PRIMARY ADULT ENDOSCOPIC DACRYOCYSTORHINOSTOMY: A NEW EXPERIENCE IN DUHOK

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ABSTRACT

Background: Over the last decade dacryocystorhinostomy has been considered as the primary surgery to treat nasolacrimal duct obstruction aiming to bypass the obstructed nasolacrimal duct. Dacryocystorhinostomy has two types: traditional external and new endoscopic. The major advantages of the endoscopic technique over the open one are that there is no external incision and the subsequent scar is needed to do the surgery, very low risk of injuring the medial canthus, and the maintenance of the orbicularis oculi muscle pumping mechanism.

Study aim: This study aims to assess the success rate, surgical outcome, and complications among patients who will undergo this surgery.

Patient and Methods: this is a retrospective study conducted on (38) patients who performed endoscopic dacryocystorhinostomy at Vin private hospital in Duhok in the period between (2015–2018) where the medical records of the patients were reviewed in detail to obtain the required information for the study purposes. The information including surgery, surgery side, patients complaints, and outcome of surgery was documented.

Results: Success of the surgery is considered when there is an absence of epiphora and other symptoms 3 months postoperatively with endoscopic visualization of the newly fashioned ostium. The results showed that around (89.5%) of the patient, have complete recovery of their original symptoms, and (10.5%) are regarded as failures for whom there is no improvement of their symptoms at all.

Conclusion: Endoscopic dacryocystorhinostomy is an effective surgical procedure in treating primary acquired nasolacrimal duct obstruction with comparable outcomes to the old external dacryocystorhinostomy with fewer side effects and complications.

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Keywords: Dacryocystorhinostomy, Epiphora, Endoscopic Sinus surgery.

Dacryocystorhinostomy (DCR) has been recently considered as the standard surgery to treat obstructed nasolacrimal duct. The surgery is performed to fashion a new anastomosis between the lacrimal sac and the nasal cavity bypassing the obstructed duct. There are two types of surgeries to make this anastomosis the External DCR (traditional) technique and the Endoscopic endonasal DCR (new) technique.[1]

Epiphora is a major symptom of nasolacrimal duct obstruction, acute or chronic dacryocystitis, conjunctivitis and conjunctival injection. all these are considered symptoms that require surgical intervention especially after failure of other treating modalities like probing.[1]

Another modification of this operation is the using of powered instruments which make a complete sac exposure is done with primary mucosal apposition, this technique

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has a comparable success rate comparable to external DCR[2].

4 decades ago, external dacryocystorhinostomy was the traditional surgery to treat distal nasolacrimal duct obstruction. After that with the development of sinuscope and the improvement in surgical technique endoscopic endonasal DCR has become popular in treating NLD obstruction with comparable results to the open one.[3]

Avoidance of external scar is the major advantage of the endoscopic technique over the external one adding to that the low risk of medial canthus injury and the preservation of orbicularis oculi pumping mechanism. All these have made the endoscopic DCR more popular in treating nasolacrimal duct obstruction.[4]

1.2. Study Aim

Our study aim is to assess the success rate, surgical outcome and complications among patients who will undergo this surgery.

PATIENTS AND METHODS

Study Design and Sampling

At the beginning of the conduction of our study, the records of 80 patients have been reviewed, then any patient who does not fulfill the inclusion criteria and any patient who has not completed his 3-month postoperative follow-up visit were excluded from this study.

38 patients out of 80 have been finally included in this study, and all patients diagnosed with primary nasolacrimal duct obstruction have been purposively and retrospectively included in this observational study. The author of the study reviewed the medical records of the patients who underwent (ENT) surgeries in Vin private hospitals that were performed between 2015 and 2018.

The medical records of the patients were reviewed in detail to obtain the required information for the study purposes. The information including surgery type, surgery side, patient complaints, and outcome of surgery was documented in a pre-designed questionnaire.

