Anatomy and physiology

- Lacrimal gland
- Gland of the third eyelid
- Accessorial lacrimal glands
- Preocular tear film

- Lacrimal punctas
- Canaliculi
- Lacrimal sac
- Nasolacrimal duct
The praeocular tear film (PTF)

- Covers the cornea and conj. - prevents the eye from the dessiccation
- allows transport of oxygen and nutritives to the cornea
- by lubrication of the eye surface, helps the movement of the lids
- eliminates the surface-irregularities of the cornea - maximal refractive power
- washing out of the foreign bodies from the eye surface
- accumulates in the ventral fornix
DISTURBANCES of LACRIMAL FUNCTION

I. FAILURE IN THE DRAINAGE OF THE TEARS
   - epiphora

II. FAILURE TO PRODUCE NORMAL PTF
   - keratoconjunctivitis sicca
I. FAILURE IN THE DRAINAGE OF THE TEARS

- Anomaly of the lacrimal punctas and canaliculi
- Dacryocystitis
- Tear staining syndrome
- ...
1. ANOMALY OF THE LACRIMAL PUNCTAS AND CANALICULI

- **Etiology**
  - atresia, imperforatio, ectopy
    - developmental abnormalities
  - obstruction
    - inflammatory, foreign bodies

- **Signs**
  - epiphora
  - lack of the punctum

- **Treatment**
  - flushing, catheterisation
  - surgery
Surgical repair of imperforated punctum

A Digital 8 Sebészeti Filmstúdió bemutatja

Imperforálódott könnypont-plasztika
II. FAILURE TO PRODUCE NORMAL PTF

Failure in the secretion of the PTF contamination of foreign corpusculi with the eye surface

dessiccation of the eye surface, permanent, subsequent inflammation = keratoconjunctivitis sicca
Keratoconjunctivitis sicca (KCS)

- any breed of dogs (horse)
- breed predisposition: spaniel, pekingese, poodle, bulldog, yorkshire

Pathomechanism of KCS

- Change in the volume of the PTF
  - frequent
- Change in the quality of the PTF
  - rare
ETIOLOGY

- unknown or known causes \textarrow{\rightarrow} \text{changes in the} \\
  \text{lacrimal gland and/or in the gland of the third} \\
  \text{eyelid} \textarrow{\rightarrow} \text{deficiency in the tear production} \\

- \textit{Idiopathic}
**Atoimmun**
- KCS without systemic disease
- KCS with systemic disease (polyarthritis, colitis, diabetes mellitus, hypothyreosis): immunocomplexes in the blood destroy the tear glands

**Chronic blepharoconjunctivitis**
- scar formation at the site of the openings of the lacrimal gland

**Drug induced; intoxications**
- long term therapy of sulphonamids
- after local or general anaesthesia
- exotoxins
- **Surgically induced**
  - after removal of the prolapsed third eyelid gland (or entire third eyelid)

- **Trauma**
  - which affects the tear glands directly or via their nerve supply

- **Canine distemper**
  - the virus definitively lacrimotoxic to the lacrimal gland and to the gland of the third eyelid

- **Congenital**
  - mops, yorkshire terrier
SIGNs

- uni- or bilateral

- intermittent: in summer, when evaporation of the tears is more intensive

- acute or chronic
Signs of acute KCS (dacryoadenitis)

- pain, blepharospasm, prolaps of the nictitans
- conjunctival hyperaemia
- little, mucopurulent discharge
- dry, lusterless cornea
- corneal ulceration
- vision is impaired on the affected eye
Signs of chronic KCS (dacryoadenopathy)

- hyperemic, velvet-like conj.
- profuse, mucopurulent discharge, strongly adheres to the cornea
- dried up exsudate on the periocula
- dry, opaque cornea
- corneal vascularisation, pigmentation
- keratinisation in the cornea (and conj.)
- dry, ipsilateral nostril
- chronic staphylococcal infection
**DIAGNOSIS**

- *chronic KCS*: by clinical signs
- *early and subclinical forms of KCS*: Schirmer tear test; Rose bengal staining
- examinations for systemic diseases
**TREATMENT**

- can not be cured!
- mainly medical
- occasionally surgical
- long term therapy
Medical therapy

- Tear replacement
  - artificial tears

- Controlling of the secondary infection and inflammation
  - topical antibiotics, subconj. steroid

- Removal of excessive discharge
  - topical eye washes

- Inhibition of immune mechanisms and stimulation of existing secretion
  - cyclosporine, tacrolimus topically
commercial formula of cyclosporine: *Optimmune Eye Ointment AUV* (0.2% cyclosporin)
The initial length of the medical th. is 3 months

**Surgical th. of KCS**

**Indication**

- No result
- The regular, long term th. is impossible

**Parotideal duct transpostion**
Parotideal duct transposition