The purpose of this study is to analyze the causes of relapses of chronic dacryocystitis. Material and methods. The research included 24 patients who were operated in our clinic from January 2018 to September 2022. All patients had previously operated on for external dacryocystorhinostomy. 14 patients underwent endonasal dacryocystorhinostomy surgery resulted from traumatic dacryocystitis. All patients received a standard ophthalmologic and dacryologic examination, including functional tests to assess the patency of the lacrimal drainage system. All patients were prescribed endonasal dacryocystorhinostomy. All patients also underwent intraoperative examination and, if necessary, CT scan.

The severity of lacrimation was assessed before and after the operation using a point scale from 0 to 4: a score of 0 indicated an absence of lacrimation complaints, 1 denoted mild lacrimation, 2 signified moderate lacrimation, 3 indicated lacrimation occurring solely outdoors, and 4 represented severe lacrimation both indoors and outdoors. All patients underwent examinations 1, 3, 7 days, 1 month, 3 months, and 6 months post-surgery. A successful outcome, defined as a score of 0 points, was achieved in 95.8% of cases.

Results. In the majority of patients operated because of traumatic dacryocystitis, a rhinological examination revealed displacement and deformation of the nasal bones, hypertrophic rhinitis and other nasal diseases. Moreover, intraoperative examination revealed a poor-quality anastomosis due to scar tissue, the presence of movable bone fragments in the area of rhinostomy and displacement of the lacrimal sac. Other reasons for relapse included insufficient drainage and incorrectly formed bone hole in the wall of the nose. Conclusions. Drainage of the formed anastomosis is a prerequisite for successful surgery of chronic dacryocystitis. Factors that increase the likelihood of relapses are significant changes in the topography of the tear ducts, as well as scar tissue changes in the rhinostomy area and the nasal mucosa. The correct choice of surgical treatment method (in our case, EDCR) in patients with recurrent chronic dacryocystitis, it allows to increase the effectiveness of surgical treatment of these patients.

Key words: relapse of chronic dacryocystitis, external dacryocystorhinostomy, endonasal dacryocystorhinostomy.

Introduction

Pathology affecting the vertical segment of the lacrimal tract is recognized as a prevalent issue within eye diseases, with an estimated prevalence ranging from 6% to 25% according to various sources [1-5]. The primary clinical manifestation of this condition is excessive tearing. Beyond being a cosmetic concern, it poses a hindrance in career selection and can have adverse effects on the patient's psychological well-being, particularly in young women. Alongside complaints of profuse tearing, individuals with this pathology may also report vision blurring and the discharge of pus from the lacrimal ducts [6-8].

Various methods have been proposed to identify the causes of lacrimation. In clinical practice, investigative approaches for examining lacrimal pathways include the color nasal test, tubular test, test involving the washing of lacrimal pathways, and the M.Y. Sultanov test [4-6, 9, 10].

Dacryocystitis is primarily caused by inflammation of the nasolacrimal duct, with initial inflammation typically localized in the nasal cavity or paranasal sinuses. When conservative therapy for chronic dacryocystitis proves unsuccessful, surgical intervention is commonly recommended [1, 2, 6, 7, 9-11].

An equally important problem is the restoration of the function of lacrimal drainage after surgical treatment of chronic dacryocystitis. To date, dacryocystorhinostomy (DCR) in various modifications remains the main surgical intervention to eliminate obstruction of the lacrimal pathways [3, 8, 9, 10]. Dacryocystorhinostomy is the preferred surgical solution in cases of nasolacrimal duct obstruction. The procedure involves creating an alternative pathway between the lacrimal sac and the nasal cavity, which leads to a bypass of the duct and allows the lacrimal fluid to drain directly into the nasal cavity. This procedure is traditionally performed by external access, including an incision on the crest of the nose, creating a hole in the lacrimal sac, holes in the nasal bone (osteotomy) and mucous membrane, as well as attaching the lacrimal sac and mucosal openings to create an alternative pathway [4-6, 7, 9].

Ophthalmic surgeons attribute the lack of success in dacryocystorhinostomy (DCR) to challenges encountered during critical stages of the procedure, such as excising the bone "window" and establishing a functional anastomosis. According to some reports, rhinostoma growth is noted in 10-20% of cases following this operation.

To enhance the selection of therapeutic strategies, a thorough examination of the functional status of the tear ducts is essential.

The aim of this study is to analyze the causes of relapses of chronic dacryocystitis after external DCR and choose the optimal method for their elimination.

Material and methods

The analysis of the aetiological factors of chronic dacryocystitis was carried out in 24 patients...
with diagnosis of chronic dacryocystitis referred to the Department of Ophthalmology, Acad. M. A. Mir-Kasimov Republic Clinical Hospital, Baku, Azerbaijan, for the period from January 2018 to September 2022. All patients had previously undergone external DCR. Of these, 8 patients were operated on in our clinic, 16 patients were operated on in other medical institutions. Among them, 5 patients were men, 19 patients were women. The age of the patients ranged from 21 to 66 years (38±3.4 years). In 14 cases, patients were operated on for traumatic dacryocystitis. All patients were prescribed endonasal dacryocystorhinostomy (DCR).