Inclusion and Exclusion Criteria

The patients who were diagnosed with PANLDO and who were aged 16 years and older, regardless of their socio-demographic aspects were included in this study.

The following patients were excluded from the study:

Previous Dacryocystorhinostomy.

Presacal obstruction.

Congenital Nasolacrimal Duct Obstruction (NLDO).

History of trauma to the lacrimal system.

History of irradiation to orbital region.

Ethical Considerations

Ethical approval was taken from the local health ethical committee in Duhok City. The confidentiality of the personal information of the patients whose medical records were reviewed was protected.

Surgical Procedures

All surgeries have been performed under general anesthesia by an ophthalmologist and otolaryngologist. Local infiltration of the incision mucosal site is performed using 1% lidocaine with 1:100000 epinephrine. With a socked cotton with 1:1000 epinephrine is inserted in the nasal cavity 15 minutes before the surgery to achieve a good vasoconstriction.

Zero-degree sinuscopy was used in the surgery. To make a vertical mucosal incision, a crescent knife was used in the surgery. The incision was started 10-12 mm anterior to the insertion of the middle turbinate. After that, it was extended 15-20 mm inferiorly towards the insertion of the inferior turbinate. A freer elevator then used to elevate the mucosal flap. After that, the flap was raised posteriorly over the frontal

process of the maxilla to its junction with the lacrimal bone.

Kerrison rongeur was used to remove the lacrimal bone overlying the lacrimal sac. Sometimes, a powered instrument is used. After the sac has been exposed a cruciate incision is made in the sac with elevation of the flaps with water irrigation from upper and lower puncti is made to assess the patency of the ducts.

A lacrimal duct probe was placed from the puncti to the newly created opening in the sac which helped to reapproximate the sac flap over the nasal mucosal flap.

Silicon DCR tube is inserted from both the upper and lower puncti and pulled and sutured inside the nasal cavity.

Patients after surgery have been instructed to use saline nasal irrigation twice daily with ciprofloxacin eye drops as well as chloramphenicol eye ointment at night for 2 weeks.

Outcome Measures

Patients' outcome is assessed in two sessions the first one is seven days after surgery and the second session 3 months after surgery. The assessment includes endoscopic visualization of the newly formed ostium with successful irrigation test as well as the resolution of patient epiphora.

Diagnosis and Measures

The following information was collected from the medical records of the patients. The age of the patients records in years. The side of the surgery was documented in right, left, or bilateral. The complaints of the patients were recorded and included redness, epiphora, edema, and a combination of these symptoms.

The outcomes of the surgery were categorized as follows: Failed was defined as no improvement or no change in the overall medical condition of the patients.

Complete/success was defined as an absence of epiphora and other symptoms 3 months postoperatively with endoscopic visualization of the newly formed opening.

Statistical Analysis

The analysis of data was done by the Statistical Package for Social Sciences (SPSS) version 25. Data were summarized as mean and standard deviation for continuous data like age of the patient and by frequency tables and graphs for categorical data. The association between surgery outcomes and other categorical variables was examined by Fishers' exact test. A p- value of 0.05 was set as the level of significance.

RESULTS

Case Summaries of Patients

The patients had various complaints, including epiphora, pain, discharge, redness, recurrent, chronic infection, edema, or a combination of these symptoms. The surgery was performed either on the right or left side or bilateral. The outcomes of the surgery were documented as complete or fail as shown in table 1

Table 1: Case Summaries of Patients

	Side	Patient Complain	Surgery Outcome
1	Left	More than one complaint	Complete
2	Right	Epiphora	Fail
3	Right	More than one complaint	Complete
4	Right	More than one complaint	Complete
5	Left	Epiphora	Complete

