Original article

Dacryocystorhinostomy in adolescents and young adults

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ABSTRACT

Objective: To study the relative frequency, causes, anatomical and functional outcomes and complications of dacryocystorhinostomy (DCR) in patients between the second and fifth decade of life.

Method: A retrospective, nonrandomized, interventional study of a clinical series of 12 patients who underwent DCR from March 2007 to March 2009, performed by a single surgeon, with an age range between 10 and 48 years. Recorded data included age at surgery, date of surgery, gender, affected side, cause of obstruction, surgical technique, outcome, and complications. The relative frequency of such cases over the total was calculated.

Results: DCR in patients between 13 and 48 years old represented 14.11% of the total (12:85). In this group 88.8% were females and in 75% surgery was on the right side. The most frequent cause of obstruction was low idiopathic obstruction (58.33%) whereas 41.66% were secondary. An external DCR was performed on 66.67% of patients and the rest were endonasal DCR. Anatomical success was achieved with resolution of symptoms in 91.6% of patients. One case had a hypertrophic scar.

Conclusion: Adolescents and young adults represent a significant percentage of cases undergoing DCR surgery. Both the external and endoscopic approaches are shown to be valid alternatives for treating these patients, with good results and low incidence of complications.

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Dacriocistorrinostomía en adolescentes, jóvenes y adultos

R E S U M E N

Objetivo: Estudiar la frecuencia relativa, causas, resultados anatómicos, funcionales y complicaciones de la dacriocistorrinostomía (DCR) en pacientes entre la segunda y quinta décadas de la vida.

Método: Estudio retrospectivo, no aleatorizado, intervencional de una serie de casos clínicos, de 12 pacientes intervenidos de DCR desde marzo de 2007 hasta marzo de 2009, realizadas por un cirujano único, con un rango de edad comprendido entre los 10 y 48 años. Registrándose edad, día de cirugía, género lateralidad, causa de la obstrucción de conducto nasolacrimal con un rango de 10-48 años.

Respecto a los resultados, se obtuvo en el 91.6% de los casos, la resolución de los síntomas, destacando que en el 66.67% de los casos se realizó DCR externa y el resto endonasal.

Conclusion: Los adolescentes y jóvenes adultos representan una importante porción de casos sometidos a DCR. Ambas técnicas, externa y endonasal, son validas alternativas para el tratamiento de estos pacientes, con buenos resultados y baja incidencia de complicaciones.

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Palabras clave:
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nasolacrimal (OCNLG), técnica quirúrgica, resultado de la intervención y complicaciones. Se calculó la frecuencia relativa de estos casos respecto del total.

Resultados: La DCR en pacientes entre 13 y 48 años representaba el 14,11% del total (12:85). En este grupo el 88,8% eran mujeres y en la cirugía el 75% estaba en el lado derecho. La causa más frecuente de obstrucción fue la obstrucción baja idiopática (58,33%), mientras que 41,66% eran secundarias. En el 66,67% de los pacientes una DCR externa se llevó a cabo y el resto fue DCR endonasal. En el 91,6% de los pacientes se logró éxito anatómico con la resolución de los síntomas. Un caso presentó cicatriz hipertrófica.

Conclusión: Los adolescentes y adultos jóvenes representan un porcentaje significativo de casos que reciben cirugía DCR. Tanto el abordaje externo como el endoscópico representan una alternativa válida para el tratamiento de estos pacientes con buenos resultados y baja incidencia de complicaciones.

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Introduction

Nasolachrymal duct obstruction (NLDO) is the most frequent form of lachrymal obstruction. Its prevalence gradually increases at age 40, with a faster growth after 60 and a relative frequency of 20.2 per 100,000 inhabitants in the general population.\(^1\) The risk factors described for this disease include Caucasian race (particularly Mediterranean), increased with age, female sex 4–5:1 and low socioeconomic level (perhaps due to less hygiene).\(^2^,\(^3^\)

As regards etiology, the most frequent cause of NLDO is an evolutionary stenosis in the elderly and an idiopathic stenosis in young people and adults. Other causes include nasosinusonal traumatism, lachrymal duct or sac neoplasia, foreign bodies, bone anomalies, inflammatory diseases such as sarcoidosis or Wegener’s disease, and reconstruction of orbital or facial fractures.\(^2\)

The usual treatment is dacryocystohistostomy (DCR) with various approaches, with external DCR being utilized typically with successful results in approximately 90–95% of cases. Other approaches such as endonasal endoscopic DCR or laser endocanalicular DCR are alternatives to external approaches.\(^3^,\(^6^\)

There are very few studies about NLDO in teenagers, young people and adults. The majority of series comprise elderly patients or focus on obstructions in children.\(^4^–\(^6^\) However, very few studies have been made on the low lachrymal pathway obstruction problem in this age group.

The purpose of this study is to assess the relative frequency, the anatomic and functional results as well as the complications of DCR in patients between the second and fifth decade of life. An additional purpose is to determine in this group of patients the causes and sites of lachrymal pathway drainage system obstruction problems.

Subjects, material and methods

A retrospective, nonrandomized, interventional study of a series of consecutive clinical cases operated for DCR in 2 hospitals between March 2007 and March 2009. The clinical records of old external or endonasal DCR performed during said period of time by a single surgeon, selecting those of patients with an age range comprised between 10 and 48 years, both inclusive.

