COMPLICATIONS IN SURGICAL TREATMENT OF PATIENTS WITH CHRONIC DACRYOCYSTITIS

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Relevance. Effective treatment of chronic dacryocystitis (CD) remains an urgent problem of modern ophthalmology and rhinology. When studying this issue, not enough attention is always paid to complications.

Objective – to analyze the existing complications in the surgical treatment of patients with CD.

Material and methods. The study group (1st group) consisted of 45 patients with CD, who underwent endonasal endoscopic dacryocystorhinostomy (EEDCR) according to the developed own method, the comparison group (2nd group) included 36 patients who after performing the developed EEDCR a polyvinyl chloride (PVC) conductor was installed in the area of the dacryorhinostoma. The control group (3rd group) included 28 patients who underwent EEDCR according to the traditional method: with the preservation and plastic placement of mucous flaps and with the installation of PVC-conductor. Patients of the 1st and 2nd groups were divided into 2 subgroups: 1A and 2A included patients who underwent computed tomography (CT) of the lacrimal ducts in the preoperative period according to the developed method, and patients of subgroups 1B and 2B – according to the traditional algorithm. Statistical analysis was performed using the licensed program MedCalc (MedCalc Software bvba, Ostend, Belgium; 2017).

Results. In patients of subgroups 2A, 2B and group 3 in the period of 1.5 months after surgery, local complications of the eyeball were recorded: epiphora during implant wearing, severe conjunctivitis, prolapse and displacement of the implant, granulation in the lower lacrimal duct, ectopia of the lower lacrimal point. No such complications were observed in patients of subgroups 1A and 1B. In patients of subgroups 1B, 2B and group 3 in the early postoperative period were recorded varying degrees of swelling of the lower eyelid, as well as nosebleeds after removal of tampons. No such complications were observed in patients of subgroups 1A and 2A, and the difference between the groups was statistically significant ($p < 0.05$).

Conclusion. CT of the lacrimal ducts and EEDCR according to the developed methods are effective and allow their combined use to avoid local complications from the nasal cavity and eyeball.

Keywords: Chronic dacryocystitis, endonasal dacryocystorhinostomy, complications.

Relevance. Despite significant advances in science and technology, effective treatment of chronic dacryocystitis (CD) remains an urgent problem of modern ophthalmology and rhinology. There are external, endonasal and transcanalicular access to the lacrimal sac, each with a considerable number of modifications. However, as is known, endonasal dacryocystorhinostomy has a number of undeniable advantages: no cosmetic defect, anatomical features and anomalies of intranasal structures with a possibility of their simultaneous correction are considered, relatively short duration of operation, short postoperative rehabilitation period [1-4].

When performing various modifications of endonasal endoscopic dacryocystorhinostomy (EEDCR) the use of lacrimal implants remains ambiguous: there are many proponents of intubation of the lacrimal duct (LD) [5-7], as well as its opponents [8-12]. Opposing views among scientists on storage and plastic stacking [13-15] or delete [16-18] mucous flaps of the lateral wall of the nasal cavity and the medial wall of the lacrimal sac.

In studying the effectiveness of surgical restoration of tearing, the authors examine many indicators and factors, but due to the lack of a standardized approach in assessing treatment outcomes, such indicators, as a complication, not enough attention is always paid [19].

Objective: analyze the existing complications in the surgical treatment of patients with CD.

MATERIALS AND METHODS

The study included 109 patients with chronic dacryocystitis, which were examined and operated in the period 2004-2014 years on the bases of the Department of Otorhinolaryngology, Faculty of Internship and Postgraduate Education, Donetsk National Medical University, Ministry of Health of Ukraine. Of these, 86 women and 23 men aged 18 to 78 years (on the average, $49,1 \pm 16,2$ years). The duration of complaints of tearing ranged from 2 months to 9 years. In all patients, chronic dacryocystitis was in remission. In all patients, tearing resumed after EEDCR.

