINATION IN THE SHORT AND LONG TERMS AFTER THE USE OF XENOTRANSPLANTS AND AUTOFASTIES IN TYMPANOPLASTICS IN PATIENTS SUFFERING FROM CHRONIC OTITIS

Khodjanov Sh.Kh.
Tashkent Medical Academy, Uzbekistan

ABOUT ARTICLE

Key words: Xenograft, autofascia, pericardium, regeneration.

Received: 07.07.2023
Accepted: 12.07.2023
Published: 17.07.2023

Abstract: According to a number of authors, improvement of some elements of the technique of ear microsurgery raises a number of questions related to the study of the regeneration process after tympanoplasty, the coordination of the healing of the surgical wound, and the reduction of the duration of treatment of patients in an inpatient setting. The long duration of postoperative wound healing can be due to various reasons. This can be caused by the error of the surgical technique (incomplete elimination of the changed pathological tissue), the presence of virulent microflora, sensitization of the organism, disruption of tissue microcirculation and metabolic processes, and a decrease in general and local immunity.

INTRODUCTION

Improving the effectiveness of surgical treatment of patients with chronic otitis is one of the urgent problems of modern otorhinolaryngology [8].

The functional results of tympanoplasty often depend on the preservation of the lightness of the tympanic cavity and the optimal formation of the neotympanal membrane at the natural level [1,7]. Therefore, from the time of tympanoplasty surgery to the present day, a large number of studies are being conducted to improve the morphological and functional results of the treatment of patients with chronic otitis media [2-6].

All currently known methods of tympanoplasty can be divided into six groups according to the nature of placing the plastic material in the formed place:

1. Plastic material is laid on the outer side of the fibrous layer of drum curtain or drum ring residue. This method is presented in English language literature as "Overlaidtechnique" [10-15].

2. Plastic material is laid on the inner side of the drum curtain residue. This method is called "Underlaidtechnique" [6, 9,15,19,24].

3. The combined method of placement, the graft is placed under and over the remnant of the drum membrane in the form of plates [12,16,17,26].

4 The plastic material is placed between the separate layers of the drum screen [18-20].

5. The edges of the graft are divided into two leaflets along the perimeter (except for its central part) and the leaflets divided into layers are placed above and below the drum curtain [21].

6. The drum rim is freed from soft tissues and fibrous ring and a graft is placed on it, like a frame [23].

Some authors divide the lateral method of graft placement into three subtypes [22]:

- removal of the epithelium of the tympanic membrane remnant without covering the graft;

- by separating the epithelium of the skin of the tympanic membrane and auditory canal, forming clots covering the edges of the transplant;

- the epithelium is completely removed from the remnant of the eardrum, a fascial flap is placed in the eardrum ring and it is closed with the skin of the auditory canal.

Tympanoplasty of all groups is used only in the presence of specific conditions:

1. In the absence of an exacerbation of the inflammatory process in the ear (in the absence of secretions from the ear, intact mucous membrane of the drum cavity, healthy skin of the external auditory canal); 2. Optimal conductivity of the auditory canal; 3. In the absence of pathology of the nose and nasal cavity; 4. In the integrity and integrity of the sound transmission apparatus of the middle ear; 5. In the improvement of hearing in the test of artificial in-ear prosthesis; 6. Conductive hearing loss or mixed hearing loss in the case where the conductive type is predominant [24].

After the exacerbation of the inflammatory process in the ear is stopped, the duration of tympanoplasty varies from 7-14 days to 6 months [25]. According to some authors, it is better to place the graft medially, but lateral placement is rational in large defects [12].

Results and their discussion. In the period after tympanoplasty surgery, the results of functional changes in group 1 and 2 patients were evaluated mainly by whispering and speech examination, tonal threshold acumetry, bone and air interval results. Such assessment of hearing change is clear, simple, and the obtained results allow mutual comparison and show the importance of performing tympanoplasty in terms of hearing restoration.

