V. Surgical Procedures on the Conjunctiva and the Sclera

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CONTENTS

Anatomical and Physiological Aspects .......................... 282

The Conjunctiva .................................................. 282

The Sclera ......................................................... 283

References .......................................................... 284

Techniques for Dissecting and Suturing .......................... 284

The Conjunctiva .................................................. 284

The Sclera ......................................................... 287

References .......................................................... 288

Operations .......................................................... 289

1 Surgical Procedures for Circumscribed Benign
Conjunctival and Epibulbar Tumors ............................. 289

1.1 Cysts .......................................................... 289

1.2 Solid Tumors ................................................... 289

References .......................................................... 290

2 Surgical Procedures for Poorly Delineated,
Usually Benign Epibulbar Tumors ............................. 291

2.1 Dermolipoma ..................................................... 291

2.2 Hemangioma and Lymphangioma ............................ 291

2.3 Lymphoid Hyperplasia
(Differential Diagnosis: Malignant Lymphoma) ............. 292

References .......................................................... 292

3 Surgical Procedures for Precancerous
and Malignant Epithelial Tumors .............................. 292

References .......................................................... 296

4 Operations for Melanotic Tumors ............................. 297

4.1 Nevi ............................................................ 297

4.2 Acquired Melanosis .......................................... 297

4.3 Melanoma ....................................................... 298

References .......................................................... 299

5 The Treatment of Sarcomas ...................................... 300

References .......................................................... 300

6 Surgical Procedures for Congenital
and Degenerative Limbal Tumors .............................. 301

6.1 Solid Limbal Dermoids ....................................... 301

6.2 Pterygium ....................................................... 301

References .......................................................... 305

7 The Surgical Treatment of Chemical
and Mechanical Injuries ...................................... 307

7.1 Acute Chemical Injuries ..................................... 307

7.2 Symblepharon and Trichiasis .............................. 308

7.3 Transplantation of Autologous Conjunctiva
to Heal Limbal and Corneal Epithelium ................. 313

7.4 Mechanical Injuries to the Conjunctiva and Sclera .... 314

References .......................................................... 314

8 Covering Corneal and Scleral Defects ..................... 316

8.1 Conjunctival Covering of the Cornea .................... 316

8.2 Scleral Necrosis and Staphyloma .......................... 321

References .......................................................... 322

9 Rare Conjunctival and Scleral Operations ................ 323

9.1 Operation for a Congenital Ectropion
of the Conjunctiva ............................................ 323

9.2 Conjunctival Resection for Mooren's Ulcer
and in Rheumatoid Marginal Ulcers ...................... 323

9.3 Conjunctival Biopsy for Systemic Metabolic Diseases
and for Sarcoidosis ............................................ 323

9.4 Removal of Parasites ........................................ 324

9.5 Homologous Conjunctival Transplantation
for Metabolic Diseases of the Corneal Epithelium .... 324

9.6 Surgical Procedures for Vernal Catarrh ................. 324

9.7 Surgical Treatment of Trachoma ......................... 325

9.8 Surgical Procedures for Ligneous Conjunctivitis .... 325

9.9 Surgical Treatment of Ocular Pemphigoid .......... 325

9.10 Attempts of a Surgical Treatment of
Progressive High Myopia ................................. 326

References .......................................................... 326

The individual steps of the surgical procedures are
in this chapter presented in the traditional way: cranial = above.

The illustrations show the surgeon on the side of
the eye to be operated on. The assistant sits on the
opposite side.

* We would like to thank Mrs. H. Renne for her editorial help
Anatomical and Physiological Aspects

The Conjunctiva

The conjunctiva covers the inner surface of the lids and the anterior surface of the eyeball up to the limbus. Biologically it is a mucous membrane which protects the eye and the orbit against noxious environmental factors. It represents a mechanical barrier, plays an important role in the nonspecific and specific defense mechanism against infections and participates in the formation of the tear film.

The conjunctiva is firmly adherent to the tarsus of the upper lid. On the lower lid these adhesions are present only over half the width of the tarsus, but are so firm that a surgical separation is difficult [12]. The conjunctiva is also firmly adherent to the underlying tissue around the limbus. The anterior extensions of Tenon's capsule merge with the subconjunctival and episcleral tissue inserting into the sclera at 1-3 mm from the limbus (Fig. V.1). This firm adhesion makes it possible that a forceps applied in this area can grasp the eyeball firmly and can move it separated from the sclera only by loose connective tissue and can be easily dissected (2). This area shows considerable individual variations. If we desire a thin flap consisting only of conjunctival epithelium and some subepithelial tissue, we inject an anesthetic or Ringer's solution into the subepithelial layer (3). If we desire a conjunctival flap which contains epithelium and the entire subconjunctival tissue (including Tenon's capsule), we inject the solutions immediately on top of the sclera while the needle opening is held toward the scleral surface (4).

![Fig. V.1. The layers of the conjunctiva and their separability.](image)

- a Conjunctival epithelium with a continuous transition into the corneal epithelium;
- b Loose, movable subepithelial tissue;
- c Dense, tight subconjunctival tissue (anterior part of Tenon's capsule);
- d Loose episcleral connective tissue which can be moved against the sclera.

The adhesions of conjunctiva and Tenon's capsule to the sclera are tight next to the limbus (1). Extending from this perilimbal adhesion to the actual corneoscleral limbus there may be an area in which the conjunctiva is separated from the sclera only by loose connective tissue and can be easily dissected (2). This area shows considerable individual variations. If we desire a thin flap consisting only of conjunctival epithelium and some subepithelial tissue, we inject an anesthetic or Ringer's solution into the subepithelial layer (3). If we desire a conjunctival flap which contains epithelium and the entire subconjunctival tissue (including Tenon's capsule), we inject the solutions immediately on top of the sclera while the needle opening is held toward the scleral surface (4).