Clinical Use of Therapeutic Bandage Contact Lenses
Bruce Baldwin, OD, PhD, FAAO, FSLS

Please silence all mobile devices and remove items from chairs so others can sit. Unauthorized recording of this session is prohibited.
Disclosure Statement:
No financial interests
Off label use of bandage lenses
OBJECTIVES

Review, with case reports, bandage lens use, with emphasis on lens size and types of patients that might be seen in various specialty practices.

Retina  Glaucoma  Peds

Optometry

Oculoplastics  Cornea  Neuro
...SIZE MATTERS
39F, Central abrasion, 14mm SiHy
Abstract

PURPOSE: To compare the efficacy of 2 types of bandage contact lenses after photorefractive keratectomy (PRK).

SETTING: Navy Refractive Surgery Center, Naval Medical Center, San Diego, California, USA.

METHODS: In this prospective study, 100 patients agreed to receive BCLs in both eyes. Each patient received a BCL composed of etafilcon A (Acuvue [ACV], Visionsci, Inc, San Diego, California, USA; 3-mm diameter, 8.4/8.8 base curve) in 1 eye and lotrafilcon A (Focus Night & Day [N&D], Ciba Vision, Duluth, Minnesota, USA; 3.8-mm diameter, 8.6 base curve) in the fellow eye. The patient was masked to the lens type in each eye. The preservative medication regimen was the same with both lenses. The epithelial defect size and corneal sensitivity were measured at surgery and daily after surgery until both eyes had reepithelialized. The lenses were removed.

RESULTS: The epithelial defect size at surgery was similar with both BCLs (ACV 57.07 mm² and N&D 57.56 mm²). Daily postoperative days 1 and 2, the mean defect size was significantly smaller in eyes with the N&D.
Re-epithelialization Studies: Serial Photographs

Immediate post-op

15.5 hrs

23.5 hrs

28.5 hrs

33.0 hrs

44.0 hrs
32F, EBMD, Recurrent erosions
1 Week F/U wearing 14mm SiHy
Treatment Options for EBMD

5% NaCl gtt and/or ung HS
Train in lid taping HS
Train how to open eyes in AM
BSCL: HS, daytime, EW
Doxycycline
Anterior stromal micropuncture
PTK
Etc...
## Discontinued Therapeutic Lenses

<table>
<thead>
<tr>
<th>LENS</th>
<th>MANUFACTURER</th>
<th>H₂O</th>
<th>Dk (O₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plano-T</td>
<td>B &amp; L</td>
<td>38%</td>
<td>9.2</td>
</tr>
<tr>
<td>O4</td>
<td>B &amp; L</td>
<td>38%</td>
<td>9.2</td>
</tr>
<tr>
<td>Optima FW</td>
<td>B &amp; L</td>
<td>38%</td>
<td>9.2</td>
</tr>
<tr>
<td>CSI-T</td>
<td>CIBA Vision</td>
<td>38.6%</td>
<td>13</td>
</tr>
<tr>
<td>Permalens</td>
<td>Cooper Vision</td>
<td>71%</td>
<td>34</td>
</tr>
</tbody>
</table>

## FDA Approved Therapeutic Lenses

<table>
<thead>
<tr>
<th>LENS</th>
<th>MANUFACTURER</th>
<th>H₂O</th>
<th>Dk (O₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oasys</td>
<td>J&amp;J</td>
<td>38%</td>
<td>103</td>
</tr>
<tr>
<td>Air Optix N&amp;D</td>
<td>Alcon</td>
<td>24%</td>
<td>140</td>
</tr>
<tr>
<td>Purevision</td>
<td>B &amp; L</td>
<td>36%</td>
<td>99</td>
</tr>
</tbody>
</table>
Lenses used “off label” should be briefed to patient and documented in the record.

<table>
<thead>
<tr>
<th>Lenses Manufacturer</th>
<th>Lenses Type</th>
<th>Lifespan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcon Labs</td>
<td>AIR OPTIX NIGHT &amp; DAY AQUA</td>
<td>30 day wear</td>
</tr>
<tr>
<td>Bausch &amp; Lomb</td>
<td>PUREVISION</td>
<td>30 day wear</td>
</tr>
<tr>
<td>Johnson &amp; Johnson VCI</td>
<td>ACUVUE OASYS</td>
<td>7 day wear</td>
</tr>
<tr>
<td>United Contact Lens</td>
<td>UCL 55/46</td>
<td>7 day wear</td>
</tr>
</tbody>
</table>

“off label”
### Soft Lenses at Least 16mm (TQ June 2018)

