Innova Ocular
IOA Madrid

Medición cuantitativa en oculoplástica

Evaluación del resultado de una DCR: FUNCIONAL

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CRITERIOS DE ÉXITO

A. fracaso completo: lagrimeo igual o peor
B. fracaso parcial: ligera mejoría pero persiste lagrimeo en interiores y exteriores;
C. éxito parcial: mejoría significativa pero persiste ligero lagrimeo en exteriores
D. éxito completo: resolución completa del lagrimeo, tanto en interiores como en exteriores

ÉXITO FUNCIONAL: DEFINICIÓN

- Ausencia de síntomas
    1. Epífora
    2. Plerolácrima
    3. Secreción

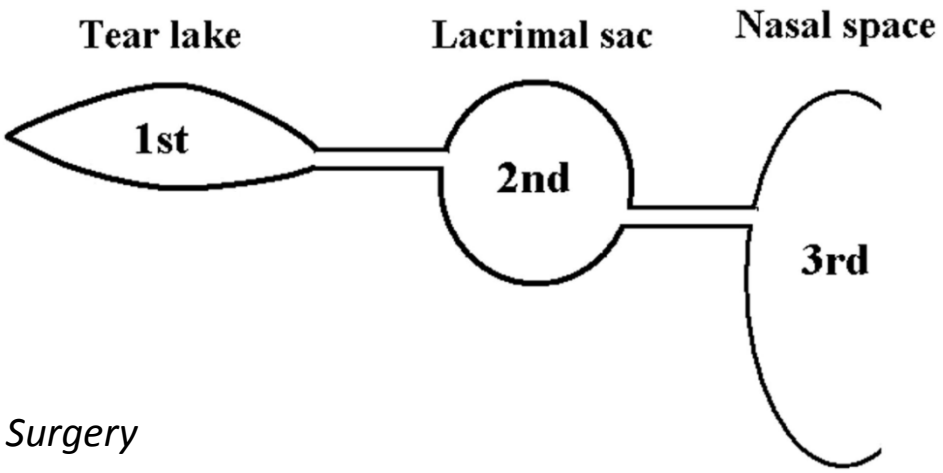
CAUSAS AJENAS A LA DCR

- ALTERACIONES PALPEBRALES
  - Entropion, ectropion, triquiasis
- ALTERACIONES SUPERFICIE OCULAR
  - Conjuntivocalasia, conjuntivitis
  - Ojo seco, lagrimeo paradójico
  - Blefaritis
- ALTERACIONES DE LAS VIAS ALTAS (PRESACALES)
  - Malposición punctal, colapso punctal tras la retirada de la intubación , síndrome de la aposición punctal
  - Alteraciones canaliculares

CRITERIOS ESTRICTOS DE ÉXITO

- FUNCIONAL:
  - ✓ Mejoría de los síntomas en al menos el 80%
- ANATÓMICA:
  - ✓ Tinción endoscópica, visualización del ostium
  - ✓ (Aclaramiento de fluoresceína)
  - ✓ Siringación

Fayers T, Laverde T, Tay E, Olver JM.
Lacrimal surgery success after external dacryocystorhinostomy: functional and anatomical results using strict outcome criteria. *Ophthal Plast Reconstr Surg. 2009;25(6):472-475.*



THE LACRIMAL PARADOX

Geoffrey E. Rose, M.S., F.R.C.OPHTH

Ophthalmic Plastic and Reconstructive Surgery
2004 Vol. 20, No. 4, pp 262–265

- Síntomas de volumen
- Síntomas de flujo

ESCALA DE MUNK

0: No epifora

1: Epifora ocasional que requiere secarse menos de 2 veces al día

2: Epifora que requiere secarse 2-4 veces al día

3: Epifora que requiere secarse 5-10 veces al día

4: Epifora que requiere secarse más de 10 veces al día

5: Epifora constante

TEST DE TRÁNSITO DE LA FLUORESCEINA

<=45 SEG: 96% ÉXITO FUNCIONAL
> 45 SEG: 56.2% PERSISTENCIA DE EPÍFORA

Fluorescein Transit Test Time and Symptomatic Outcomes After External Dacryocystorhinostomy
Yvonne M. Delaney, and Ramona Khooshabeh
Ophthalmic Plastic and Reconstructive Surgery
Vol. 18, No. 4, pp 281–284.2002

