Therapeutical bandage
contact lenses for
corneal protection

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Contact for text manuscript demands

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Overview

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Objectives

To review definitions, conditions and techniques in the use of therapeutical bandage contact lenses.

To introduce advantages of using therapeutical bandage contact lenses of different materials and attributes.

To provide an understanding of the pathophysiology, manifestations and appropriate management of patients with corneal disorders.
Corneal disorders:

Any kind of disturbances or diseases of the cornea, who interfere with the normal physiology of the human corneal tissue.
Definitions

Therapeutical bandage contact lenses:

A bandage lens (also called a therapeutic lens) is a contact lens used primarily for a therapeutic or treatment purposes.

Bandage lenses should be fitted so as to minimally disturb corneal physiology.

(Definitions by CIBA Vision)
Protection from:

1. Tear evaporation
2. Mechanical Abrasion
3. Mechanical „Pressure“
4. Recurrent Erosions
5. Physiological Destabilization
6. Infections and Inflammations
7. Allergies
Protection from:

1. Pain and Itching
2. Tearing
3. Blepharospasmus
4. Blinding
5. Redness
6. Edema
7. Scarring
8. „Funny looking“
Protection for:

1. Epithelial cell regrowth
2. Speed corneal healing
3. Physiological stabilization
4. Slow tear evaporation
5. Medical treatment
CL Materials

Soft CL’s
(speciality)
CL Materials

Soft CL’s
(disposable)
CL Materials

Silicone-Hydrogel CL’s
CL Materials

Rigid gas permeable CL’s
Trichiasis:
- mech. Protection
- Pain, tearing,
  Blepharospasm,
  redness
- Infections
- Scarring
- „Funny Looking“
Clinical cases

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- mech. Protection
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Clinical cases

Trichiasis:
- mech. Protection
- Pain, tearing, Blepharospasm, redness, scarring
- Infections
- Scarring
- „Funny Looking“

⇒ Prosthetic soft speciality CL (Cantor & Silver MMA-VP 70%)
Recurrent corneal erosion:

- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- Infections
- less scarring
Recurrent corneal erosion:
- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- Infections
- less scarring
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  Blepharospasm,
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Recurrent corneal erosion:
- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- Infections
- less scarring

⇒ Soft speciality CL (Conso BG 80%, Hecht/Ascon)
Recurrent corneal plaques:

- mech. Protection
- corneal healing
- Discomfort
- less scarring
- physiological Stabilization
Clinical cases

Recurrent corneal plaques:

- mech. Protection
- corneal healing
- Discomfort
- less scarring
- physiological Stabilization

⇒ Silicone-Hydrogel (Pure Vision, B&L)
Clinical cases

Recurrent basal cell disorder:

- mech. Protection
- corneal „healing“
- physiological Stabilization
- optical Stabilization
Recurrent basal cell disorder:
- mech. Protection
- corneal „healing“
- physiological Stabilization
- optical Stabilization

⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA)
Clinical cases

Cornea Dystrophies:
Clinical cases

Epithelial basement membrane Dystrophies:
(Cogan or Map-Dot-Fingerprint)

- Discomfort
- physiological Stabilization
- optical Stabilization
Clinical cases

Epithelial basement membrane Dystrophies:
(Cogan or Map-Dot-Fingerprint)

- Discomfort
- physiological Stabilization
- optical Stabilization

⇒ Soft Disposable CL (H2O Extrem, Benz)
Clinical cases

Epithelial basement membrane Dystrophies:
(Meesman)

- Discomfort
- physiological stabilization
- optical stabilization
Clinical cases

Epithelial basement membrane Dystrophies:
(Meesman)

- Discomfort
- physiological Stabilization
- optical Stabilization

 geile specialty CL (Conso BG 80%, Hecht/Ascon)
Epithelial basement membrane Dystrophies:

(in general)

- optical

Stabilization
Clinical cases

Epithelial basement membrane Dystrophies:
(in general)

- optical
Stabilization
Epithelial / stromal Degeneration:
(nodular Salzmann)

- Discomfort
- physiological stabilization
- optical stabilization
Clinical cases

Epithelial / stromal Degeneration:
(nodular Salzmann)

- Discomfort
- physiological Stabilization
- optical Stabilization
Clinical cases

Epithelial / stromal Degeneration:
(nodular Salzmann)

- Discomfort
- physiological Stabilization
- optical Stabilization

⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA)
Clinical cases

Atopic Keratoconjunctivitis:

- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring
- epithelial regrowth
Atopic Keratoconjunctivitis:

- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
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- less scarring
- epithelial regrowth
Clinical cases

Atopic Keratoconjunctivitis:

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- corneal healing
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  Blepharospasm,
  redness, blinding
- less scarring
- epithelial regrowth
**Clinical cases**

Atopic Keratoconjunctivitis:

- mech. Protection
- corneal healing
- Pain, tearing, Blepharospasm, redness, blinding
- less scarring
- epithelial regrowth
Clinical cases

Atopic Keratoconjunctivitis:

- mech. Protection
- corneal healing
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring
- epithelial regrowth

⇒ Soft Disposable CL / RGP (PERIT, Falco)
Clinical cases

Bullous Keratopathy:

- Pain, tearing,
- Blepharospasm,
- redness, blinding
- „less scarring“
- „epithelial regrowth“
Clinical cases

Bullous Keratopathy:

- Pain, tearing, Blepharospasm, redness, blinding
- less scarring
- epithelial regrowth
Clinical cases

Bullous Keratopathy:

- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring
- epithelial regrowth

⇒ Soft disposable CL (Acuvue, J&J, 1 Week EW)
⇒ Silicone-Hydrogel (Pure Vision/B&L, Night & Day/CIBA, 1 Mt CW)
Bullous Keratopathy:

Surgical treatment = Penetrating Keratoplasty
Clinical cases

Penetrating Keratoplasty:
Penetrating Keratoplasty:

- Thread relaxation
- After thread removal (only in rare cases)
- Repulsion
- Physiological Stabilization
Penetrating Keratoplasty:

- Thread relaxation
- After thread removal (only in rare cases)
- Repulsion
- Physiological Stabilization

⇒ Silicone-Hydrogel CL (Focus Night&Day, CIBA)
Penetrating Keratoplasty:

- Thread relaxation
- After thread removal (only in rare cases)
- Repulsion
- Physiological Stabilization

⇒ RGP CL (Miniscleral OAD 13.5 mm, Falco,)
Severe Keratoconus:
- mechanical Protection
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring (?)
- less Progression (?)
Clinical cases

Severe Keratokonus:

- mechanical Protection
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring (?)
- less Progression (?)
Severe Keratokonus :

- mechanical Protection
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring (?)
- less Progression (?)
Clinical cases

Severe Keratokonus:

- mechanical Protection
- Pain, tearing,
  Blepharospasm,
  redness, blinding
- less scarring (?)
- less Progression (?)

⇒ RGP CL (FITQ, Boston XO, Falco)
Clinical cases

Dry Eye:
- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation

(Keratitis elagophthalmo)
Dry Eye:
- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation

(Keratitis filiformis)
Dry Eye:

- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation

(Lid Surgery)
Dry Eye:
- Tear evaporation
- Discomfort, pain
- Redness
- Slow tear evaporation

(Silicone-Hydrogel CL (Focus Night&Day, CIBA))
Attributes

- Water binding
- Ionic binding
- Deposits
- Drug binding
- Oxygen Transmissibility
- Flexural modulus
Attributes

Ionic binding

- BG 80
- H2O Extreme
- Acuvue
- Pure Vision
- Night & Day
- RGP
Attributes

Deposits (Proteins, Lipids)

- BG 80
- H2O Extreme
- Acuvue
- Pure Vision
- Night & Day
- RGP
Drug binding

- BG 80
- H2O Extreme
- Acuvue
- Pure Vision
- Night & Day
- RGP

Attributes
Attributes

Oxygen Transmissibility (ISO)

- BG 80
- H2O Extreme
- Acuvue
- Pure Vision
- Night & Day
- RGP
Attributes

Flexural Modulus

BG 80  H2O Extreme  Acuvue  Pure Vision  Night & Day  RGP

1350

Values:
- BG 80: Appr.
- Acuvue: Appr.
- Pure Vision: 150
- Night & Day: 250
- RGP: 1350

Axes:
- Flexural Modulus
Choosing the right attitudes:

- Low evaporation rate for corneal protection.

- High evaporation rate for epithelial dehydration.

- High ionic and drug binding as a drug reservoir for antibiotics, hyperchlorid, cycloplegics, steroids or NSAID (Drops or ointment). Take attention to preservatives and epinephrine!
Choosing the right attitudes:

- Avoid high deposit rates because of microbial binding.

- High O\textsubscript{2} -Transmissibility for speed corneal healing and enhanced epithelial cell regrowth.

- Moderate to high stiffness/modulus for corneal surface modeling.
Choosing the right wearing modality:

- Temporary Wear
- Daily Wear
- Continuous Wear (months/years)
- Extendet Wear (weeks)
Choosing the right wearing modality:

Temporary Wear = Modeling, Comfort, mech. Protection

Daily Wear = Modeling, Comfort, mech. Protection

Extended Wear = Corneal healing and epithelial regrowth, modeling, physiological stabilization, medical treatment, Comfort, mech. Protection

Continuous Wear = Physiological stabilization, slow tear evaporation, Modeling, mech. Protection
Risks

- Loss
- Evaporation
- Lack of oxygen
- Microbial infections
- Chemical contamination
Risks

Microbial infections
Short term prognosis:

Therapeutic bandage contact lenses are useful to protect the convalescent cornea from negative environmental influences.

They are helpful to protect the patient from discomfort and pain.

They are usable as a drug deposit with care.
Middle and long term prognosis:

Therapeutic bandage contact lenses are useful to protect the long term distroph cornea from negatives environmental influences.

They are helpful to modeling the mild irregular corneal surface for better vision.

They are helpful to protect the patient from discomfort and pain.

They can make happy patients!
Conclusion

Used with a closed monitoring on a co-management base between the Ophthalmologist and the Optometrist, therapeutic bandage contact lenses are a good alternative to conservatives methods.
Thank you!