<table>
<thead>
<tr>
<th>* 20+ mm</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ABB Optical Group</td>
</tr>
<tr>
<td>*</td>
<td>Advanced Ultra Vision, Inc.</td>
</tr>
<tr>
<td>*</td>
<td>Advanced Vision Technologies</td>
</tr>
<tr>
<td></td>
<td>Alden Optical</td>
</tr>
<tr>
<td>*</td>
<td>Art Optical Contact Lens, Inc</td>
</tr>
<tr>
<td>*</td>
<td>Continental Soft Lens</td>
</tr>
<tr>
<td>*</td>
<td>Kontur Kontakt Lens</td>
</tr>
<tr>
<td>*</td>
<td>Orion Vision Group</td>
</tr>
<tr>
<td></td>
<td>SpecialEyes, LLC</td>
</tr>
<tr>
<td></td>
<td>Unilens</td>
</tr>
<tr>
<td>*</td>
<td>United Contact Lens</td>
</tr>
<tr>
<td></td>
<td>Visionary Optics, LLC</td>
</tr>
<tr>
<td>*</td>
<td>Xcel Specialty Contacts</td>
</tr>
</tbody>
</table>
Approval for adding a **therapeutic** indication for the PureVision **Contact Lens**. The device, as modified, will be marketed under the trade name BAUSCH & LOMB® PureVision™ (balafilcon A) Visibility tinted **Contact Lens** for **Therapeutic** Use and is indicated for **therapeutic** use as a bandage **contact lens** for corneal protection and corneal pain relief during treatment of ocular pathologies as well as post-surgical conditions. Applications of the PureVision **Contact Lens** include but are not limited to conditions such as the following:

1) For corneal protection in conditions such as entropion, trichiasis, tarsal scars, recurrent corneal erosion and post surgical ptosis for corneal protection; 2) For corneal pain relief in conditions such as bullous keratopathy, epithelial erosion and abrasion, filamentary keratitis, post-keratoplasty;
3) For use as a bandage during the healing process of conditions such as chronic epithelial defects, corneal ulcer, neurotrophic keratitis, neuroparalytic keratitis, chemical burns, and post surgical epithelial defects; and
4) For post surgical conditions that include bandage use such as LASIK, PRK, PK, PTK, lamellar grafts, corneal flaps, and additional corneal surgical conditions. Pure Vision **Contact Lenses** for **therapeutic** use can also provide correction during healing if required.
...indicated for therapeutic use as a bandage contact lens for corneal protection and corneal pain relief during treatment of ocular pathologies as well as post-surgical conditions.

include but are not limited to entropion, trichiasis, tarsal scars, recurrent corneal erosion and post surgical ptosis for corneal protection; bullous keratopathy, epithelial erosion and abrasion, filamentary keratitis, post-keratoplasty; chronic epithelial defects, corneal ulcer, neurotrophic keratitis, neuroparalytic keratitis, chemical burns, and post surgical epithelial defects; LASIK, PRK, PK, PTK, lamellar grafts, corneal flaps.

**Lenses for therapeutic use can also provide correction during healing if required.**
Approval for an additional indication for therapeutic use for the VISTAKON®...ACUVUE® OASYS™ ...

5) For structural stability and protection in piggy back lens fitting where the cornea and associated surfaces are too irregular to allow for corneal rigid gas permeable (RGP) lenses to be fit. In addition the use of the lens can prevent irritation and abrasions in conditions where there are elevation differences in the host/graph junction or scar tissue. Lenses prescribed for therapeutic use may be worn for daily or extended wearing periods.

www.fda.gov/MedicalDevices/
Terriens Marginal Degeneration

20/25
Piggyback with 18.2mm Scleral Lens
Note Oasys plano bandage lens
Billing and Coding

92070

SPECIAL OPHTHALMOLOGICAL SERVICES

92071 Fitting of contact lens for treatment of ocular surface disease

(Report supply of lens separately with 99070 or appropriate supply code)

Medicare allowable – about $35
79F, 2007, AC IOL, 20/25
2009, PBK 20/200, Severe arthritis
Severe arthritis
OD is -300, 20/15
Painful bullae
## Indications for Penetrating Keratoplasty