In our investigations, all patients, i.e. 1st group (110-110-100-96-84) and 2nd group patients (79-68-66-60-60) received sound waves with whispering and spoken speech. In each group, patients were examined with whispering and spoken speech, tone threshold audiometry in the near (1-3 months) and long-term (6 months, 1 and 3 years) after surgery. The obtained results were analyzed by the average indicators of the bone-air interval (SHI) and the level of increase in the reception of sound from the air.

In group 1 patients, i.e. xenograft sheep pericardium was used as a graft in tympanoplasty, and the short-term and long-term speech examination results after the surgery were compared with the results before the surgery (Table 1) .

Table 1

The rate of acceptance of SN and SN after surgery of patients of the main 1 and control 2 groups.

No	Speech reception (in meters)	1 group n=110										2 groups n=79									
		Whisper speech					Conversational speech					Whisper speech					Conversational speech				
		1 n=110	2 n=110	3 n=100	4 n=96	5 n=84	1 n=110	2 n=110	3 n=100	4 n=96	5 n=84	1 n=79	2 n=68	3 n=66	4 n=60	5 n=60	1 n=79	2 n=68	3 n=66	4 n=60	5 n=60
1	ad conha to 1m	22 (20%)	10 (9.8%)	3 (3%)	9 (1%)	1 (1%)	-	-	-	-	-	15 (19%)	6 (9%)	1 (2%)	1 (1%)	1 (1%)	-	-	-	-	-

2	1.1 - 3	66 (60 %)	50 (45. 1%)	52 (52 %)	49 (51 %)	41 (49 %)	24 (22 %)	20 (18 %)	16 (16 %)	13 (14 %)	11 (13 %)	48 (61 %)	29 (43 %)	27 (41 %)	27 (45 %)	27 (45 %)	8 (10 %)	5 (8 %)	2 (3%)	1 (2 %)	2 (3 %)
3	3.1-5 m	33 (30 %)	50 (45. 1%)	46 (46 %)	46 (48 %)	42 (50 %)	53 (48 %)	56 (51 %)	51 (51 %)	50 (52 %)	43 (51 %)	16 (20 %)	33 (48 %)	38 (57 %)	32 (54 %)	32 (54 %)	66 (84 %)	39 (57 %)	40 (60. 6%)	37 (62 %)	35 (59 %)
4	5 m and mor e	-	-	-	-	-	33 (30 %)	34 (31 %)	33 (33 %)	33 (34 %)	30 (36 %)	-	-	-	-	-	5 (6%)	24 (35 %)	24 (36. 4%)	22 (36 %)	23 (38 %)

Note: 1 – 1 month later, 2 – 3 months later, 3 – 6 months later, 4 – 1 year later, 5 – 3 years later

76 patients (69.1%) had whispering speech before surgery. ad conha to 1 m, 23 patients (20.9%) 1.1-3 m, 11 patients (10%) 3.1-5 m, within 1-3 months after tympanoplasty this indicator increased to 20 decreased by 10%. The number of patients between 1.1-3 m increased by 60% from 23 (20.9%) to 66 patients. These rates increased from 1 patient (1) who received whispering speech up to 1 m, 23 patients (21%) to 41 patients (49 %) who received 1.1-3 m whispering after 1 and 3 years. 46 (48%) and 42 (50%) patients received whisper speech from 3.1 to 5 m. It can be seen that hearing gradually improved after surgery.

Speech examination conducted before tympanoplasty surgery was 4 (3.7) from 1.1-3m, 78 (70.9) from 3.1-5m, 23 (20.9) from 5-10m %) patients, these indicators changed to 22-18-16-14-13% in 1-3-6-12-36 months of our observation. The number of patients receiving spoken speech up to 3.1-5m was 48-51-51-52-52%.

In patients of group 1, hearing function gradually recovered and remained practically unchanged after 1 and 3 years.

In group 2, i.e., when we used autofascia as a graft, results close to group 1 were obtained, i.e., the index before tympanoplasty was 54 patients (68.4%) of whispering speech up to 1 m, 21 patients (26.6%) of 1.1-3 m , 4 patients (5%) received up to 3.1-5 m, 61-43-41-45-45% of patients up to 1.1-3 m in the next short and long term, up to 3.1-5 m was observed in 84-57-60-61-59% of patients, 6-35-36-36-38% of patients with 5.1-10m.