Según la osteotomía

Olver J,ed.
Colour atlas of lacrimal surgery. Woburn,Mass: Butterworth-Heinemann;2002:135-8

Plana

Alcoba

Caverna

D: Caverna oculta

Associated factors of functional failure of external dacryocystorhinostomy
Min JoungLee,MD, Sang InKhwarg,MD, Ho-Kyung Choung,MD, Namju Kim,MD
Can JOphthalmol 2014;49:40–44

TÉCNICAS DE IMAGEN

- DCG: ejerce presión. Valorar imágenes tardías incorporado
- US: ejerce presión

TÉCNICAS DE IMAGEN

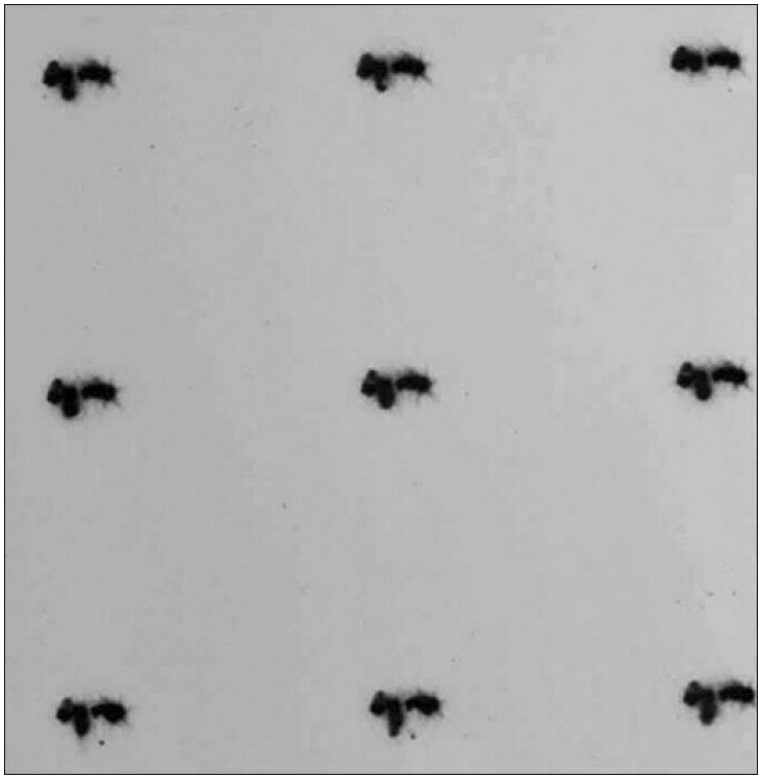
- DCG-RNM:
  - Dinámica durante el parpadeo
  - DCG 3D
  - Contenido de agua en regiones específicas
- DCG-TAC: imágenes de partes duras

Detorakis ET, Drakonaki E, Papadaki E, Pallikaris IG, Tsilimbaris MK. Watery eye following patent external DCR: an MR dacryocystography study. *Orbit. 2010;29(5):239-243.*

