PERIOCULAR RECONSTRUCTION: TOOLBOX AND INNOVATIONS

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Scope

- Laissez-faire
- Direct closure
- Formal reconstruction
  - Flaps
  - Grafts
Eyelid reconstruction - aims

- Restore anatomy
- Preserve physiologic functioning
- Cosmesis
Factors to consider
The Defect

- **Location**
  - Upper or lower lid
  - Canalicular involvement

- **Size**

- **Depth**
  - Anterior and posterior lamellae involved

- **Adjacent tissue excess or laxity**
  - Flaps usually better than grafts
The patient

- Age
- Fitness for surgery
- Blood thinners — aspirin, clopidogrel, warfarin, NOAC
- Vision ?only eye
The logistics

- Timing and availability of pathology results
- Theatre access
The surgeon

- Training
- Confidence
- Willingness to try new techniques
Laissez-faire

- Secondary intention healing
- Zones predicting outcome of healing by Laissez-faire predicted by Zitelli¹ in 1983

“NEET” area (concave areas of the Nose, Eye, Ear and Temple) - best outcomes
“FAIR” area (forehead, antihelix, eyelids, remainder of nose, lips and cheeks) – flat acceptable scars
“NOCH” area (convex surfaces of nose, oral lips, cheeks and chin, helix of ear) – poorer scars

<table>
<thead>
<tr>
<th></th>
<th>Laissez-faire</th>
<th>Formal repair</th>
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<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td>Avoids surgical procedure</td>
<td>Predictability of wound healing (not always!)</td>
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<td></td>
<td>Useful in elderly or mentally incompetent who are unsuitable for prolonged reconstruction</td>
<td>Reduce risk of infection?</td>
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<td>Cheaper</td>
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<td>Usually painless and seldom bleed</td>
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<td>Usually good cosmetic outcome</td>
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<td><strong>Disadvantages</strong></td>
<td>Unpredictability of scarring</td>
<td>Need for surgical procedure</td>
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<td>Potential need for revisional surgery</td>
<td>Need to be fit for surgery</td>
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<td>Fear about “infections” – probably unfounded</td>
<td>Cost</td>
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Post-excision right lower lid BCC

Image courtesy of Richard Harrad
4 weeks post-op

Image courtesy of Richard Harrad
Post-op left medial canthal BCC excision: 17mm defect

Image courtesy of Richard Harrad
6 weeks post-op

Image courtesy of Richard Harrad
3 months post-op

Image courtesy of Richard Harrad
Formal reconstruction
Direct closure on tension

E, F 2 months postop

Magic suture

Skin
Subcut tissue
Orbicularis

10mm 10mm
Direct closure on tension

# Reconstruction of lamellae

<table>
<thead>
<tr>
<th>Anterior lamella (skin +/- muscle)</th>
<th>Posterior lamella</th>
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<tbody>
<tr>
<td>Full thickness skin graft – UL, pre-auricular, posterior auricular, supraclavicular, inner upper arm</td>
<td>Free tarsoconjunctival graft (usually fellow upper lid)</td>
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<tr>
<td>Lateral advancement flap</td>
<td>Tarsoconjunctival flap</td>
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<tr>
<td>McGregor flap</td>
<td>Hughes flap for LL defects</td>
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<tr>
<td>Tenzel semi-circular flap</td>
<td>Cutler beard flap for UL defects</td>
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<tr>
<td>Mustarde cheek rotation flap</td>
<td>Hard palate graft</td>
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<tr>
<td>Heteropalpebral flap from upper lid</td>
<td>Ear cartilage graft</td>
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<td>Chondromucosal graft</td>
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Have fun using combinations of the above but cannot use graft on graft!
Flaps

- Unit of tissue that is transferred from one site (donor site) to another (recipient site) while maintaining its own blood supply
- Skin only or composite
- Avoid tension – good rule of thumb in advancement flaps is to dissect 3x length of defect you are trying to fill
Local flaps by movement - summary