Depending on the modification in which the EEDCR was performed, all patients were divided into 3 groups. In 1 group (Study) consisted of 45 patients to whom EEDCR were performed according to the method developed by us. In 2 (Comparison group) 36 patients were included, who after performing our EEDCR in the area of dacryorhinostoma installed a conductor made of polyvinyl chloride (PVC). The 3rd (Control) group included 28 patients who underwent EEDCR according to the generally accepted method: with preservation and

plastic laying of the cut flaps of the mucous membrane of the nasal cavity and lacrimal sac and with the installation of PVC conductor – archival material.

Developed way EEDCR («Method for endonasal endoscopic surgical treatment of chronic suppurative dacryocystitis», Ukrainian patent for the model № 53616 from 11.10.2010 year, bulletin № 19/2010) was as follows: at the stage of excision of the U-shaped flap of the mucous membrane of the nasal cavity first performed the identification of the incision site by diaphanoscopy, at the stage of opening the lacrimal sac, the latter was cut to the bottom (maximum down), and the excised flaps of the lateral wall of the nasal cavity and the medial wall of the lacrimal sac were excised [20]. Such differences allow to avoid stagnation and suppuration of a tear, to carry out its passage uniform and unobstructed, thus, helping to minimize the process of scarring (formation of stricture) in the area of dacryorhinostoma.

Depending on the computed tomography (CT) option LD, patients of groups 1 and 2 were divided into 2 subgroups (Table 1). Subgroups 1A and 2A included patients who underwent contrast-enhanced CT LD in the preoperative examination according to the method developed by us. Subgroups 1B and 2B consisted of patients who underwent CT LD according to the traditional algorithm. In turn, patients of the control clinical group underwent dacryocystography in the preoperative examination, and to clarify the condition of the intranasal structures – computed tomography of paranasal sinuses.

A method of performing CT LD with contrast has been developed («The method of determining the topographic and anatomical relationships of the lacrimal sac with the surrounding structures», Ukrainian patent for the model №66910 from 25.01.2012, bulletin № 2/2012) was as follows: before the study LD washed, removing purulent contents; then a water-soluble contrast agent was injected into the LD lumen (sodium amidotrisoate 60%); then no

later than 5 minutes began CT scan in coronary projection with a step of not more than 1 mm from the nasal cavity to the border between the anterior and posterior cells of the lattice labyrinth – the basal plate (area of interest), and then to the wedge-shaped sinus with a step of 5 mm. Performed 3D-reconstruction of images. The obtained data were analyzed according to the developed algorithm [21].

In the early postoperative period, all patients were observed in hospital and on an outpatient basis. After inpatient treatment, patients were examined every 3-4 days for two weeks, then once every 7 days for 2 weeks, then once a month for 5 months and once every six months for 18 months. Tampons were removed from the nasal cavity for 1-2 days after surgery. In patients of 2 and 3 clinical groups, the conductor was removed from the lacrimal ducts after 1.5 months. All patients were treated daily with a gentle toilet of the nasal cavity, instructed on self-care of the nasal cavity. Medical support of patients of all groups was standard and included antibacterial drugs (systemic and local), antihistamines, irrigation therapy (saline solutions, topical steroids).

Patients in the study clinical group at each visit during the first month, the lacrimal ducts were washed with antiseptic solutions. Patients in the control clinical group and the comparison group were recommended to instill solutions of antiseptics for the entire period of the implant in the LD.

To assess the statistical significance of differences between the studied groups when comparing frequencies in independent groups, the Chi-square test (χ^2) and Fisher's exact test were used. Differences were considered statistically significant at a significance level of less than 5% ($p < 0,05$). The data in the tables are given in absolute (abs.) And percentage (%) values. Statistical analysis was performed using a licensed program MedCalc (MedCalc Software bvba, Ostend, Belgium; 2017).