As it can be seen from the given results, reception of sound waves with whispering and spoken speech in 2 groups of patients begins to recover faster in the near future.

In patients of group 2, the hearing function gradually recovered, which is related to the clinical and morphological changes in the transplants.

When we analyzed the results of audiological examinations before surgery, it was found that the average threshold of air conduction in the patients of group 1 was 47.4±0.75dB at frequencies in the speech area, and bone conduction was 12.8±0.77dB. The bone-air interval was determined to be 30.6±0.75 dB.

In group 2 patients, 46±0.44dB from air, 13±0.8dB from bone, the interval between bone and air was 33±0.4dB. As can be seen from the above, it was found that the indicators of hearing reserve were high in both groups of patients.

In our scientific work, we conducted functional tests one month after the surgery, because the results of the audiological examination in the earlier period may not have a clear indication. Audiometric examinations in the period after surgery in patients of groups 1 and 2: after 1 month in 110 patients of group 1, in 79 patients of group 2, after 3 months in 110 and 68 patients, after 6 months in 100 and 66 patients, after 1 year in 96 and 60 patients, After 3 years, 84 and 60 patients were examined.

In the period after tympanoplasty, we periodically monitored hearing changes, i.e. short- and long-term air and bone sound reception threshold and bone-air interval. From the indicated indicators, it became clear that it was not possible to fully cover patients who underwent surgery in the long term. Tone threshold audiometry data are presented in Tables 2 , 3 , and 4 .

Table 2

Short- and long-term results of threshold audiometry after xenograft use in tympanoplasty surgery in children (n=110)

Frequency Hz	Hearing status, dB											
	From tympanoplasty before		1 n=110		2 n=110		3 n=100		4 n=96		5 n=84	
	the air	bone	the air	bone	the air	bone	the air	bone	the air	bone	the air	bone

125	48 ±4.5	10 ±3.2	18 ±3.6	7 ±2.4	18 ±3.6	6 ± 2 , 3	16 ±3, 9	6 ± 2 , 3	14 ±3, 7	6 ± 2 , 3	14 ±3, 7	6 ± 2 , 3
250	48 ±4.5	10 ±3.2	18 ±3.6	7 ±2.4	16 ±3, 9	7 ±2.4	16 ±3, 9	7 ±2.4	14 ±3, 7	6 ± 2 , 3	13 ±3, 6	6 ± 2 , 3
500	44 ±4.4	12 ±3, 4	20 ±3, 8	8 ± 2.5	11 ±3, 3	7 ±2.4	10 ±2, 9	7 ±2.4	10 ±2, 9	6 ± 2 , 3	9 ±2, 6	6 ± 2 , 3
1000	44 ±4.4	12 ±3, 4	20 ±3, 8	8 ± 2.5	12 ± 3 , 2	8 ± 2.5	12 ± 3 , 2	8 ± 2.5	11 ±3, 3	8 ± 2.5	10 ±2, 9	7 ±2.4
2000	47 ±4.5	11 ±3, 3	20 ±3, 8	8 ± 2.5	22 ± 4 , 2	9 ±2, 6	14 ±3, 7	7 ±2.4	12 ± 3 , 2	7 ±2.4	12 ± 3 , 2	5 ± 2 , 2
4000	46 ±4.5	13 ±3, 6	18 ±3.6	9 ±2, 6	14 ±3, 7	9 ±2, 6	12 ± 3 , 2	7 ±2.4	12 ± 3 , 2	7 ±2.4	11 ±3, 3	7 ±2.4
6000	50 ±4, 8	16 ±3, 9	25 ± 4 , 3	10 ±2, 9	20 ±3, 8	10 ±2, 9	18 ±3.6	8 ± 2.5	11 ±3, 3	8 ± 2.5	10 ±2, 9	8 ± 2.5
8000	52 ±4, 9	18 ± 4 , 1	25 ± 4 , 3	12 ± 3 , 2	22 ± 4 , 2	12 ± 3 , 2	18 ±3.6	10 ±2, 9	11 ±3, 3	8 ± 2.5	11 ±3, 3	7 ±2.4