	Side	Patient Complain	Surgery Outcome
6	Bilateral	Epiphora	Fail
7	Right	Epiphora	Complete
8	Bilateral	Epiphora	Complete
9	Right	More than one complaint	Complete
10	Right	Epiphora	Complete
11	Left	More than one complaint	Complete
12	Right	More than one complaint	Complete
13	Left	Epiphora	Complete
14	Right	More than one complaint	Complete
15	Right	Epiphora	Complete
16	Right	More than one complaint	Complete
17	Left	More than one complaint	Complete
18	Right	More than one complaint	Complete
19	Left	More than one complaint	Complete
20	Right	More than one complaint	Complete
21	Left	Edema	Complete
22	Left	Epiphora	Complete
23	Left	Edema	Fail
24	Left	Epiphora	Complete
25	Left	More than one complaint	Complete
26	Right	Epiphora	Complete
27	Right	More than one complaint	Complete
28	Bilateral	Epiphora	Complete
29	Left	More than one complaint	Complete
30	Right	Redness	Complete
31	Left	Epiphora	Complete
32	Right	More than one complaint	Complete
33	Right	Epiphora	Fail
34	Right	More than one complaint	Complete
35	Right	More than one complaint	Complete
36	Right	More than one complaint	Complete
37	Left	Epiphora	Complete
38	Right	Epiphora	Complete

Patients Characteristics and Surgery Outcomes

The age of the patients in this study ranged from 16 to 76 years with a mean of 43.5 years and 15.06 years standard deviation. Exactly half of the patients had a combination of symptoms before surgery followed by epiphora (42.1%), edema (5.3%), and redness (2.6%). The surgery was performed for most of the patients on the right side (55.3%) followed by left (36.8%) and both sides (7.9%). Most of the patients obtained complete recovery with no complain (89.5%) with only 10.5% rate of failure.

3 cases 75% of failed case were due to adhesion between the operating side and nasal septum and 1 case 25% was due to formation of mucosal membrane over the newly formed opening, and all of them have been staged for revision surgery. No complications have been recorded among all the operated patients.

These findings are shown in table 2 and figure 1.

Table 2: Patients, Characteristics and Surgery Outcomes

Patients' characteristics (N=38)	Statistics	
	Mean	**SD**
Age (Range: 16-75 Years)	43.50	15.06
	Number	**Percent %**
Patient Complain		
Redness	1	2.6
Epiphora	16	42.1
More than one complaint	19	50.0
Edema	2	5.3
Operation side		
Right	21	55.3
Left	14	36.8
Bilateral	3	7.9
Surgery Outcome		
Fail	4	10.5
Complete recovery	34	89.5