Before the operation, an ophthalmological examination was performed according to the standard scheme. The bacteriological study included a Schirmer test, a tubular test according to the method of M.Y. Sultanov [6], as well as a tubular and lacrimal-nasal test with a dye to determine the active patency of the tear ducts. In the postoperative period, the restoration of lacrimal drainage was evaluated by the results of flushing of the lacrimal pathways, as well as using a color tear-nasal test.

All patients received color samples as a necessary step to identify potential causes of relapse following previous surgical interventions. An intraoperative study was conducted, supplemented by additional examinations such as CT scans, when deemed necessary.

The intensity of lacrimation was evaluated before and after surgery using a scoring scale ranging from 0 to 4, where 0 points indicated no complaints of lacrimation, 1 point signified minor lacrimation, 2 points represented moderate lacrimation, 3 points indicated lacrimation only outdoors, and 4 points denoted pronounced lacrimation both indoors and outdoors [3, 9].

Follow-up examinations were conducted at intervals of 1, 3, 7 days, 1 month, 3 months, and 6 months post-surgery for all patients.

The procedure was carried out under local anesthesia. The execution technique unfolded as follows: Approximately 20-30 minutes before commencement, gauze turunds saturated with a solution comprising 2% lidocaine and 0.1% epinephrine were introduced into the common nasal passage, specifically targeting the anterior end of the middle nasal concha. Subsequent to anesthesia, both tear points underwent dilation using a conical probe. Employing a septum needle, a mucosal injection of 1% lidocaine solution with adrenaline (1:1000) was administered into the agger nasi cell zone.

The first stages of the operation were performed under the control of a microscope, the field of view of the microscope was set to the area of the middle nasal concha. Coagulation of the mucous membrane of the lateral nasal wall was performed in the area of the projection of the lacrimal sac. At the second stage, the bone window was formed. A cutting boron with a diameter of 6 mm was used to remove the bone mass in the projection area of the lacrimal sac. As soon as the wall of the lacrimal sac appeared in the bone window, the work with the cutting boron stopped.

In the postoperative period, all patients washed the lacrimal-nasal passage through the lacrimal tubules, antibacterial drops were prescribed 4 times a day for 1 month.

Results

In 14 patients operated for traumatic dacryocystitis, lacrimal tract damage was not observed. Rhinological examination revealed in most patients with traumatic dacryocystitis displacement and deformation of the bones of the nose, hypertrophic rhinitis and other diseases of the nose.

In the remaining 10 patients with uncomplicated forms of dacryocystitis (non-traumatic), relapses occurred due to inadequate drainage in 4 cases and improper formation of the bone hole in 6 cases.

In the intraoperative examination of rhinostomy, it was observed that the relapse in 16 patients was attributed to an incorrectly formed bone hole in the side wall of the nose. Most frequently, this misalignment was situated anteriorly and superiorly relative to the required location.

In traumatic dacryocystitis cases, a suboptimal anastomosis was identified, primarily stemming from extensive scar tissue changes, the presence of mobile bone fragments in the rhinostomy formation zone, or displacement of the lacrimal sac.

In cases of traumatic dacryocystitis, there was a combination of several causes that led to a relapse of the disease. These are, first of all, underestimation of changes in the topography of the lacrimal pathways after injury, mistakes made in the technique of surgery - poor and insufficient adaptation of the wound edges of the nasal mucosa and lacrimal sac during the formation of the anastomosis, incomplete hemostasis, the formation of small holes in the bone, etc.

The subjective assessment of the severity of lacrimation before and after surgery is presented in Table 1.

<table>
<thead>
<tr>
<th>Severity of lacrimation (score)</th>
<th>Before the operation</th>
<th>After the operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of eyes</td>
<td>%</td>
</tr>
<tr>
<td>0</td>
<td>23</td>
<td>95.8</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td>4</td>
<td>24</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 1: Subjective assessment of the severity of lacrimation before and after surgery.
As can be seen from the table, according to a 4-point scale, 23 patients reported about having no lacrimation, one patient complained of lacrimation on the street (on a scale of 3 points).

The results of a color tear-nasal test of the tear ducts after surgery are shown in Table 2.

All patients (24 eyes) underwent endonasal endoscopic dacryocystorhinostomy (EDCR). The soft tissue incision was performed on an old scar. The use of endonasal endoscopy enables optimizing the size of the hole in the bone, while keeping the nasal mucosa intact.

Discussion

As is known, the main clinical symptom of chronic dacryocystitis is lacrimation, in most cases accompanied by suppuration. In addition to constant discomfort, these symptoms negatively affect the patient's psyche. The causes of lacrimation are evaluated in clinical practice by various functional tests, as well as by washing the lacrimal pathways [4-6, 9, 10].

Inflammation of the nasolacrimal duct is the cause of the development of chronic dacryocystitis [1, 2, 6-11].