Note: 1 – 1 month later, 2 – 3 months later, 3 – 6 months later, 4 – 1 year later, 5 – 3 years later

Table 3

Results of short-term and long-term threshold audiometry after the use of autograft in tympanoplasty surgery in children (n=79)

Frequency Hz	Hearing status, dB											
	From tympanoplasty before		1 n= 79		2 n= 68		3 n= 60		4 n= 60		5 n= 60	
	the air	bone	the air	bone	the air	bone	the air	bone	the air	bone	the air	bone

125	46 ±4.5	12 ±3, 4	15 ±3, 8	9 ±3, 1	20 ±3, 8	10 ±3, 2	18 ± 4 , 1	8 ± 2.5	16 ±3, 9	8 ± 2.5	16 ±3, 9	7 ±2. 4
250	47 ±4, 6	10 ±3, 2	15 ±3, 8	9 ±3, 1	28 ± 4 , 7	11 ±3, 3	20 ±3, 8	9 ±3, 1	18 ± 4 , 1	9 ±3, 1	18 ± 4 , 1	7 ±2. 4
500	45 ±4, 4	12 ±3, 4	12 ±3, 4	10 ±3, 2	24 ± 4 , 4	12 ±3, 4	20 ±3, 8	9 ±3, 1	18 ± 4 , 1	8 ± 2.5	18 ± 4 , 1	7 ±2. 4
1000	45 ±4, 4	12 ±3, 4	12 ±3, 4	8 ± 2.5	20 ±3, 8	10 ±3, 2	18 ± 4 , 1	10 ±3, 2	16 ±3, 9	8 ± 2.5	14 ±3, 7	6 ± 2 , 3
2000	45 ±4, 4	10 ±3, 2	11 ±3, 3	8 ± 2.5	16 ±3, 9	7 ±2. 4	16 ±3, 9	8 ± 2.5	14 ±3, 7	8 ± 2.5	15 ±3, 8	6 ± 2 , 3
4000	44 ±4, 3	15 ±3, 8	11 ±3, 3	8 ± 2.5	18 ± 4 , 1	8 ± 2.5	16 ±3, 9	8 ± 2.5	16 ±3, 9	8 ± 2.5	16 ±3, 9	6 ± 2 , 3
6000	48 ±4, 7	15 ±3, 8	18 ± 4 , 1	10 ±3, 2	20 ±3, 8	11 ±3, 3	14 ±3, 7	10 ±3, 2	14 ±3, 7	12 ±3, 4	14 ±3, 7	8 ± 2.5
8000	48 ±4, 7	18 ± 4 , 1	18 ± 4 , 1	12 ±3, 4	20 ±3, 8	11 ±3, 3	16 ±3, 9	12 ±3, 4	14 ±3, 7	12 ±3, 4	12 ±3, 4	8 ± 2.5

Note: 1 – 1 month later, 2 – 3 months later, 3 – 6 months later, 4 – 1 year later, 5 – 3 years later

Table 4

Results of audiometric examination of the increase in hearing level in patients of groups 1 and 2 after tympanoplasty surgery in the short and long term

	1 group n=110						2 groups n=79					
	Until surgery	1 month n=110	3 months n=110	6 months n=100	1 year n=96	3 years n=84	Until surgery	1 month n=79	3 months n=68	6 months n=66	1 year n=60	3 years n=60
Air	47.4±0.75	20.5 ±0.8	16.9 ±1.28	14.5 ±0.88	11.9 ±0.4	11.3 ±0.46	46±0.44	14± 0.88	20.8 ±0.93	17.3 ±0.62	15.8 ±0.46	15.4 ±0.57

Bone	12.8±0.77	8.6±0.6	8.5±0.53	7.5±0.31	7±0.27	6.5±0.27	13±0.8	9.3±0.49	10±0.44	9.3±0.38	9.1±0.51	6.9±0.23
Hearing improvement	Air	26.9±1.1	30.5±1.45	32.9±1.15	35.5±0.81	36.1±0.53	Air	32±1.1	25.3±1.45	28.8±1.15	30.3±0.64	30.6±0.31
	Bone	4.1±0.98	4.3±0.93	5.3±0.77	5.8±0.73	6.3±0.73	Bone	3.8±0.98	3±0.93	3.8±0.83	3.9±0.92	6.1±0.73

4 , all patients of group 1 had hearing improvement in the period after surgery.