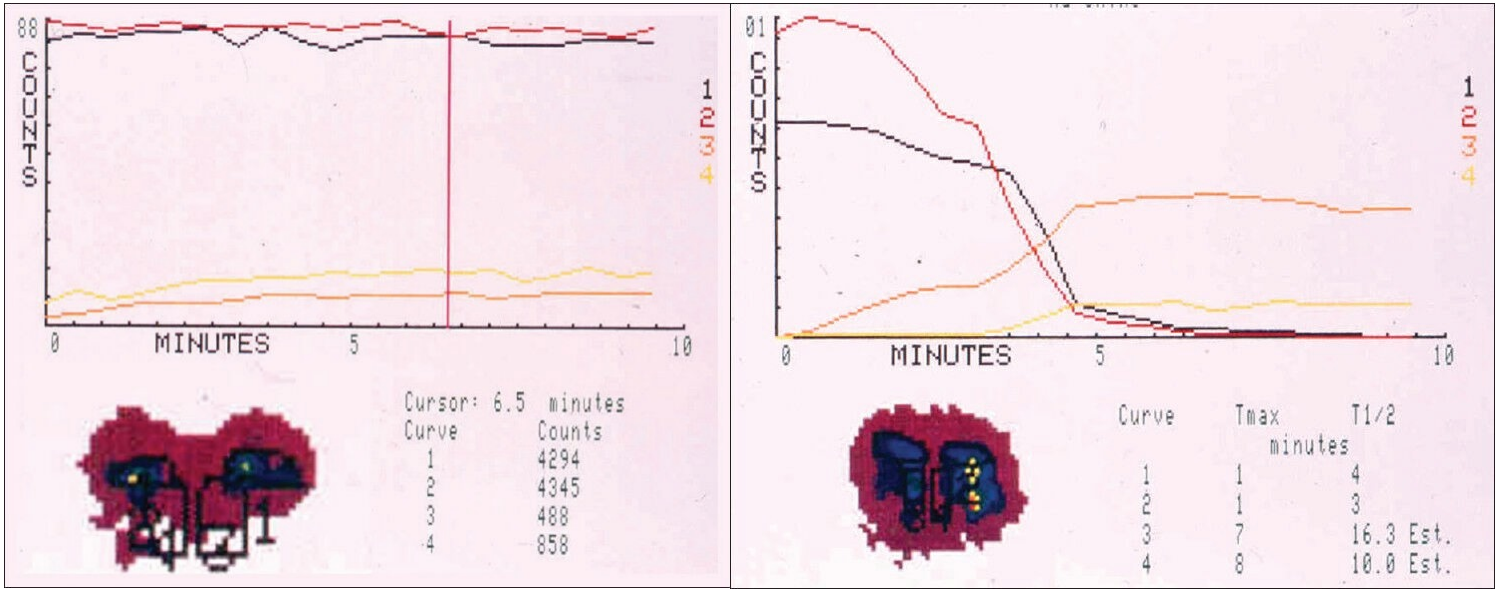
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4149763/

TÉCNICAS DE IMAGEN

- DACRIOSCINTIGRAFÍA



Medición cuantitativa DSG



Detorakis ET, Zissimopoulos A, Ioannakis K, Kozobolis VP. Lacrimal Outflow Mechanisms and the Role of Scintigraphy: Current Trends. *World Journal of Nuclear Medicine*. 2014;13(1):16-21. doi:10.4103/1450-1147.138569.

Brit. J. Ophthal. (1975) **59**, 308

Quantitative lacrimal scintillography

I. Method and physiological application

J. J. HURWITZ,* M. N. MAISEY, AND R. A. N. WELHAM

From the Department of Clinical Ophthalmology, Institute of Ophthalmology, London, the Department of Nuclear Medicine, Guy's Hospital, London, and Moorfields Eye Hospital, London

Anatomical assessment of the lacrimal drainage apparatus is precise using subtraction macro-dacryocystography with canalicular catheterization (Lloyd, 1973), but provides only limited information about the dynamics of the system. A technique using a radioactive tracer instilled into the conjunctival sac and visualization with an Anger gamma camera is a more sensitive method for evaluating the dynamics of lacrimal drainage (Rossomondo, Carlton, Trueblood, and Thomas, 1972). The purpose of the present study was to improve the diagnostic value by including quantitative criteria for lacrimal drainage by utilizing a computer interfaced to the gamma camera.