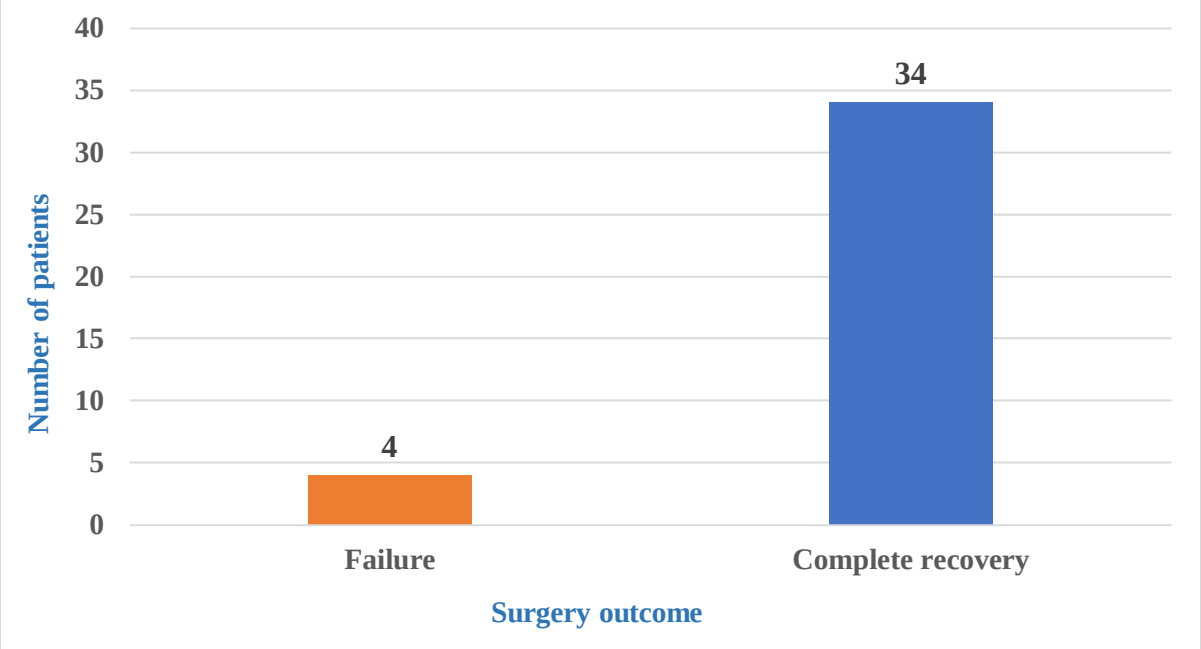

Fig 1: Surgery Outcomes

Surgical Outcome in relation the side of operation and patient complaint

Because the majority of patient had complete recovery as surgery outcome (about 90%), so the complete recovery was

the predominant outcome when related to the side of operation. It happened that 90.5% of those operated on right side had complete recovery and similarly 92.9% of the left side operation and less when surgery done on both sides, but this difference was not statistically significant. Regarding the patient complaint, it was found that majority of those with complete recovery were having more than one complaint. These finding are seen in table 3.

Table 3: Surgical Outcome in relation the side of operation and patient complaint

Characteristics	Surgery outcome		P-value*
	Failure	Complete recovery	
Surgery Side			
Right	2 (9.5)	19 (90.5)	0.48
Left	1 (7.1)	13 (92.9)	
Both sides	1 (33.3)	2 (66.7)	
Patient Complaint			
Redness	0 (0.0)	1 (100.0)	
Epiphora	3 (18.8)	13 (81.2)	0.06
Edema	1 (50.0)	1 (50.0)	
More than one complaint	0 (0.0)	19 (100.0)	

* Fishers' exact test was performed for statistical analyses.

Figures 2 and 3 shows that relation of surgery outcome with side of operation and patient complaint in a graphical way.