Table 1

Distribution of patients by clinical groups taking into account preoperative CT-examination and performed surgical treatment

№	Clinical group	Surgical treatment	Preoperative examination
1	The study group (S), n=45	A	Endonasal endoscopic dacryocystorhinostomy according to the method developed by us
		B	CT of the lacrimal duct with contrast according to the method developed by us
2	Comparison group (Cm), n=36	A	CT of the lacrimal duct with a traditional algorithm
		B	Endonasal endoscopic dacryocystorhinostomy according to the proposed method + implant
3	Control group (Cn), n=28	Endonasal endoscopic dacryocystorhinostomy in the traditional way	CT of the lacrimal duct with contrast according to the method developed by us

RESULTS AND DISCUSSION

Intraoperative complications were not observed in any patient. In the postoperative period, the general somatic condition of all patients was satisfied.

Among local complications, nasal bleeding was observed in 7 (6.4%) patients in the early postoperative period. In all these patients, it occurred 24-48 hours after surgery, immediately after removal of tampons. Bleeding was associated with damage to the nasal mucosa during surgery, eliminated by re-tamponade of the nasal cavity in 6 (5.5%) patients or coagulation of blood vessels with a suction coagulator, which was observed in one (0.9%) patient.

In 8 (7.3%) patients the next day after surgery there was swelling of the lower eyelid of varying severity. In all patients, this complication resolved on the background of conservative treatment for several days.

The distribution of local complications (nosebleeds and swelling of the lower eyelid) by clinical groups is shown in Table 2.

As can be seen from the data in table 2, almost the same percentage of nasal bleeding and swelling of the lower eyelid was observed in patients of subgroups 1B, 2B and group 3, and in subgroups 1A and 2A in any case no such complications were observed, the difference between the groups was statistically significant ($p < 0,05$). In our opinion, the worst indicators in subgroups 1B, 2B and in group 3 were associated with greater trauma to the structures surrounding the lacrimal sac, when accessing it and finding it. The absence of complications in subgroups 1A and 2A was probably due to the greater informativeness of the obtained CT data in determining the ratio of pathologically altered lacrimal ducts and adjacent intranasal structures, thanks to which there was a clearer direction of surgical intervention and more economical access to a lacrimal sac was carried out.

Local complications of the eyeball in the postoperative period were observed in subgroups 2A, 2B and group 3. In 4 (3,7%) patients developed severe conjunctivitis on the background of being in LD implant for 1.5 months. One patient was from subgroups 2A and 2B, one – group 3 (Table 3). Inflammatory phenomena in all cases were stopped by the appointment of a fixed combination of dexamethasone, neomycin sulfate and polymyxin. Sulfate in the form of eye drops 4 times a day for 7-10 days. No such complications were observed in patients of the studied clinical group.

In three (2.8%) patients there was a loss or displacement of implants in the follow-up period from 2 weeks to 1 month of wearing: these were 2 patients from group 3 and 1 patient from subgroup 2B (Table 3). In all cases, the PVC conductor was reinstalled with endoscopic control.

Two (1.8%) patients from subgroup 2A and group 3 due to prolonged stay in the LD of the implant in the area of the lower lacrimal duct formed granulations. This required additional ophthalmic guidance to remove them.

Epiphora during implant wearing was noted in 12 (11.0%) patients: 6 – from group 3 (3 patients from subgroups 2A and 2B). Tearing in this category of patients persisted until the implants were removed and ranged from 2 to 4 points on a scale P.L. Munk. This was apparently due to the fact that the PVC conductor installed in the lower lacrimal duct prevented the outflow of tears, and the upper lacrimal point and the upper lacrimal duct in the proper volume could not compensate for the tear function. In addition, the implant somewhat filled the lumen of the common lacrimal duct and dacryorhinostoma and, thus, hindered the outflow of tears. Also, as a foreign body in the LD and nasal cavity, it could stimulate tear hyperproduction. In turn, in the control clinical group could prevent the outflow of tears,

Table 2

The incidence of complications of nosebleeds and lower eyelid edema in patients of clinical groups, n=109