<table>
<thead>
<tr>
<th>Rank</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unknown, unreported, or unspecified 9,765 (26.6%)</td>
<td>Unknown, unreported, or unspecified 8,252 (22.8%)</td>
<td>Ectasias/Thinnings (Keratoconus) 4,731 (21.2%)</td>
</tr>
<tr>
<td>2</td>
<td>Ectasias/Thinnings (Keratoconus) 6,650 (18.1%)</td>
<td>Ectasias/Thinnings (Keratoconus) 7,331 (20.3%)</td>
<td>Other causes of endothelial dysfunction 4,455 (20.0%)</td>
</tr>
<tr>
<td>3</td>
<td>Repeat corneal transplant 4,460 (12.1%)</td>
<td>Repeat corneal transplant 4,271 (11.8%)</td>
<td>Repeat cornea transplant 4,025 (18.0%)</td>
</tr>
<tr>
<td>4</td>
<td>Other causes of corneal dysfunction or distortion (non-endothelial) 3,795 (10.3%)</td>
<td>Other causes of corneal dysfunction or distortion (non-endothelial) 4,115 (11.4%)</td>
<td>Post-cataract surgery edema 3,104 (13.9%)</td>
</tr>
<tr>
<td>5</td>
<td>Post-cataract surgery edema 3,670 (10.0%)</td>
<td>Post-cataract surgery edema 3,710 (10.3%)</td>
<td>Other degenerations or dystrophies 1,899 (8.5%)</td>
</tr>
<tr>
<td>TOTAL PK</td>
<td>36,716</td>
<td>36,144</td>
<td>22,312</td>
</tr>
</tbody>
</table>

2012 Eye Banking Statistical Report
Eye Bank Association of America, www.restoresight.org
### 2016 Eye Banking Statistics Reported by U.S. Banks: Use of Donated Tissues

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corneal Grafts Total</td>
<td>82,994</td>
<td>79,304</td>
<td>76,431</td>
<td>72,736</td>
<td>68,681</td>
</tr>
<tr>
<td>Penetrating Keratoplasty</td>
<td>38,413</td>
<td>39,554</td>
<td>38,919</td>
<td>36,998</td>
<td>36,716</td>
</tr>
<tr>
<td>Anterior Lamellar Keratoplasty</td>
<td>2,386</td>
<td>2,201</td>
<td>1,953</td>
<td>2,009</td>
<td>1,855</td>
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<tr>
<td>Endothelial Keratoplasty</td>
<td>32,221</td>
<td>30,710</td>
<td>28,961</td>
<td>27,298</td>
<td>24,277</td>
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<tr>
<td>Keratolimbal Allograft</td>
<td>97</td>
<td>107</td>
<td>88</td>
<td>110</td>
<td>97</td>
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<tr>
<td>Keratoprosthesis (K-Pro)</td>
<td>313</td>
<td>364</td>
<td>294</td>
<td>255</td>
<td>263</td>
</tr>
<tr>
<td>Glaucoma Shunt Patch or other non-keratoplasty use</td>
<td>917</td>
<td>527</td>
<td>755</td>
<td>687</td>
<td>676</td>
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<tr>
<td>Other keratoplasty (experimental surgery)</td>
<td>65</td>
<td>19</td>
<td>17</td>
<td>17</td>
<td>44</td>
</tr>
<tr>
<td>Unknown or Unspecified</td>
<td>1,514</td>
<td>1,142</td>
<td>1,026</td>
<td>1,068</td>
<td>1,554</td>
</tr>
<tr>
<td>Sclera</td>
<td>3,380</td>
<td>3,225</td>
<td>3,345</td>
<td>3,693</td>
<td>3,497</td>
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<tr>
<td>Long-Term Preserved Corneas</td>
<td>18,133</td>
<td>11,672</td>
<td>7,223</td>
<td>4,840</td>
<td>5,095</td>
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<tr>
<td>Keratoplasty</td>
<td>1,335</td>
<td>737</td>
<td>938</td>
<td>499</td>
<td>305</td>
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<tr>
<td>Glaucoma Shunt Patching</td>
<td>16,683</td>
<td>10,843</td>
<td>6,212</td>
<td>4,040</td>
<td>4,435</td>
</tr>
<tr>
<td>Other Surgical Uses</td>
<td>115</td>
<td>92</td>
<td>73</td>
<td>301</td>
<td>335</td>
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<tr>
<td>Research</td>
<td>17,023</td>
<td>16,924</td>
<td>17,670</td>
<td>17,384</td>
<td>19,320</td>
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<tr>
<td>Training</td>
<td>9,916</td>
<td>10,003</td>
<td>9,295</td>
<td>7,451</td>
<td>6,850</td>
</tr>
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### 2016 U.S. Eye Banking Statistics Reported by U.S. Banks:
Indications for Corneal Transplant Reported by U.S. Banks

