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Results of surgical endoscopic Dacryocystorhinostomy (DCR) in different levels of obstruction of the Lacrimal Drainage system
A comparative short and long terms study

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Background: ***Dacryocystorhinostomy (DCR) was always indicated for the treatment of epiphora caused by distal (lacrimal sac or nasolacrimal duct) obstruction, and most authors believed -without solid study in the literature- that DCR is not suitable for proximal (canalicular and common canalicular) obstruction. In our work we are evaluating the results of surgical endoscopic DCR in different levels of obstruction prospectively on a large cohort of patients.***

Methods: ***Eighty patients were included in this study prospectively in the period between October 2002 and March 2004.***

Results: ***In short term follow up, although the results in cases of lower obstruction were better than in upper obstruction yet the difference was not statistically significant. In long term follow up, there was marked difference in the success rate between both groups and the results in lower obstruction were much favorable statistically than those with upper obstruction.***

Conclusion: ***DCR may give early encouraging results in cases of presaccal proximal lacrimal drainage system obstruction, these results are not maintained on long terms, and so DCR surgery is not suitable for cases of presaccal lacrimal drainage system obstruction.***

Keywords: ***Dacryocystorhinostomy, Leveling, Success Rate.***

INTRODUCTION

Dacryocystorhinostomy (DCR) was first described via an external approach by Totti in 1904.(1) In 1989 McDonough and Meiring described the endoscopic transnasal dacryocystorhinostomy (DCR),(2) and since this description a number of modifications using laser have been described as a useful tool in endoscopic DCR. Dacryocystorhinostomy (DCR) was always indicated for the treatment of socially unacceptable epiphora caused by distal (lacrimal sac or nasolacrimal duct) obstruction, and most authors believed -without solid study in the literature- that DCR is not suitable for proximal (canalicular and common canalicular) obstruction.

This concept went true till the study of Yung and Hardman-Lea published in 2002. In their work those authors concluded that endoscopic DCR could be used in the treatment of patients with common canalicular or even canalicular obstruction with comparable results to external or conjunctival DCR with Jones tubes.(3) In our work we are evaluating the results of surgical endoscopic DCR in different levels of obstruction prospectively on a large cohort of patients. Results are evaluated on short term and

then long term intervals to clearly answer the question: could classical DCR be a treatment modality for pre saccal obstruction?

PATIENTS AND METHODS

Eighty patients were included in this study prospectively in the period between October 2002 and March 2004. There were 12 male (15%) and 68 female (85%). Patient complained of epiphora due to lacrimal drainage system obstruction. Patients were assessed, treated and followed up in the ENT and Ophthalmology departments, Cairo University.

Preoperative diagnosis of the level of obstruction was done using:

1. Diagnostic syringing and probing of lacrimal drainage system.
2. Radioactive scintigraphy using technetium 99 (99TC).

Patient Groups:

Patients were classified according to level of obstruction in the lacrimal drainage system into two broad categories.

a) Upper (proximal) lacrimal drainage system obstruction:

22 cases (27.5%) had upper lacrimal drainage system obstruction; among those 14 cases (17.5%) had canalicular obstruction and 8 cases (10%) had common canalicular obstruction.

b) Lower (distal) lacrimal drainage system obstruction:

58 cases (72.5%) had lower lacrimal drainage system obstruction; among those 26 cases (22.5%) had lacrimal sac obstruction while 32 cases (40%) had nasolacrimal duct obstruction.

Surgical Technique:

All operations were done under general hypotensive anesthesia using 0^o, and 30^o telescopes. Our DCR technique involved marspulization of inferior three quarters of lacrimal sac creating 6-8 mm wide window at the lateral nasal wall after drilling of the medical wall of the lacrimal bone anterior to the uncinate process. Stenting of the lacrimal drainage system was done using silicon stents at the end of the procedure after careful dilatation of punctum and canaliculi by punctual dilator and lacrimal probes.

Post-operative care

- Nasal packs were removed after 24 hours.
- Local eye drops, corticosteroid ointments, Alkaline nasal lotions and prophylactic amoxicillin / Clavulinic acid were prescribed for 10 days post operatively.
- Stents were removed 2 months after the procedure except in cases of canalicular and common canalicular obstruction where tubing was left for 5 months.

Follow up and outcome measures

- All cases were followed up routinely every 2 months for a minimum of 6 months after the surgery. They were recalled again at 30 months.
- Evaluation of the results was done after 6 months (short term results) and 30 months (long term results).
- For outcome; surgery was categorized into successful surgery (patient was subjectively satisfied and lacrimal irrigation proved no blockage) or failed surgery if patient was not satisfied , and/or lacrimal irrigation proved partial or complete lacrimal drainage system obstruction.

  Chi square test was used to compare between results and $p<0.05$ was considered significant.

RESULTS

This work was conducted to evaluate the possible effect of the level of obstruction in the lacrimal drainage system on the short and long term results of surgical endoscopic DCR.