Indicator of local complication	1A (n=28)		1B (n=17)		2A (n=21)		2B (n=15)		3 (n=28)	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Nose bleeding	0	0	2	11,8	0	0	2	13,3	3	10,7
Swelling of the lower eyelid	0	0	2	11,8	0	0	2	13,3	4	14,3

Table 3

Local complications of the eyeball, detected in the postoperative period in patients of clinical groups, n=109

Indicator of local complication	1A (n=28)		1B (n=17)		2A (n=21)		2B (n=15)		3 (n=28)	
	abs.	%	abs.	%	abs.	%	abs.	%	abs.	%
Conjunctivitis is pronounced	0	0	0	0	1	4,8	1	6,7	2	7,1
Granulations in the area of the lower lacrimal duct	0	0	0	0	1	4,8	0	0	1	3,6
Ectopia of the lower lacrimal point	0	0	0	0	0	0	1	6,7	1	3,6
Epiphora during implant wearing	0	0	0	0	3	14,3	3	20	6	21,4
Implant prolapse	0	0	0	0	0	0	1	6,7	2	7,1
Total	0	0	0	0	5	23,8	6	40,0	12	42,9

in addition to the PVC conductor, also swollen displaced flaps of the mucous membrane of the lateral wall of the nasal cavity and the medial wall of the lacrimal sac.

Two (1.8%) patients from subgroup 2B and group 3 had ectopia of the lower lacrimal point. This complication was due to her prolonged stay in the downward position of the conductor. Such patients were observed by an ophthalmologist, and in six months the position of the lacrimal point returned to normal.

Local complications of the eyeball are listed in the Table 3.

Thus, as can be seen from the data in table 3, in patients of subgroups 1A and 1B, who underwent endonasal endoscopic dacryocystorhinostomy without PVC conductor in LD, no complications were observed. At the same time, in patients who underwent major surgery to establish a conductor in LD, observed almost all variants of complications. It should be noted that in group 2A, where in the preoperative period performed CT according to the method developed by us, the least number of ophthalmic complications was noted – 5 (23,8%) observations. At the same time, in patients of subgroup 2B and group 3 complications were recorded in 6 (40,0%) and 12 (42,9%) patients, respectively.

CONCLUSIONS

The developed method of endonasal endoscopic dacryocystorhinostomy meets the principles of cost-effective surgery and is effective in the treatment of patients with chronic dacryocystitis in terms of local complications.

The use of CT of the lacrimal ducts according to the developed method allows to improve the results of surgical treatment in terms of local complications.

The direction of surgery and the absence of a conductor in the tear ducts avoid local complications from the nasal cavity and eyeball.

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УСКЛАДНЕННЯ ПРИ ХІРУРГІЧНОМУ ЛІКУВАННІ ХВОРИХ З ХРОНІЧНИМ ДАКРІОЦИСТИТОМ

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Актуальність. Ефективне лікування хронічного дакриоциститу (ХД) залишається актуальною проблемою сучасної офтальмології та ринології. При вивченні цього питання не завжди приділяється достатньо уваги ускладненням.

Мета: проаналізувати наявні ускладнення при хірургічному лікуванні хворих з ХД.

Матеріали та методи. Досліджувану групу (1 група) склали 45 пацієнтів з хронічним дакриоциститом, яким ендоназальна ендоскопічна дакриоцисториностомія (ЕЕДЦРС) була здійснена за розробленою власною методикою. У групу порівняння (2 група) було включено 36 хворих, яким після виконання розробленої ЕЕДЦРС в зону дакриоцисторинози встановлювали провідник з полівінілхлориду (ПВХ). У контрольну групу (3 група) увійшли 28 пацієнтів, яким ЕЕДЦРС виконували за традиційною методикою: зі збереженням і пластичним укладанням слизових клаптів та з установленням ПВХ-провідника. Пацієнти 1 та 2 груп були розділені на 2 підгрупи: до 1А і 2А увійшли пацієнти, яким у передопераційному періоді проводили комп'ютерну томографію (КТ) слюзовідвідних шляхів за розробленою методикою, а хворим підгруп 1В і 2В – за традиційним алгоритмом. Статистичний аналіз проводили за допомогою ліцензованої програми MedCalc (MedCalc Software bvba, Ostend, Belgium; 2017).