<table>
<thead>
<tr>
<th>Indications for Penetrating Keratoplasty</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Post-cataract surgery edema</td>
<td>2,729</td>
<td>2,905</td>
</tr>
<tr>
<td>B. Keratoconus</td>
<td>5,463</td>
<td>5,835</td>
</tr>
<tr>
<td>C. Fuchs' Dystrophy</td>
<td>1,171</td>
<td>1,235</td>
</tr>
<tr>
<td>D. Repeat Corneal Transplant</td>
<td>4,529</td>
<td>4,267</td>
</tr>
<tr>
<td>E. Other degenerations or dystrophies</td>
<td>1,164</td>
<td>1,148</td>
</tr>
<tr>
<td>F. Post-refractive surgery</td>
<td>70</td>
<td>55</td>
</tr>
<tr>
<td>G. Microbial changes</td>
<td>677</td>
<td>689</td>
</tr>
<tr>
<td>H. Mechanical or chemical trauma</td>
<td>982</td>
<td>1,180</td>
</tr>
<tr>
<td>I. Congenital opacities</td>
<td>620</td>
<td>672</td>
</tr>
<tr>
<td>J. Pterygium</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>K. Non-infectious ulcerative keratitis or perforation</td>
<td>1,301</td>
<td>1,357</td>
</tr>
<tr>
<td>L. Other causes of corneal dysfunction or distortion (non-endothelial)</td>
<td>2,346</td>
<td>2,633</td>
</tr>
<tr>
<td>M. Other causes of endothelial dysfunction</td>
<td>1,035</td>
<td>1,189</td>
</tr>
<tr>
<td>Z. Unknown, unreported, or unspecified</td>
<td>16,316</td>
<td>16,373</td>
</tr>
<tr>
<td><strong>Total Indications for Penetrating Keratoplasty</strong></td>
<td><strong>38,413</strong></td>
<td><strong>39,554</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indications for Endothelial Keratoplasty</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Post-Cataract Surgery Edema</td>
<td>5,558</td>
<td>5,385</td>
</tr>
<tr>
<td>C. Fuchs' Dystrophy</td>
<td>15,845</td>
<td>14,472</td>
</tr>
<tr>
<td>D. Repeat Corneal Transplant</td>
<td>2,822</td>
<td>2,613</td>
</tr>
<tr>
<td>M. Other Causes of Endothelial Dysfunction</td>
<td>2,882</td>
<td>3,208</td>
</tr>
<tr>
<td>Z. Unknown, unreported, or unspecified</td>
<td>5,114</td>
<td>5,032</td>
</tr>
<tr>
<td><strong>Total for Endothelial Keratoplasty</strong></td>
<td><strong>32,221</strong></td>
<td><strong>30,710</strong></td>
</tr>
</tbody>
</table>
2013, 14mm SiHy q 4-8 weeks
92F, PBK, 14mm SiHy, wore 4 mts
Large abrasion, Long RD surgery

Retina
Frequency of Surgeon Reported Corneal Epithelial Debridement During Diabetic Vitrectomy

JJ Scherer¹, TR Friberg¹, M Ohji² and Y Tano²

Results: 17.4%

The frequency of epithelial debridement was 17.4% (+/- 19.0%) across 8,002 vitrectomies.

Bandage Contact Lens and Topical Indomethacin for Treating Persistent Corneal Epithelial Defects After Vitreoretinal Surgery

Syed Jafar Oskouee, MD,*, Javad Amuzadeh, MD,† and Mohammad Taher Rajabi, MD†
CORNEAL EPITHELIAL DEFECTS FOLLOWING VITRECTOMY SURGERY USING HAND-HELD, SEW-ON, AND NONCONTACT VIEWING LENSES

STEVEN R. VIRATA, MD, JAN A. KYLSTRA, MD, H. TINA SINGH, MD

___________

From the Department of Ophthalmology, University of North Carolina, Chapel Hill.

Reprint requests: Jan A. Kylstra, MD, 617 Burnett-Womack, CB#7040, Chapel Hill, NC 27599-7040.
Infected and leaking filtering bleb  Glaucoma
20mm lens for tamponade
Bleb revision, 16mm, leak sealed in two weeks
JT 37 M, HSV?/ARN 2002
8.0, 3.7mm pupil, 14.5
Brain tumor, exposure keratopathy
Speculum may be needed for peds or adults
7yo F, Pencil trauma, aphakic
Bandage lens worn 3-4 mts
+1450 RGP
With/without piggyback  20/50
Precautions for peds with vision loss?
Precautions for peds with vision loss?
“...oncocytic carcinoma arising in a pleomorphic adenoma involving lacrimal gland.”