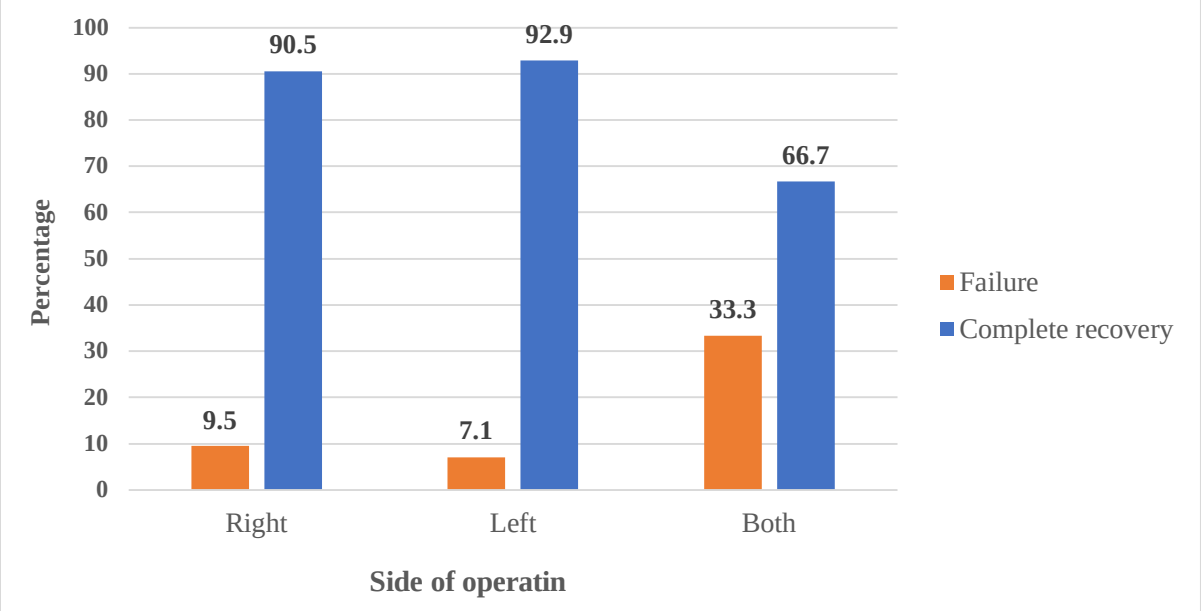

Fig 2: Rate of Surgical Outcomes in Patients with Different Surgery Sides

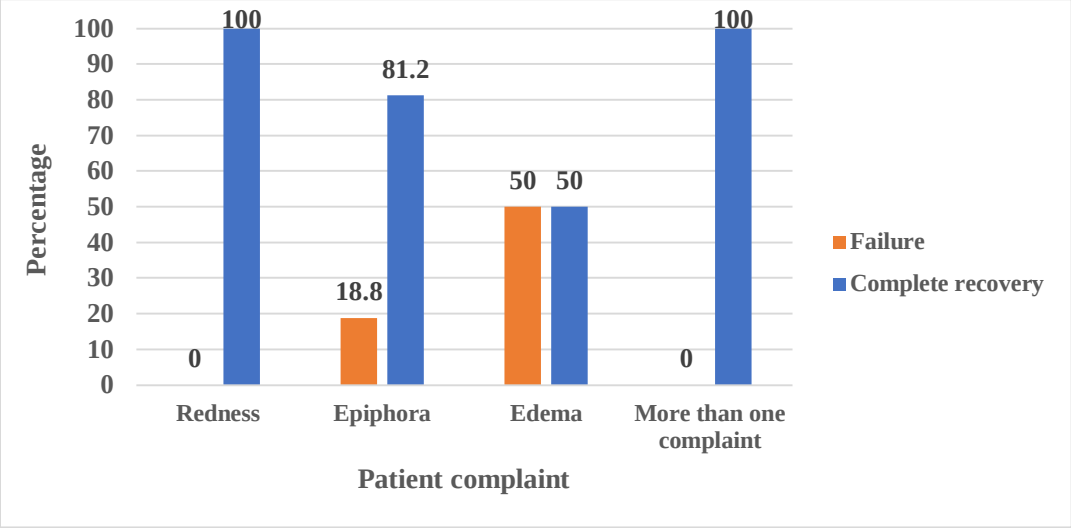

Fig 3: Rate of Surgical Outcomes in Patients with Different Complains

DISCUSSIONS

Endoscopic DCR is a minimally invasive procedure aiming to create a new fistula connecting the lacrimal sac to the nasal cavity to bypass the distally obstructed nasolacrimal duct, with 2 main advantages, first, avoiding external scar and second preserving the pumping mechanism of orbicularis oculi muscle.[5]

Endoscopic DCR has become an effective technique to treat nasolacrimal duct obstruction. The patients had various complaints, including pain, discharge, redness, epiphora, recurrent, chronic infection, edema, or a combination of these symptoms. The surgery was performed either on the right or left side or bilateral. The outcomes of the surgery were documented as complete with no complaints and fail.[6]

the success rate in our study (89.5%) is comparable to other meta-analysis studies using the same surgical technique which shows 92.9% and 90%.[7,8] However our results were higher than other results conducted in our country which showed a success rate of around 72%.[5]

Epiphora is considered the most common symptom affecting patients with nasolacrimal duct obstruction, also Patients can complain of swelling around the eye, and generally, the symptoms are unilateral. Acute or chronic dacrocystitis may be developed if symptoms are untreated. Surgery is recommended when other conservative methods have failed to alleviate the symptoms like messaging over the sac area and dilatation and probing of the ducts.[9]