Material and methods

The patient sits erect with the head fixed in front of an Anger gamma camera (Ohio Nuclear Series 100) fitted with a standard 3 mm pinhole collimator. The nasion is located centrally towards the upper margin of the field of view and 10·2 cm from the pinhole. The gamma camera is interfaced with an image display and analysis system (DEC Gamma 11). Two automatic pipettes (Finnpipettes) are used to deliver 0·013 ml of tracer simultaneously on to the lower marginal tear strip beneath the inferior limbus of the cornea. The tracer used is Technetium 99 M (^{99m}Tc) sulphur colloid, with a specific activity of 10 mCi/ml. This has a viscosity of 1·21 centipoise at 20°C, and 0·87 centipoise at 37°C, thus simulating the viscosity of tears (Hamano and Mitsunagu, 1973). The patient is instructed to blink normally. The distribution of the tracer is imaged serially as it passes down the lacrimal drainage systems. Images are taken every 10 s for 1 min, then every 3 min for 10 min, and finally every 5 min until 30 min after instillation, at which time the study is discontinued. The data from the gamma camera are recorded simultaneously on to the magnetic disc of the computer system for subsequent quantitative analysis.

ANALYSIS

When the digitized images are redisplayed on the Gamma 11 persistence oscilloscope, optimized images of the regional distribution of tracer are produced using background subtraction, contrast enhancement, and frame arithmetic. Areas of interest are then superimposed on these images by the use of a remote 'joy stick' device. Time activity curves for the entire study are then displayed for these designated areas. Four areas of interest are chosen in each lacrimal system, namely: the inner canthus of the palpebral aperture, the lacrimal sac, the lacrimal duct, and that region just beneath the lacrimal duct in the inferior meatus (Fig. 1).

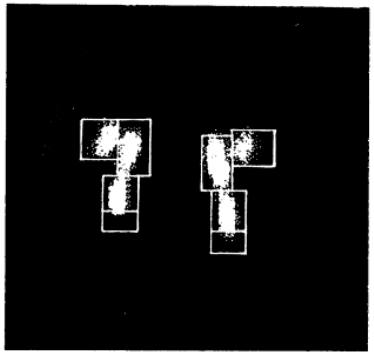


FIG. 1 *Regions of interest outlined on computer oscilloscope*

Fig. 2 shows the typical curves from the inner canthus, the sac, and the naso-lacrimal duct.

The $T\frac{1}{2}$ values for the inner canthus are measured directly (Fig. 3). However, to obtain the absolute values for the sacs, the changes in the inner canthus are subtracted from the sac values at each point (Fig. 4). Likewise the change in activity in the sac was subtracted from the duct counts (at each point) before the $T\frac{1}{2}$ for the duct was calculated (Fig. 5). The mean transit times (T max) can be determined for the sacs and ducts as the time at

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TÉCNICAS DE IMAGEN

Figure 1 Delayed erect radiograph demonstrating retained contrast in the right lacrimal system; the left system is normal.

Comparison of dacryocystography and lacrimal scintigraphy in the diagnosis of functional nasolacrimal duct obstruction
Michael J Wearne, John Pitts, John Frank, Geoffrey E Rose
*Br J Ophthalmol 1999;**83:1032–1035***

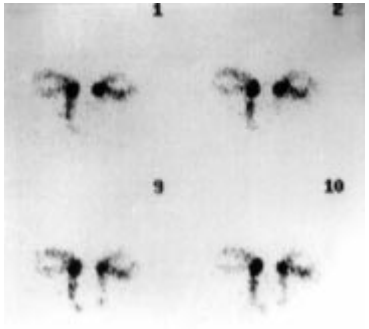

Figure 2 Normal lacrimating scintigram with rapid clearance of tracer in dynamic study (pictures at 10, 20, 90, and 100 seconds).

Figure 3 Dynamic study showing system with "presac delay".

ÉXITO FUNCIONAL

- Alteración de la “bomba”lagrimal
- En relación con la forma de la osteotomía
- Éxito funcional estricto no supera el 80%

MEDICIÓN CUANTITATIVA

- Mejoría de los síntomas > 80% epifora/100% secreción
- Tránsito de fluoresceína < 45seg
- DCG: tomas tardías
- Dacrioscintigrafía
- (DCG-RNM)