Oculoplastics
Radiation orbitopathy

Punctal plug

20mm BSCL
Punctal Cautery

Punctal Occlusion
Non-healing epi defect after lid procedure
Maintained on BSCL for 7+ years
Pain control, 20/150 PH 20/60
20/400, Etiology?
Ptosis surgery & revisions, lid scarring
Ptosis Surgery & Revisions, Exposure Keratopathy
64 F, Exposure Keratopathy
Acoustic neuroma, metastatic small cell lung Ca
Sulfacetamide drops
OD, Kontur 15.0, 8.9, plano
Non-preserved ATs, Vigamox
One week f/u
Stromal defect 75% filled in

Ten day f/u
Epi defect closed, scarring 😊
Replaced Oasys, 8.4 plano
82F, Uncomplicated phaco
PO day 3 weight lifting, leak
Choroidal effusion/Detachment
15mm edema, exchanged for 16mm
67 M, Phaco wound leak
Ta OD 19, OS 09

22mm, 9.0, plano Kontur
Exchanged 22mm for 16mm lens

Burp the bubble
64M Cataract surgery, relaxing incisions, PAIN
SLK, Lissamine Green
LISSAMINE GREEN  STERILE STRIPS

Each strip contains approx. 1.5 mg. Lissamine Green

Distributed by Rose Stone Enterprises, 9622 Baseline Road.
Alta Loma, CA 91701

Manufactured in India by : Contacare Ophthalmics and Diagnostics
Pterygium, recurrent x 3
Significant symblepharon with motility restriction and diplopia
Pterigiecctomy, conjunctival autograft
PERFECT: Pterygium Extended Removal Followed by Extended Conjunctival Transplant

http://www.aao.org/publications/eyenet/201202/cornea.cfm
One day post-op
18mm bandage CL covering sutures and epithelial defect from keratectomy
Post-op day 14
20/60 chemosis resolving
Exchanged 18mm for a 20mm, 9.8
Bubble removed with manual slide technique
Post-op day 43
17F, Trauma, open globe, leak
PK, sulcus IOL, pupilloplasty  UCVA 20/40
MANAGEMENT

ER Cornea/Scleral Lac Repair, Glu, BSCL
(Multiple Facial Reconstruction, ENT)
Glue Replacement, Suture Removal, 22mm BSCL
Multiple visits to residents to clean or replace CL
Multiple visits for suture removal
Glue fell off at 5 weeks
Several BSCL replacements for pain
Retina service - B scan “retina flat”
Dr Fowler complex surgery 23 mts after MVA:

PK
Aspiration of liquid cataract
Sulcus IOL
Ant & post synechialysis
Pupilloplasty
Thermo-gonioplasty & pupilloplasty
YAG
Soft CL for OD (Safety Glasses??)
Aug 2010
HM Va

Oct 2010

Oct 2010, Glue removed, 20/60
53F, LASIK OU with enhancements OU 2004

Multifocal IOL OS, broken haptic during surgery & IOL exchange 2010

Edema, pain, flap dehiscence

BCVA 20/200

Bandage lens x 13 months
Edema, flap dehiscence, pain
14.4mm, 55% H2O BSCL for pain control and edema deturgescence
29F, CL, Pseudomonas aeruginosa
ER: erythromycin, ketorolac
MD: vanc/gent, Vig q4h
Better & dexamethasone TID 3 days
Referred with failed PK × 2, **HM VA** for prosthetic hand painted SCL
After 16mm BSCL (55%) 20/70
83F, Conjunctival/corneal Lesion
Kontur, 16mm, 9.0
Specimen A shows a thin layer of stratified nonkeratinizing squamous epithelium with no evidence of corneal/conjunctival intraepithelial neoplasia (CIN).

Specimen B shows a sessile papilloma. No CIN is identified.

Specimen C shows conjunctival epithelium with no evidence of CIN.
What Do You See?
Graves disease
Exposure
Posted for second orbital decompression

Neuro-ophthalmology
Exposure, risk of perforation
Use largest lens possible, 20mm
41M, SJS-TEN
Cough, OS conjunctivitis
Amoxicillin & Tobramycin drops OS
ICU then Burn ICU
BSCVA 20/80
Piggyback
N&D, 8.4, plano, 10.5mm RGP 20/50-70
Scheduled for Boston K-pro
Another Patient
Boston K-Pro type 1
20/40

16.0, 8.9, Plano
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