2 Lacrimal Drainage System

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Obstruction

Punctal stenosis

**Signs**

*Fig. 2.1* Narrowing of the inferior punctum.

**Causes**

1. Primary (idiopathic)
2. Secondary to medial ectropion
3. Infection
   a. Herpes simplex.
   b. Trachoma.
4. Cicatrising conjunctivitis
5. Post-irradiation
6. Systemic cytotoxic drugs
   a. 5-Fluorouracil.
   b. Docetaxel.

**Treatment**

1. Not associated with medial ectropion
   a. *Fig. 2.2* Dilatation, which may need to be repeated.
   b. One-snip ampullotomy.

2. Associated with medial ectropion
   a. Ziegler cautery burns to the palpebral conjunctiva 5 mm below the punctum.
   b. *Fig. 2.4* Medial conjunctivoplasty.
   c. *Fig. 2.3* Two-snip procedure.
   d. Laser punctoplasty.
   e. Insertion of canalized plugs.

**Canicular obstruction**

**Diagnosis**

*Fig. 2.5* Soft stop on probing the inferior canaliculus. There is also lack of distension of the lacrimal sac on irrigation with reflux through the inferior canaliculus.

**Causes**

These are similar to punctal stenosis not associated with medial ectropion.

**Treatment**

1. Partial obstruction is treated by intubation.
2. Total obstruction may be treated with canaliculodacryocystorhinostomy and/or a Lester Jones tube, depending on the extent of remaining patent canaliculus.

**Nasolacrimal duct obstruction**

**Diagnosis**

1. *Fig. 2.6* Hard stop on probing the inferior canaliculus. There is also distension of the lacrimal sac on irrigation with reflux through the upper canaliculus.

**Causes**

1. Idiopathic
2. Secondary
   b. Wegener granulomatosis.
   c. Infiltration by nasopharyngeal tumours.

**Treatment**

1. Complete obstruction is treated by dacryocystorhinostomy (DCR).
2. Incomplete obstruction may be treated by intubation or DCR.
Delayed canalization

Pathogenesis
Delayed canalization of the lower end of the nasolacrimal duct at the valve of Hasner.

Signs

Treatment

1. **Fig. 2.9** Massage of the lacrimal sac and duct.

Differential diagnosis

1. **Fig. 2.11** Fistula between the sac and skin.
2. Congenital punctal atresia.
3. Congenital glaucoma may cause lacrimation.

Infection

Chronic canaliculitis

Pathogenesis
Infection with *Actinomyces israelii*, usually without any identifiable predisposition.

Signs

1. **Fig. 2.12** Oedema of the canaliculus and a ‘pouting’ punctum.

Differential diagnosis

1. **Fig. 2.11** Fistula between the sac and skin.

Prognosis
Ninety per cent of patients are cured by the first probing and a further 6% by the second.

Acute dacryocystitis

Pathogenesis
Acute staphylococcal infection of the lacrimal sac secondary to nasolacrimal duct obstruction.

Signs

1. **Fig. 2.13** Expressed concretions consisting of sulphur granules.

Differential diagnosis

Fig. 2.14 Canaliculotomy which involves incision into the conjunctival side of the canaliculus.

Fig. 2.15 Tender, red, tense swelling at the medial canthus which may be associated with preseptal cellulitis.

1. **Fig. 2.10** Probing should be delayed until the age of 12 months because spontaneous canalization occurs in about 95% of cases.

Fig. 2.8 Epiphora and matting of lashes, starting soon after birth.
**Treatment**
1. Application of local warmth and oral antibiotics such as flucloxacillin.
2. DCR after the acute infection has subsided.

**Chronic dacryocystitis**

**Pathogenesis**
Chronic staphylococcal infection of the lacrimal sac secondary to nasolacrimal duct obstruction.

**Signs**

*Fig. 2.16* Painless swelling at the inner canthus (mucocele) with reflux of mucopurulent material on pressure over the sac.

**Treatment**
DCR.

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**Surgery**

**Conventional DCR**

**Indications**
Obstruction beyond the medial opening of the common canaliculus (i.e. the canalicular system is patent).

**Technique**

*Fig. 2.17* An anastomosis is made between the lacrimal sac and nasal mucosa.

**Endoscopic DCR**

**Indications**
Obstruction beyond the medial opening of the common canaliculus, particularly following failed conventional DCR.

**Advantages over conventional DCR**
1. Can be performed without systemic hypotension.
2. Lack of skin incision.
3. Shorter operating time.
4. Lower risk of damage to the lacrimal pump mechanism.
5. No risk of CSF rhinorrhoea.

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**Lester Jones tube**

**Indications**
Absence of canalicular function due to obstruction less than 8 mm from the puncta or lacrimal pump failure.

**Technique**

*Fig. 2.18* A tube is inserted between the inner canthus and lacrimal sac, thereby bypassing the canalicular system.