In tympanoplasty patients of group 1, when xenograft was used, after 1 and 3 months, air conduction threshold was 20.5±0.8, 16.9±1.28dB, bone conduction was 8.6±0.6, 8.5±0.53dB. (before surgery 47.4±0.75, 12.8±0.77) was determined. So, in the post-surgical period, the increase in hearing was determined to be 26.9±1.1dB from air and 30.5±1.45dB, and 4.1±0.98dB, 4.3±0.93dB from bone conduction. It can be seen that, even in the immediate period after tympanoplasty, there was an improvement in bone conduction, albeit slightly.

In our follow-up at 6 months, 1 year and 3 years after tympanoplasty, we observed further improvement of these indicators. Air conduction threshold improved to 14.5±0.88, 11.9±0.4, 11.3±0.46dB. Bone conduction was found to be 7.5±0.3dB, 7±0.27dB, 6.5±0.27dB, and it was observed that the hearing level improved in the long period after surgery, and it shows its stabilization by 1-3 years.

When we analyzed these results, it was found that when we used the xenograft, the hearing gain increased by 32.9±1.15dB from air at 6 months, 35.5±0.81dB after 1 year, and 36.1±0.53dB after 3 years. The cited indicators showed that the hearing gradually increased and improved when the xenograft was used, and these changes stabilized by 1-3 years.

When autofascia was used as a graft in tympanoplasty surgery, good positive results were also shown in 2 groups of patients. For comparison, in the 79 patients who were under our observation in the period before surgery, the average threshold value of air conduction was 46±0.44dB and bone conduction was 13±0.8dB.

After tympanoplasty, it was found that the hearing threshold increased by 14±0.88dB, 20.8±0.93dB from air, and 9.3±0.49, 10±0.44dB from bone. The increase in hearing shows that air conduction at these

frequencies has increased the average threshold value by 32±1.1dB, 25.3±1.45dB, bone by 3.8±0.98dB and 3±0.93dB.

In the long term of our follow-up (6 months, 1-3 years) it was found that the hearing at the air and bone conduction thresholds improved and its results stabilized. 6 months and 1-3 years after surgery, the air and bone threshold values were as follows: 17.3±0.62dB, 15.8±0.46dB, 15.4±0.57dB from bone, 9.3±0, 38dB, 9.1±0.51dB, 6.9±0.23dB.

Based on these indicators, if we determine the level of hearing improvement, this indicator is 28.8±1.15dB, 30.3±0.64dB, 30.6±0.31dB from air, and bone conduction is 3.8±0.83dB, 3, It was found that 9±0.92dB increased by 6.1±0.63dB. Analyzing the obtained results, functional positive indicators after tympanoplasty in all patients of groups 1 and 2 depend on the condition of the neotympanal membrane, the process of recovery of the newly formed drum cavity. It is known that the changes in the period after tympanoplasty can last a long time, salt deposits on the tympanic membrane and ossification processes can be observed. It is very important to evaluate the criteria of hearing improvement depending on whether the air conduction threshold covers the bone conduction parameters. Here we have evaluated the hearing criteria as follows: excellent 0-10dB, good 0-20dB, satisfactory 0-30dB and unsatisfactory above 30dB. It has 0 bone conduction. 10-30 is air permeability and shows the bone-air interval, i.e. shell reserve (table 5).