Our results were as follow:

1. Results in total study population irrespective of level of obstruction (80 cases):

a) Short term results (6 months):

- Successful surgery 58 cases (72.5%)
- Failure 22 cases (27.5%)

b) b. Long term results (30 months):

- Successful surgery: 46 cases (57.5%)
- Failure: 34 cases (42.5%)

2. Results according to level of obstruction:

a) Results in cases of upper lacrimal drainage system obstruction (22 cases):

Short term results (6 months)

- Successful surgery: 14 cases (63.63%)
- Failure: 3 cases (36.36%)

Long term results (30 months)

- Successful surgery: 6 cases (27.27%)
- Failure: 16 cases (72.72%)

b) Results in cases of lower lacrimal drainage system obstruction (58 cases):

Short term results (6 months)

- Successful surgery: 44 cases (75.8%)
- Failure: 14 cases (42.2%)

Long term results (30 months)

- Successful surgery: 40 cases (68.9%)
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- Failure: 18 cases (31.1%)

Analysis of the previous results will lead to following data.

1. The successful rate of surgical endoscopic DCR in total study population decreased significantly with time from a success rate of 72.5% after 6 months to a success rate of 57.5% after 30 months (P value <0.05 for the relation between two success rates) .This was also true when studying cases with upper lacrimal drainage system separately as the success rate dropped significantly from 63.63% at 6 months to 27.27% after 30 months and again P value was less than 0.05.

   On the contrary when we evaluated separately cases with lower lacrimal drainage system obstruction we found that favorable results were maintained after 2.5 years (75.8% at short term follow up compared to 68.9% at long term follow up) and P value > 0.05 for the relationship between two values.

2. Comparing results of surgical endoscopic DCR in the two studied populations showed that:

a) In short term follow up, although the results in cases of lower obstruction were better than in upper obstruction (75.8% compared to 63.63%) yet the difference was not statistically significant P>0.05.

b) In long term follow up, there was marked difference in the success rate between both groups and the results in lower obstruction were much favorable statistically than those with upper obstruction (68.9% compared to 27.27%)(P value <0.05 for relation between both values).

DISCUSSION

Cases of presaccal obstruction (canalicular and common canalicular) were always – without a solid proof– considered by most authors as not suitable for classical endoscopic DCR ,but do better with either external DCR or conjunctival DCR with Jones tube.[4.5]

This went true till the work of Yung and Hardman-Lea published in 2002 on a total number of 171 cases of epiphora due to lacrimal drainage system obstruction at different levels (pre saccal, saccal and post saccal).
Authors found that at 6 and 12 months follow up cases of common canalicular obstruction do almost as good as cases of distal obstruction (saccular and ductal) with success rates around 90%, while cases of pure canalicular obstruction – which was always stated as the most difficult
area of lacrimal drainage system to treat – were found by the same authors to have a success rate with classic DCR reaching 55% which is equal to the success rates of canalicular or conjunctival DCR with much less complication.[3]

Yung and Hardman-Lea stated that the above mentioned results are true only under two conditions:

1. Stents are left for longer periods (5-6 months in common canalicular and even longer in canalicular obstruction).
2. Stents are advanced so carefully to avoid false passages.

This concept published by Yung and Hardman-Lea in 2002 was totally new and unique, and suggested that classical DCR could be considered as a stenting surgery not only a bypass surgery.

In this work we are trying to re-evaluate this point but avoiding some week points in the work of Yung and Hardman-Lea, that from our point of view could cause some bias in the results which are:

1. The follow up period in our work was much longer than the work of Yung and Hardman-Lea [30 months compared to 12 months].
2. Solid statistical tests were done to compare between different rates of success.

The overall short term success rate in total study population irrespective of site of obstruction was in our work 72.5% , and this figure is near to the results in literature discussing short term results of DCR in cases of postsaccal obstruction e.g. (Hartikainen et al., 75% success rate and Moore et al., 83% success rate).[6-7] However on long terms (2.5 years) success rates in total study population dropped significantly to 57.5 % (P<0.05 for the statistical relation between short and long term success rates). This figure (long term success rate) was markedly lower than reports in the literature discussing long term results of DCR in cases of postsaccal obstruction e.g. (Dietrich et al., 81% after 3.2 years and Gurlet and San 74% after 49.3 months).[8-9]

Discussing the results of DCR in the two studied subgroups (proximal and distal obstruction) we found that the results in cases of proximal obstruction were comparable to the result in cases of distal obstruction only in short term follows up (63.63% success rate in proximal

obstruction compared to 75.8% in distal obstruction). There was no statistical difference between the two values. While on the contrary on long term follow up results of DCR in proximal obstruction dropped to 27.27% only compared to 68.9% in distal obstruction and statistical comparison between the two values was significant.

So although DCR may give early encouraging results in cases of presaccal proximal lacrimal drainage system obstruction, these results are not maintained on long terms , and so DCR surgery is not suitable for cases of presaccal lacrimal drainage system obstruction.

COLNCLUSION

Preoperative leveling of obstruction is a mandatory step in the work up of cases epiphora as cases of upper lacrimal drainage system obstruction is not suitable particularly on long terms for classical DCR.

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