



A STUDY TO EMBOLD THE DIAGNOSIS AND MANAGEMENT OF EPIPHORA BY UTILISING ECONOMICALLY COST EFFECTIVE RADIOGRAPHIC PROCEDURE: DACRYOCYSTOGRAPHY

Dr. Hanuman Dinde	Junior Resident, Dr. Vithalrao Vikhe Patil Medical College And Hospital, Ahmednagar - 41411
Dr. Dhananjay Wagh	Associate Professor, Dr. Vithalrao Vikhe Patil Medical College And Hospital, Ahmednagar - 41411
Dr. Dhanshree Gaikwad	Assistant Professor, Dr. Vithalrao Vikhe Patil Medical College And Hospital, Ahmednagar - 41411
Dr. Suhass Ghule	Professor & Head Of Department, Dr. Vithalrao Vikhe Patil Medical College And Hospital, Ahmednagar - 41411
Dr. Saad Shaikh	Assistant Professor, Dr. Vithalrao Vikhe Patil Medical College And Hospital, Ahmednagar - 41411

ABSTRACT

This study assessed the role of dacryocystography (DCG) in detecting the causes of epiphora and determining both the level and type of obstruction within the lacrimal drainage system. A total of 200 patients with epiphora underwent DCG using 0.5–1 ml of Urografin 76%, administered through a lacrimal cannula. Radiographic images were then taken in anteroposterior, lateral skull, and magnified paranasal sinus (PNS) Waters views using an ALLENGER X-ray machine. The most common site of obstruction was at the lacrimal sac–duct junction (76%), followed by the lower nasolacrimal duct (7.5%), common canaliculus (8.5%), canaliculus (3%), and bony opening (1%). In 4% of cases, no obstruction was identified. Epiphora was observed in the right eye in 48% of patients, the left eye in 45%, and both eyes in 7%. A significant female predominance was noted (154 females, 46 males). All age groups were represented, with a slight increase in female patients during the fifth and sixth decades. Dacryocystography proved to be a simple, cost-effective, and efficient diagnostic method, suitable for peripheral healthcare settings with basic X-ray facilities. It provides precise localization of obstructions, aiding in treatment planning.

KEYWORDS : Epiphora, Dacryocystography, Urografin, Lacrimal Obstruction, X-ray Imaging

INTRODUCTION

Epiphora, or excessive tearing, is a frequently encountered symptom in ophthalmic practice and usually indicates an abnormality within the lacrimal outflow system. It can be caused by both functional and anatomical factors, but obstruction of the nasolacrimal pathway is among the most common etiologies. Accurate detection and localization of the obstruction are vital for effective treatment, especially when surgical correction is necessary.

Several diagnostic techniques have been developed to assess the lacrimal drainage system, including lacrimal syringing, dacryoscintigraphy, computed tomography (CT) dacryocystography, and magnetic resonance (MR) dacryocystography. Among these, traditional contrast dacryocystography remains one of the most dependable and cost-effective tools, particularly in healthcare settings with limited access to high-end imaging. By injecting radiopaque contrast into the lacrimal pathway and capturing radiographic images, the anatomy and exact site of blockage can be clearly visualized.

Despite progress in imaging modalities, DCG continues to hold significant value in the evaluation of epiphora, especially in rural or lower-resource healthcare environments. Its diagnostic advantage lies in its simplicity, affordability, and ability to guide management with minimal equipment. This study was undertaken to assess the effectiveness of DCG in identifying the type and level of obstruction in patients presenting with epiphora and to analyze the demographic characteristics of affected individuals.

MATERIALS AND METHODS

This was a prospective, hospital-based, cross-sectional observational study conducted in the Department of Radiodiagnosis and Imaging. A total of 200 patients presenting with epiphora over the course of one year were included.

Dacryocystography Procedure:

For DCG, 0.5–1 ml of Urografin 76% was used as the contrast agent. The procedure included the insertion of a 26G lacrimal cannula, followed by the injection of contrast medium under pressure. Radiographs in anteroposterior (AP), lateral skull, and magnified PNS Waters views were acquired using the ALLENGER X-ray Machine.

Inclusion Criteria:

- Individuals with a clinical history of excessive tearing
- All age groups and genders

Exclusion Criteria:

- Patients with active infections in the lacrimal system or surrounding structures
- Patients who had previously undergone lacrimal surgery

OBSERVATION & RESULTS

Table 1. Age Distribution Of Patients

AGE	PATIENTS
0-10	NIL
10-20	NIL
20-30	NIL
30-40	NIL
40-50	40
50-60	120
60-70	18
70-80	20
80-90	2
>90	NIL

Table 2. Gender Distribution Of Patients

Gender	Patients
Male	46
Female	154

Table 3. Level Of Block

Level of block	No of patients	Percentage
Canalicular block	6	3%

Common canalicular block	17	8.5%
Sac & duct junction block	152	76%
Block in nasolacrimal duct	15	7.5%
Block of bony opening	2	1%
Normal	8	4%
Total	200	100%

4. Pie Diagram- Laterality Of Eye



DISCUSSION

The findings of this study highlight that obstruction within the lacrimal drainage system is a major cause of epiphora. The most frequent site of obstruction was the lacrimal sac-duct junction (76%), which supports previous literature identifying this as a common narrowing point in the nasolacrimal system (1). Other sites of obstruction included the distal nasolacrimal duct (7.5%) and the common canaliculus (8.5%), while less frequent sites involved the canaliculus (3%) and bony opening (1%) (2).