Результати. У пацієнтів підгруп 2А, 2В і групи 3 в період 1,5 місяці після операції були зафіксовані місцеві ускладнення з боку очного яблука: епіфора у період носіння імпланта, виражений кон'юнктивіт, випадіння та зміщення імпланта, грануляції у ділянці нижнього слізного каналця, ектопія нижньої слізної точки. Подібних ускладнень у пацієнтів підгруп 1А і 1В не спостерігалось. У пацієнтів підгруп 1В, 2В і групи 3 в ранньому післяопераційному періоді були зафіксовані різного ступеня вираженості набряклість нижньої повіки, а також носові кровотечі після видалення тампонів. У пацієнтів підгруп 1А і 2А такі ускладнення не спостерігались, і відмінність між групами була статистично значущою ($p < 0,05$).

Висновок. КТ слюзовідвідних шляхів та ЕЕДЦРС за розробленими методиками є ефективними та дозволяють при їх поєднаному застосуванні уникнути місцевих ускладнень з боку порожнини носа та очного яблука.

Ключові слова: хронічний дакриоцистит, ендоназальна дакриоцисториностомія, ускладнення.

ОСЛОЖНЕНИЯ ПРИ ХИРУРГИЧЕСКОМ ЛЕЧЕНИИ БОЛЬНЫХ С ХРОНИЧЕСКИМ ДАКРИОЦИСТИТОМ

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Актуальность. Эффективное лечение хронического дакриоцистита (ХД) остается актуальной проблемой современной офтальмологии и ринологии. При изучении этого вопроса не всегда уделяется достаточного внимания осложнениям.

Цель: проанализировать имеющиеся осложнения при хирургическом лечении больных с ХД.

Материалы и методы. Исследуемую группу (1 группа) составили 45 пациентов с ХД, которым эндоназальная эндоскопическая дакриоцисториностомия (ЕЕДЦРС) выполнена по разработанной собственной методике. В группу сравнения (2 группа) были включены 36 больных, которым после выполнения разработанной ЕЕДЦРС в зону дакриориностомы устанавливали проводник из поливинилхлорида (ПВХ). В контрольную группу (3 группа) вошли 28 пациентов, которым ЕЕДЦРС выполняли по традиционной методике: с сохранением и пластической укладкой слизистых лоскутов и с установкой ПВХ-проводника. Пациенты 1 и 2 групп были разделены на 2 подгруппы: в 1А и 2А вошли пациенты, которым в предоперационном периоде проводили компьютерную томографию (КТ) слезоотводящих путей по разработанной методике, а больным подгрупп 1В и 2В – по традиционному алгоритму. Статистический анализ проводили с помощью лицензированной программы MedCalc (MedCalc Software bvba, Ostend, Belgium; 2017).

Результаты. У пациентов подгрупп 2А, 2В и группы 3 в период 1,5 месяца после операции были зафиксированы местные осложнения со стороны глазного яблока: эпифора в период ношения импланта, выраженный конъюнктивит, выпадение и смещение импланта, грануляции в области нижнего слезного канальца, эктопия нижней слезной точки. Подобных осложнений у пациентов подгрупп 1А и 1В не наблюдалось. У пациентов подгрупп 1В, 2В и группы 3 в раннем послеоперационном периоде были зафиксированы различной степени выраженности отечность нижнего века, а также носовые кровотечения после удаления тампонов. У пациентов подгрупп 1А и 2А такие осложнения не наблюдались, и различие между группами была статистически значимой ($p < 0,05$).

Выводы. КТ слезоотводящих путей и ЭЕДЦРС по разработанным методикам эффективны и позволяют при их одновременном применении избежать местных осложнений со стороны полости носа и глазного яблока.

Ключевые слова: хронический дакриоцистит, эндоназальная дакриоцисториностомия, осложнения.