Advancement  Rotation  Transposition
Large local advancement flap
Interpolation flap

- 2 stage tissue flap
- Base of flap not immediately adjacent to recipient site (e.g. if insufficient tissue/laxity in nearby skin)
- Flap lifted over an area of normal skin
- Results in bridge of tissue (pedicle) between flap base and surgical defect, that must be removed in 2\textsuperscript{nd} stage once vascularity established
- E.g. Cutler beard flap
Cutler beard flap

- Useful for large upper lid full thickness defects
- Replaces anterior and posterior lamellae with advancement flap from lower lid under bridge of lower lid, into upper lid
Cutler Beard flap
Cutler Beard Flap
Cutler Beard flap
Cutler Beard flap – early postop
Cutler Beard flap – post division
Alternative to Cutler beard – UL defect
Free tarsocconjunctival graft
Donor site – free tarsoconj graft
Myocutaneous flap
Full thickness skin graft
Hughes flap
Hughes flap + FTSG
Infiltrative lower lid BCC – Hughes flap and cheek advancement
Tenzel flap

Semicircular rotation flap
Useful for UL or LL defects <50%
Diameter of flap twice that of defect
Widely undermine
Lateral canthotomy and inferior cantholysis
Anchor flap to periosteum of lateral orbital rim
Mustarde flap

Rotational cheek flap for large lower lid defects >75%

Useful in patients who can’t tolerate Hughes

Need posterior lamellar graft
Mustarde cheek flap - defect
Mustarde cheek flap
Mustarde cheek flap
Large advancement flap (almost Mustarde...)
Bilobed flap

Images courtesy of Rebecca Ford
Pedicle (transposition)

Flaps
Nasojugal pedicle flap
Nasojugal pedicle flap
Glabella flap (V to Y)
Right medial canthal BCC
Glabellar flap
Glabellar flap 1 week post-op
Mc Gregor flap
Left lower lid BCC
Heteropalpebral flap + free tarsal graft
Heteropalpebral flap + free tarsal graft
Combination of Techniques for Large Defects

Courtesy of Mr A Murray, Birmingham
Defect post right lower lid BCC excision—significant loss of tarsal plate. Reconstruction?
A) Laissez-faire
B) Hughes flap + skin graft
C) Tenzel flap (+/- free tarsoconjunctival graft)
D) McGregor flap (+/- free tarsoconjunctival graft)
E) Lateral advancement flap (+/- free tarsoconjunctival graft)
Answer: laissez-faire

Defect

3 months post-op

Images courtesy of Adam Bray
Right lower lid defect post BCC excision.
Reconstruction?
A) Laissez-faire
B) Hughes flap + skin graft
C) Lateral canthotomy/cantholysis, periosteal flap, release of orbitomalar ligament and cheek advancement flap
D) Tenzel flap
E) Mustarde flap
Answer: laissez-faire

Defect

Images courtesy of Adam Bray
Extensive upper lid BCC – reconstruction?
A) Laissez-faire
B) Cutler Beard Flap
C) Free tars Conjunctival graft, myocutaneous advancement flap from superior to defect, and skin graft to fill the gap left from the myocutaneous flap
D) Direct closure on tension
Answer

Direct closure on tension

a. Upper lid BCC with 4 mm margin markings (24 × 13 mm specimen W × H). b On table, direct defect closure under tension (patient unable to open eye). c, d At 4 months, open and closed respectively, i.e., full eyelid function

Right medial canthal SCC – reconstruction?

A) Laissez-faire
B) Glabellar flap
C) Rhomboid flap
D) Bilobed flap
E) Direct closure
Answer: direct closure

Deep 5/0 vicryl

6/0 vicryl skin
1 week post-op
Summary

- Every case is different so individualise treatment
- Always consider laissez faire
- Try some new techniques
  - Direct closure on tension
- Remember scars always contract and the effect of gravity
- Do the simplest thing you can
- Take lots of photos
Thank you