Table 5

Results of audiometric examination of the increase in hearing level in patients of groups 1 and 2 after tympanoplasty surgery in the short and long term

Hearing reserve	Evaluation criteria	1 group n=110										2 groups n=79									
		1 month n=110		3 months n=110		6 months n=100		1 year n=96		3 years n=84		1 month n=79		3 months n=68		6 months n=66		1 year n=60		3 years n=60	
		Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%	Abs	%
0 -10	Excellent	11	10	16	14,5 _	18	18	28	29.2	31	36.9	7	8.9	9	13.2	11	16.7	16	26.7	20	33.3
0-20	Good	36	32.7	39	35.5	38	38	25	26.0	17	20.2	23	29.1	22	32.4	25	37.8	15	25.0	11	18.3
0-30	Satisfactory	62	56.4	52	47.3	42	42	38	39.6	31	36.9	47	59.5	33	48.5	27	40.9	23	38.3	21	35.1
>30	You are not	1	0.9	3	2.7	2	2	5	5.2	5	5.9	2	2.5	4	5.9	3	4.6	6	10.0	8	13.3

	satisfied																			

As can be seen from this table, excellent results in group 1 patients range from 10% to 36.9%, in group 2 patients from 8.9% to 33.3%, good results in group 1 patients from 32.7% to 20.2%, In 2 groups, indicators from 29.1% to 18.3% were observed.

The number of satisfactory results decreased gradually, from 62 (56.4%) in group 1 to 31 (36%) patients in group 2 and from 47 (59.3%) to 21 (35.1%) in group 2 by 3 years. In unsatisfactory results, the hearing loss was large (35-40db) and the number of these patients increased over 3 years. In group 1, the number of these patients increased from 1(0.9%) to 5(5.9%) during 1-3 years. In group 2 patients, this indicator increased from 2(2.25%) to 8(13.3%). It should be noted that none of the patients with unsatisfactory results had an attack or recurrence of chronic purulent otitis media.

In these two groups, i.e., patients with satisfactory and unsatisfactory results, even though they only complained of hearing loss, it was noted that their hearing improved slightly. These patients were recommended to undergo tympanoplasty again.

CONCLUSION

Thus, considering the criteria of hearing improvement, good results were achieved in both groups: excellent and good results in group 1 patients 31 (36.9%) and 17 (20.2%) patients, 20 patients of group 2 (33.3%) and 11 (18.3%) was observed. The use of xenograft in tympanoplasty surgery in patients with chronic otitis media has shown its effectiveness.

REFERENCES

1. Botirov et al. Clinical and morphological results of xenografts to use in myringoplasty //The International Tinnitus Journal. - 2020. - T. 24. – no. 1. – S. 1-6.
2. Normurodov BK et al. Prevalence and structure of purulent inflammatory diseases of the maxillofacial area //Central Asian Journal of Medicine. - 2020. - T. 2020. – no. 1. – S. 116-130.
3. Djuraev JA et al. Results of an immunohistochemical study in patients with polypoid rhinosinusitis //European Journal of Molecular & Clinical Medicine. - 2020. - T. 7. – no. 2. - S. 2526-2541.
4. Shaumarov AZ et al. Role of Hemostatic Agents in Simultaneous Surgical Interventions in the Nasal Cavity //Journal of Experimental and Clinical Surgery. - 2021. - T. 14. – no. 2. - S. 175-180.

5. Djuraev JA et al. Distribution of Allelic Variants and Genotypes of Il4, Il10, Il12b, Tlr2 Genes in the Group of Patients with CPRS //Annals of the Romanian Society for Cell Biology. - 2021. - S. 4466-4470.

6. Normurodov B. K. i dr. The frequency of occurrence and the structure of gonoid and inflammatory diseases of the maxillofacial area // Chirurg. - 2020. - No. 7-8. - S. 73-84.

7. Hasanov U. S. i dr. Chronic polyposis with rhinosinusitis in patients immunohistochemical of research results . - 2020.

8. Shaumarov A. _ Z. , Shaikhova X. _ E. , Djuraev J. _ A. _ Assessment of the influence of nasal tamponade on quality of life in the early postoperative period after septoplasty //Uzbek medical journal. - 2020. - T. 5. – no. 1.

