Dealing with Flap Mishaps

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Q 1
- In your LASIK practice, are you still using mechanical microkeratome?
  A. Yes
  B. No

Q 2
- In your LASIK practice, Did you ever have a flap button hole?
  A. Yes
  B. No
Q 3

- In your LASIK practice, Did you ever have a torn flap?
  A. Yes
  B. No
Incidence of intraoperative flap complications in laser in situ keratomileusis
Jason M. Jacobs, MD, Michael J. Taravella, MD

- 0.099% Partial flaps (84)
- 0.070% buttonholes (59)
- 0.087% Torn Flaps (74)

Incidence, Management, & Visual Outcomes of Buttonholed Laser in Situ Keratomileusis Flaps
Hani S. Al-Mezaine, MD, Saleh A. Al-Amro, MD, Saleh Al-Obeidan, MD

- Of 4250 primary LASIK procedures, 17 eyes (0.4%) with buttonholed flaps were identified.
- Buttonholes occurred with the Hansatome microkeratome in 64.7% of eyes and with the Moria
- Microkeratome in 35.3% of eyes, the incidence of buttonholed flaps was 0.62% and 0.19%, respectively

CONCLUSION
- Buttonholed flaps occurred more frequently in the second of 2 consecutively treated eyes.
- Microkeratomes that produce a larger diameter flap were more likely to produce flap buttonholes.
- The least loss of BCVA was achieved when LASIK was aborted and then repeated after refractive stability.

Transepithelial phototherapeutic keratectomy/photorefractive keratectomy with adjunctive mitomycin-C for complicated LASIK flaps
Laura T. Muller, MD, Eugenio M. Candal, MD, Randy J. Epstein, MD, Richard F. Dennis, MD, Parag A. Majmudar, MD

Mitomycin-C assisted photorefractive keratectomy in the treatment of buttonholed laser in situ keratomileusis flaps associated with epithelial ingrowth
Suphi Taneri, MD, Jörg M. Koch, MD, Samir A. Melki, MD, PhD, Dimitri T. Azar, MD
J Cataract Refract Surg 2005; 31:2026–2030

SUBJECTS

Group III:
- 5 eyes of five patients with LASIK flap complication; 3 had buttonhole & 2 had torn flap.

METHODS

Transepithelial PTK/PRK was performed using VISX Star S4 Excimer LASER System
- “Laser scrape” for central 6.0mm with an epithelial setting of 50 µm
- Transepithelial PTK was first performed for cases with irregular corneal topography using 6.0 mm laser spot size & carboxymethylcellulose sodium 1% as a masking agent.
METHODS

- Transepithelial PRK was done for the original refraction.
- The programmed myopic refractive error was reduced by 20% for cases with regular topography and by 50% for cases who had PTK.
- After ablation, a sterile sponge soaked in 0.02% MMC was applied to the bed for 20 seconds.

METHODS

- The ocular surface was irrigated by 30 ml chilled BSS.
- CL was applied for 4 to 6 days.
- Fluoroquinolone antibiotic and Prednisolone acetate 1% 4 times a day for one week.
- Prednisolone was tapered over subsequent 3 weeks.

RESULTS

**Group III (Post LASIK Flap Complication)**

- Two men and 3 women
- Mean age: 28.8 years
- Mean Preop. UCVA: 20/440
- Mean Preop. BSCVA: 20/25
- Mean Preop. SE : -5.10 ± 2.77 D

RESULTS

**Group III (Post LASIK Flap Complication)**

- Mean interval between initial LASIK Flap Complication and PTK/PRK/MMC: 7.2 weeks
- Mean Postop. SE : -0.55 ± 0.37 D
- Mean Postop. UCVA: 20/25
- Mean Postop. BSCVA: 20/20.2
RESULTS

**Group III (Post LASIK Flap Complication)**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Eye</th>
<th>Flap Complication</th>
<th>Post Complication Refraction</th>
<th>UCVA</th>
<th>BSC VA</th>
<th>Date of Initial LASIK</th>
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<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>F</td>
<td>OD</td>
<td>Buttonhole</td>
<td>-5.25 -1.75 X 100</td>
<td>20/600</td>
<td>20/20</td>
<td>26/04/04</td>
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<tr>
<td>2</td>
<td>29</td>
<td>M</td>
<td>OS</td>
<td>Torn Flap</td>
<td>-4.00 -1.00 X 15</td>
<td>20/400</td>
<td>20/20</td>
<td>09/08/04</td>
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<tr>
<td>3</td>
<td>33</td>
<td>F</td>
<td>OS</td>
<td>Buttonhole</td>
<td>-3.00 -2.25 X 180</td>
<td>20/400</td>
<td>20/40</td>
<td>28/11/04</td>
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<tr>
<td>4</td>
<td>27</td>
<td>F</td>
<td>OS</td>
<td>Torn Flap</td>
<td>-5.00 -1.50 X 65</td>
<td>20/600</td>
<td>20/25</td>
<td>26/01/05</td>
</tr>
<tr>
<td>5</td>
<td>30</td>
<td>M</td>
<td>OD</td>
<td>Buttonhole</td>
<td>-2.00 -2.00 X 70</td>
<td>20/200</td>
<td>20/20</td>
<td>03/03/05</td>
</tr>
</tbody>
</table>

**Case 1**

25 Ys old lady
Flap Button hole
(August 2005)
Ref: -5.25 -1.75 X 100

Central triangular scar
-3.75 -4.50 X 30
(7 weeks later)

**Decision:** Tranepithelial PRK/MMC

**RESULTS**

**Group III (Post LASIK Flap Complication)**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Date of Initial LASIK</th>
<th>Waiting Period</th>
<th>Follow-up Period</th>
<th>Post Operative Refraction</th>
<th>Haze Score</th>
<th>UCVA</th>
<th>BCVA</th>
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<tbody>
<tr>
<td>1</td>
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<td>6 weeks</td>
<td></td>
<td>-1.00 -0.5 X 90</td>
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<td>20/30</td>
<td>20/20</td>
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<tr>
<td>2</td>
<td>09/08/04</td>
<td>8 weeks</td>
<td></td>
<td>Plano</td>
<td>0</td>
<td>20/20</td>
<td>20/20</td>
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<tr>
<td>3</td>
<td>28/11/04</td>
<td>8 weeks</td>
<td></td>
<td>+0.75 -1.25 X 180</td>
<td>0</td>
<td>20/30</td>
<td>20/25</td>
</tr>
<tr>
<td>4</td>
<td>26/01/05</td>
<td>6 weeks</td>
<td></td>
<td>-0.75 -0.50 X 65</td>
<td>0</td>
<td>20/25</td>
<td>20/16</td>
</tr>
<tr>
<td>5</td>
<td>03/03/05</td>
<td>8 weeks</td>
<td></td>
<td>Plano +0.50 X 80</td>
<td>0</td>
<td>20/20</td>
<td>20/20</td>
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</tbody>
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**Central triangular scar**
-3.75 -4.50 X 30
(7 weeks later)

**Decision:** Tranepithelial PRK/MMC
- Mean Ablation depth was 63 ± 13 µm (45 – 85 µm)
- Mechanical epithelial removal (Amoil’s brush)
- 6 mm OZ with 1 mm transition zone
- Post-ablation MMC application (0.02% for 20 seconds)
- Bandage CL with routine postop. regimen