To date, the main surgical intervention to eliminate obstruction of the lacrimal pathways remains DCR in various modifications [3, 8-10]. The procedure involves creating an alternative pathway between the lacrimal sac and the nasal cavity, which leads to a bypass of the duct and allows the lacrimal fluid to drain directly into the nasal cavity. For many surgeons, the method of choice is classical DCR, which is performed by external access, including an incision on the crest of the nose, creating a hole in the lacrimal sac, holes in the nasal bone (osteotomy) and the mucous membrane, as well as attaching the lacrimal sac and mucosal openings to create an alternative membrane, as well as attaching the lacrimal sac and mucosal openings to create an alternative anastomosis. Factors contributing to an increased risk of relapses include substantial alterations in tear duct topography, as well as scar tissue changes in the rhinostomy area and nasal mucosa. Opting for the correct surgical treatment method, such as External Dacryocystorhinostomy (EDCR), in patients with recurrent chronic dacryocystitis enhances the overall efficacy of surgical interventions for this patient group.

Conclusion

Successful surgery for chronic dacryocystitis necessitates proper drainage of the established anastomosis. Factors contributing to an increased risk of relapses include substantial alterations in tear duct topography, as well as scar tissue changes in the rhinostomy area and nasal mucosa. Opting for the correct surgical treatment method, such as External Dacryocystorhinostomy (EDCR), in patients with recurrent chronic dacryocystitis enhances the overall efficacy of surgical interventions for this patient group.

Prospects for Further Research

Future research endeavors aim to investigate a larger cohort of patients experiencing recurrent chronic dacryocystitis after external dacryocystorhinostomy. The goal is to identify new factors associated with recurrence, thereby improving the effectiveness of surgical treatments for this specific patient population.

References

1. Askerova SM. Kompleksnoe chirurgicheskoe lechenie pervichnoi i induciravannoi patologii silznoi sistemy [Complex surgical treatment of primary and induced pathology of the malignant system]. Abstr. Dr. Sci. (Med.), M; 2005. 52 s. [Russian]

Реферат
АНАЛІЗ НЕВДАЛОЇ ЗОВНІШНЬОЇ ДАКРІОЦИСТОРИНОСТОМІЇ У ХВОРИХ З ХРОНІЧНИМ ДАКРІОЦИСТИТОМ І ШЛЯХИ ЇХ УСУНЕННЯ
Мусаєва Нігяр Бахтіяр гизи
Ключові слова: рецидиви дакріоциститів, зовнішня дакріоцисториностомія, ендоназальна дакріоцисторино стомія.
Метою дослідження було провести аналіз причин рецидивів хронічного дакріоциститу після зовнішньої дакріоцисториностомії та вибрати оптимальний метод їх усунення.
Матеріал та методи. В дослідженні прийняли участь 24 пацієнти з діагнозом хронічний дакріоцистит, які звернулися до Республіканської клінічної лікарні ім. акад. М. А. Мир-Касімова (Баку, Азербайджан) в період з січня 2018 року по вересень 2022 року.
Матеріал та методи. Всім пацієнтам раніше було проведено зовнішню дакріоцисториностомію. 14 пацієнтів було прооперовано з приводу травматичного дакріоциститу. Передопераційне обстеження включало стандартне офтальмологічне обстеження, а також проведення функціональних проб для визначення активної прохідності сльозовідвідних шляхів. Усім пацієнтам було призначено ендоназальну дакріоцисторино стомію. Для з'ясування можливих причин рецидиву всім пацієнтам було проведено інтраоперативне дослідження, а за необхідності комп'ютерну томографію.
Результати. Оцінка виразності сльозотечі проводилася до та після операції з використанням балової шкали від 0 до 4, де 0 балів – відсутність скарг на сльозотечу, 1 бал – незначна сльозотеча, 2 бали – помірна сльозотеча, 3 бали – сльозотеча тільки на вулиці, 4 бали – виражена сльозотеча як на вулиці, так і в приміщенні. Усі пацієнти обстежувалися через 1, 3, 7 днів, 1 місяць, 3 місяці та 6 місяців після операції. При реоперативній рецидивів хронічних дакріоциститів методом ендоназальної дакріоцисторино стомії отримано позитивний ефект у 95,8% випадків (0 балів).
У більшості хворих, оперованих з приводу травматичного дакріоциститу, ринологічне дослідження виявило зміщення і деформацію кісток носа, гіпертрофічний риніт та інші захворювання носа. Також при інтраопераційному досліджені було виявано неправильну сферацію кісткового отвір у бічній стінці носа.
Висновки. Дренування сформованого сполучення є обов'язковою умовою успішної хірургії хронічних дакріоциститів. Факторами, що збільшують ймовірність виникнення рецидивів, є значні зміни топографії сльозовідвідних шляхів, а також патологічні зміни тканин в зоні формування риностоми або зміщення слізного мішка. Причинами рецидиву також можна вважати дренаж, який не завжди застосовується, і неправильну сформованість кістковий отвір у бічній стінці носа.