9. Khasanov US, Djuraev JA MORPHOLOGICAL CHARACTERISTICS OF CHRONIC POLYPOUS RHINOSINUSITIS //CUTTING EDGE-SCIENCE. - 2020. - S. 30.

10. Djuraev JA, Khasanov US, Vokhidov UN The prevalence of chronic inflammatory diseases of the nose and paranasal sinuses in patients with myocarditis //European Science Review. – 2018. – no. 5-6. - S. 147-149.

11. JA D. et al. Frequency Analysis Results Distribution of C589t Rs2243250 Polymorphism in Il4 Gene Among Patients with Chronic Rhinosinusitis //MEDICINE. - 2021. - T. 2. – no. 6.

12. Djuraev JA Improvement of comprehensive treatment of vasomotor rhinitis.

13. Vahidov UN et al. Current issues of the treatment of chronic polypous rhinosinusitis //Journal of Biomedicine and Practice. - 2020. - T. 2. – no. 5.

14. Djuraev JA, Khasanov US Results of Frequency Analysis Distribution of Polymorphism Rs1800895 592c> A In Il10 Gene among Patients with Chronic Polypoid Rhinosinusitis //International Journal Of Medical Science And Clinical Research Studies. - 2021. - T. 1. – no. 6. - S. 129-134.

15. Khasanov US, Khayitov OR, Djuraev JA OF THE STATE OF HEARING AND CEREBRAL HEMODYNAMICS IN PATIENTS WITH DEVIATION OF THE NASAL SEPTUM // NAUKA , KULTURA , OBRAZOVANIE : AKTUALNYE VOPROSY , DOSTIJENYA I INNOVATION II . - 2021. - S. 185-187.

16. Nigmatov IO et al. Features of the application of fat tissue auto transplantation (Lipofiling) in patients with deformities of the maxillofacial region //ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL. - 2021. - T. 11. – no. 1. – S. 195-204.

17. Djuraev JA Prevalence of Allelic and Genotypic Variants of Il4, Il10, Il12b and Tlr2 Gene Polymorphism in Patients with Chronic Polypoid Rhinosinusitis.

18. Djuraev JA, Khasanov US Results of Frequency Analysis Distribution of A1188c Rs3212227 Polymorphism in the IL12b Gene among Patients with Chronic Polypoid Rhinosinusitis.

19. Djuraev JA, Makhsitaliev MI Morphofunctional State of the Maxillary Sinus Mucosa in Patients After Endoscopic Infundibulotomy .

20. Khasanov US et al. Morphological Characteristics of the Cysts of the Maxillary Sinuses.

21. Khasanov US, Khayitov OR, Djuraev JA On The Features Of Changes In Hearing And Cerebral Hemodynamics In Patients With Nasal Obstruction Curvature.

22. Khasanov US, Vokhidov UN, Djuraev JA State of the nasal cavity in chronic inflammatory diseases of the nose and paranasal sinuses in patients with myocarditis //European science, (9 (41)).– 2018. - 2018.

23. UN V. et al. The local immunity in the tissues of various forms of nasal polyps // ALLERGY. – 111 RIVER ST, HOBOKEN 07030-5774, NJ USA : WILEY-BLACKWELL, 2016. – T . 71. - S. 121-121.

24. Kurbonov YK, Boymuradov SA, Djuraev JA Purulent-Necrotic Diseases of the Face: Aspects of Diagnostics and Treatment //The American Journal of Medical Sciences and Pharmaceutical Research. - 2021. - T. 3. - S. 24-30.

25. Hasanov He . S. , Khaitov O. _ R. , Djuraev J. _ A. _ PECULIARITIES OF THE STATE OF HEARING AND CEREBRAL HEMODYNAMICS IN PATIENTS WITH DEVIATION OF THE NASAL SEPTUM // UZBEKISH MEDITSINSKY MAGAZINE . - 2021. - T. 2. – no. 2.

26. Shaumarov A. _ Z. , Shaikhova X. _ E. , Djuraev J. _ A. _ Assessment of the influence of nasal tamponade on quality of life in the early postoperative period after septoplasty //Uzbek medical journal. - 2020. - T. 5. – no. 1.