The current study showed that the mean age of the patients was 43.50 (SD: 15.06 years) ranging between 16 and 76, about half of the patients had a combination of symptoms before surgery (50.0%) followed by epiphora (42.1%), edema (5.3%), and redness (2.6%). The surgery was performed for most of the patients on the right side (55.3%) followed by left (36.8%) and both sides (7.9%). Most of the patients obtained complete recovery with no complaints (89.5%). The rate of failure was 10.5% in the study. The results in our study are comparable to some other published data which showed a higher success rate with higher rates of complications.[10]

The level of lacrimal passage obstruction plays an important role in the success rate of surgery. The study showed that the complete outcomes were more prevalent in patients undergoing surgery at left (64.3%) and on both sides (66.7%). In addition, it was more prevalent in patients who had

multi-complain (63.2%) followed by epiphora (56.3%). There was not any significant correlation between the surgery outcome and either the site of involvement and the patient complaints (p values 0.673 and 0.2) respectively. Complete surgery outcomes were more prevalent in patients who had the surgery side in the right (90.5%) and left (92.9%) followed by bilateral (66.7%). In addition, it was more prevalent in patients who had more than one complaint before surgery followed by epiphora (81.3%). The outcomes of the endoscopic approach were found to be equal with the external approach with great success rates and improved outcomes. The safety profile of the endoscopic approach is found to be very good compared to other approaches like the absence of external scar, maintenance of orbicularis oculi muscle pumping mechanism and preservation of medial canthus.[11-14]

In contrast to many studies that show a comparable result between endoscopic and external DCR, a study conducted by Mostafa A Waly et al shows a better success rate (97.5%) in external DCR than our study with negligible concern about external scar.[15]

External DCR has the advantages of direct sac visualization with easy flap formation in contrast to endoscopic one, a study conducted by Amadi shows a higher success rate (98%) among patient with external DCR in contrast to (94%) success rate in patients with a endoscopic DCR.[16]

Endoscopic DCR has become the primary surgical modality to treat nasolacrimal duct obstruction. Endoscopic approach has the advantage of better surgical access to the operated site by doing septoplasty or anterior middle turbinectomy if needed. Endoscopic approach has advantage of treating concomitant nasal problem with the DCR surgery. Endoscopic DCR considered a better alternative option in revision cases as well as in primary cases.[17-18]

CONCLUSION

When properly indicated, endoscopic DCR is a safe and effective procedure, patients have fewer complications with more rapid recovery, a high degree of satisfaction, and a rapid return to usual life and work when compared to external technique. Magnification of the operated site is one of the great advantages of the endoscopic approach, adding to that avoidance of external scar, preservation of the lacrimal pump through the eye's orbicular muscle, less intraoperative time 30-40 minutes, and overall lower morbidity.

It is recommended that endoscopic dacryocystorhinostomy with tube insertion is the treatment of choice in cases of chronic epiphora due to postsaccal stenosis of the lacrimal canal.

More further studies in our locality with a larger group of patients are recommended.

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پوختە

داکریسیستۆرینۆستۆمی سەرەتایی ئەندۆسکۆپی گەورەسالّان: ئەزموونێکی نوێ لە دوّک

پێشەکی و ئارمانج: کریارا نشتەگەریا تویرکێ روندکا یێ دفنێ رێکارەکا سەرەکییە بو چارەسەرکرنا گرتنا کەنالێ دفنێ یێ روندکا بی ئارمانجا قەکرنا کەنالێ هاتییە گرتن. دو جور ژ قێ نشتەرگەریێ پێن هەین، رێکا کەقن یا نشتەرگەریا قەکری ژدەرقە و رێکا نوی بنازورێ. ژ باشیێن رێکا نوی لسەر یا کەقن ئەوە نەبوونا برین ونیشانا نشتەرگەریێ، و پاراستنا میکانزما دەرهاڤێژتنا زەڤلەکا چاڤی یا بازنەیی و نەهێلانا توشبوونا خەلەکا بەرەف دفنێ.