The nasolachrymal duct obstruction diagnostic was made on the basis of the epiphora clinics, with or without a history of acute dachrycystitis and the presence of reflux in the lachrymal pathway irrigation. All the patients underwent a complete assessment with slit lamp and palpebral exploration. The 2 patients with distal canalicular obstruction were diagnosed by means of probes.

The cases in which endonasal surgery was indicated were also explored by the ENT specialist to assess the nasal cavities. After performing the surgical indication of the treatment, the patient was given the choice of external DCR or endoscopic endonasal DCR, explaining the advantages and drawbacks of each technique. If a previous endocanalicular DCR had failed, the external DCR was indicated. Bicanalicular intubation was made with silicone tubes in all patients and withdrawn after 2–3 months. In endonasal DCR or reinterventions mitomycin C was utilized.

All of the interventions were performed as major outpatient surgery with local anesthesia and sedation.

The post-operation treatment consisted in the instillation of antibiotic-corticoid eyedrops (tobramicine-dexamethasone) 3 times a day for 15 days, followed by a descending posology associated or not to corticoid nasal spray 3 times a day for one month.

The follow-up visits were scheduled at week one, month one and month 3 after the intervention, assessing the patency of the duct and the presence or absence of complications.

The relative frequency of these cases was compared against the overall number of cases.

Results

Of the 85 DCR performed in the period between March 2007 and March 2009, 14.11% were in patients with a mean age of 36.75 years and a range between 13 and 48 years. Of this group, 83.33% were female (10:2) and in 75% of cases the surgery was performed on the right side (9:3).

The most frequent cause of surgery was idiopathic NLDO in 58.33% of cases (7:12), but a significant percentage (41.66%) was due to other causes such as nasal–orbital traumatism (1:12), synechiae in the nose with deviation of the nasal...
Fig. 1 – (A) Patient with acute dacyrocystitis due to NLDO secondary to synechiae in nasal vestibule with nasal septum deviation, before surgery. (B) The same patient with enlarged image.

septum (1:12) (Fig. 1A and 8), dacyrocistocele (1:12), and distal canaliculum obstruction (2:12), of which one was secondary to herpetic blepharitis and another to possible traumatism.

None of the patients had been intervened for DCR with one exception of failure of diode laser endocanalicular DCR (Fig. 2).

The surgical technique utilized in 66.66% (8:12) of interventions was external and the remainder endonasal. Bicanalicular intubation with silicone tubes was performed in all patients, regardless of the technique. In the 5 cases intra-op mitomycin C was utilized due to the operation being endonasal DCR or because of previous surgery failure.

The pathway was clear within 3 months in 10 out of the 12 patients, while in one patient there is no follow-up at month 3 and in a further patient the process did not resolve.

In what concerns complications, only one slight hypertrophic scar was observed in a patient with external DCR (Fig. 3). In this short period of time no new stenosis arose as well as any other complication described in the literature.

Table 1 illustrates the main characteristics of each case.

Discussion

In a prospective study various researchers have analyzed the prevalence of congenital NLDO, with a prevalence rate of 5.7% and 8% in series of American and Japanese children respectively.

It is more difficult to determine the true prevalence of acquired NLDO as there are very few studies on this type of NLDO, generally referring to elderly patients instead of young people or adults.

In our series we have found a significant percentage of cases intervened with DCR due to NLDO in teenagers, young people and adults in the past 2 years in both hospitals.

In addition, we also observed that even though the most frequent cause is idiopathic NLDO, in this age group other secondary causes such as nose and sinus traumatism gain importance. This had already been described in other papers, which confirms that traumatic dacyrocystitis are more frequent in males in the age group between 18 and 40. In what concerns sex, no differences were found with other publications, the female sex being prevalent.

Fig. 2 – Patient intervened with external DCR 3 months postop due to failure of endocanalicular laser DCR.

Fig. 3 – Patient intervened with external DCR one week postop, exhibiting a small scar with stitch points still attached and with hardly any inflammation.
In our short series both external DCR and endonasal DCR have exhibited similar anatomical and functional results, with very few complications in NLDO treatment. Probably the endonasal pathway is more adequate in this group of patients to avoid an external scar. However, if the technique is not available, external DCR is also a valid option as it exhibits good functional results and a very small incision which is aesthetically acceptable. Although several complications have been described in relation to the wound such as infection, hypertrophic scar or necrosis, these did not appear in our group. Other complications described in relation to osteotomy and nasal mucosa are epistaxis, LCR fistula and orbital emphysema, which were also absent in our patients.

The utilization of mitomycin C in complicated patients or in re-interventions probably assists in preventing an excessive scarring process which is more likely in young patients. However, prospective studies would be necessary to determine the usefulness of mitomycin C in this age group.

Accordingly, it can be concluded that both the external and endoscopic pathways constitute a valid alternatives for treating these patients, yielding good anatomical and functional results as well as a small prevalence of complications.

However, prospective studies would be required to calculate the prevalence in young patients with NLDO that require intervention with DCR as well as the anatomical and functional results of the various surgical techniques and the complications which could arise thereof. This would require a longer follow-up period.

### Conflict of interests

None of the authors have declared any conflict of interests.

### REFERENCES