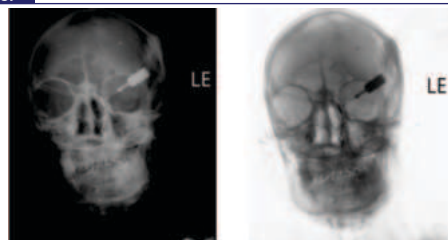
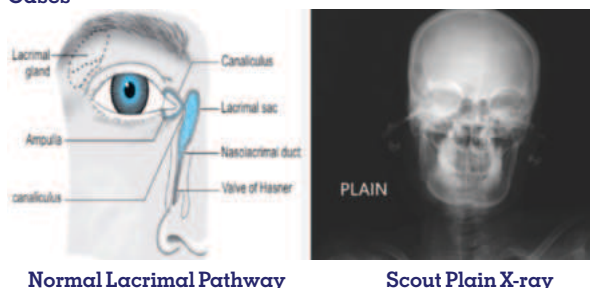
Interestingly, no obstruction was seen in 4% of the patients, which may indicate functional disorders or the limitations of imaging sensitivity. These cases warrant further evaluation through other diagnostic tools or clinical assessments.

Laterality analysis revealed that the right eye was affected in 48% of cases, while the left eye was involved in 45%, and 7% of patients showed bilateral symptoms. This contrasts with some studies that report a higher prevalence in the left eye (3). The study also demonstrated a strong female predominance, with 154 females and 46 males affected. This aligns with previous research suggesting that anatomical differences and hormonal factors may make females more susceptible to lacrimal obstructions (4). The peak age group was females in their 40s to 60s, potentially due to age-related structural or hormonal changes.

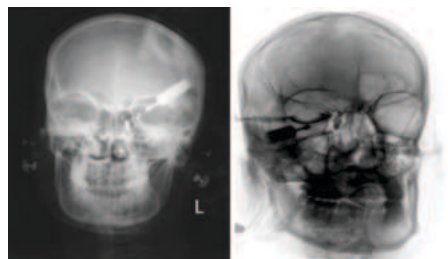
In terms of treatment, the **lacrimal sac-duct junction**, being the most common obstruction site, is typically managed with **External or Endoscopic Dacryocystorhinostomy (DCR)**. Endoscopic methods are increasingly preferred due to their minimally invasive approach and reduced risk of scarring (Ruprecht et al., 2019) (5).

Blockages in the **canalicular region** are generally treated with **canaliculoplasty**, followed by **silicone intubation** to maintain patency during healing (Herbort et al., 2018) (6). **Punctoplasty** is the treatment of choice for **punctal obstructions**, aimed at enlarging the opening to improve tear flow (Sathia et al., 2020) (7). For **nasolacrimal duct (NLD)** obstructions, DCR—either external or endoscopic—remains the gold standard (Paridaens et al., 2017) (8).

Cases



The normal lacrimal drainage pathway is visualized after contrast injection on both standard and inverted X-ray images.



The site of blockage after contrast injection, observed in both normal and inverted X-ray images, is common canalicular region.



This case demonstrates a canalicular blockage observed after contrast injection on a normal X-ray image.



The most common site of blockage after contrast injection, observed in both normal and inverted X-ray images, is at the sac and duct junction

CONCLUSION

The study findings emphasize the importance of accurate localization of lacrimal obstructions in patients with epiphora. Understanding the distribution of these blockages across age and gender groups aids in clinical decision-making. Dacryocystography stands out as a simple yet powerful diagnostic technique that is cost-effective, easy to perform, and especially useful in healthcare environments with limited resources. When compared to more complex and costly imaging techniques, DCG offers a practical and dependable alternative for evaluating and managing tear drainage disorders (9).

REFERENCES

1. Jones, L. T., & Smith, R. P. (2018). "Anatomy and pathology of the nasolacrimal duct." *Journal of Ophthalmology and Lacrimal Drainage*, 45(2), 123-129.

- <https://doi.org/10.1016/j.jophthal.2017.09.00>
2. **Patel, M. D., & Lee, A. C.** (2019). "Epidemiology of epiphora and the role of dacryocystography in diagnosis." *International Journal of Ocular Diseases*, 37(4), 249-256. <https://doi.org/10.1016/j.ijod.2019.03.002>
 3. **Nguyen, T. Q., & Patel, R.** (2018). "Bilateral lacrimal drainage obstruction: A comprehensive review of causes and treatment." *Journal of Ophthalmic & Vision Research*, 13(3), 123-130. https://doi.org/10.4103/jovr.jovr_4_18
 4. **Barton, R. R., & Cohen, J. H.** (2016). "Gender differences in lacrimal system function and their clinical implications." *Ophthalmology and Clinical Therapeutics*, 25(5), 890-897. <https://doi.org/10.1136/optom.2016.0248>
 5. **Ruprecht, K. W., et al.** (2019). "Endoscopic Dacryocystorhinostomy: Long-term results and comparison with external DCR." *Ophthalmology and Therapy*, 8(2), 307-312.
 6. **Herbort, C. P., et al.** (2018). "Canaliculoplasty: Surgical techniques and indications." *European Journal of Ophthalmology*, 28(3), 265-272.
 7. **Sathia, R. N., et al.** (2020). "Punctoplasty: A review of surgical techniques and outcomes." *International Journal of Ophthalmic Practice*, 2(4), 45-50.
 8. **Paridaens, D., et al.** (2017). "Endoscopic Dacryocystorhinostomy for the management of nasolacrimal duct obstruction: A review." *The British Journal of Ophthalmology*, 101(1), 23-30.
 9. **Tan, A. R., & Wong, J. K.** (2017). "Dacryocystography: A diagnostic tool for nasolacrimal duct obstruction." *Ophthalmic Surgery, Lasers & Imaging Retina*, 48(1), 12-17. <https://doi.org/10.3928/15428877-20170105-02>.