ئارمانج: ئارمانجا قەکولینێ هەلسەنگاندنا ئەنجام و ریژا سەرکەفتنێ و ئالوزییێن نشتەرگەریێ.

رێکێن قەکولینێ: شێوازێ قەکولینا پارچەیی یا پاشڤەیی هاتە بکارئینان لسەر (38) نەخوشێن کو نشەرگەریا قەکرنا کەنالێ دفنێ یێ روندکا بنازورێ بە هاتییە کرن لنەخوشخانا ڤین یا تایبەت لدهوکێ دماوێ دناڤبەرا 2015 – 2018 پێداچوونا فایلێن نەخوشا هاتە کرن وپێزانینێن پێدڤی بو قەکولینێ هاتنە وەرگرتن دەربارەی نشتەرگەریێ دگەل نیشانێن نەخوشا و لایێ نشتەگەریێ و ئەنجامێن نشتەگەریێ.

ئەنجام: قەکولینێ دیارکر کو پرانیا نەخوشا (نێزیکی90%) بتەمامی ژنیشانێن نەخوشیێ پێن دەستپێکی رزگاربوون بەرامبەر (10%) کو نشتەرگەری ب نەسەرکەفتی هاتە وەسفکرن و نیشان هەر وەك خو مان.

دەرئەنجام: نشەرگەریا قەکرنا کەنالێ دفنێ یێ روندکا بنازورێ رێکارەکا نشتەگەریا کاریگەرە بو چارەسەرکرنا گرتنا کەنالێ دفنێ یێ روندکا دگەل ئەنجامێن وەکهەڤ دگەل رێکا کەقن و بکێمتر کارتێکرنێن لایەکی و ئالوزییا.

الخلاصة

فغر كيس الدمع بالأنف بالمنظار الأولي للبالغين: تجربة جديدة في دهوك

الخلفية والأهداف: يعتبر فغر كيس الدمع الإجراء الأساسي لعلاج انسداد القناة الأنفية الدمعية بهدف تجاوز الانسداد في هذاالقناة .توجد طريقتان لهذه العملية، الطريقة التقليدية بالجراحة الخارجية والطريقة الجديدة بالمنظار. تتميز الجراحة بالمنظار عن التقنية التقليدية بعدم وجود الجرح الخارجي وظهور ندبة الجراحة، وكذلك الحفاظ على آلية ضخ عضلة العين الدايرية وتجنب الإصابة المحتملة للحلقة الإنسي.

الأهداف: استهدف البحث الى تقييم نتائج ونسبة نجاح العملية وكذلك المضاعفات لدى المرضى الذين اجريت لهم .

طرق البحث: تم استخدام نمط الدراسة المقطعية باثر رجعي على 38 مريض ممن اجريت لهم عملية فغر كيس الدمع بالمنظار في مستشفى فين الخاص في دهوك في الفترة بين ٢٠١٥-٢٠١٨ تمت مراجعة الملفات الطبية للمرضى واخذ المعلومات المطلوبة عن الجراحة لأغراض الدراسة بما فيها الأعراض السريرية للمرضى والجانب الذي اجريت عليه الجراحة مع نتايج الجراحة.

النتائج: اظهرت الدراسة بان اغلبية المرضى (حوالي 90%) قد تماثلوا للشفاء التام من اعراضهم الأولية، بينما اعتبرت العملية لدى (10%) من المرضى غير ناجحة او فاشلة حيث لم تتحسن اعراضهم على الإطلاق.

الاستنتاجات: عملية فغر كيس الدمع بالمنظار هو اجراء جراحي فعال في علاج انسداد القناة الدمعية مع نتائج مماثلة للجراحة الخارجية القديمة واثار جانبية ومضاعفات اقل.