Utilizing the CROSS Technique for Post-operative Scars

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Objectives

- Discuss the impact of scarring on quality of life
- Review scar revision options
- Review history of CROSS technique
- Discuss our study
Conflicts of Interest

- I have no conflicts of interest to declare.
Skin Cancer Surgery in 2013

- Over 5 million skin cancers diagnosed each year
- Dermatologists perform over 3 million of these treatments
  - Up 13% from previous year
Effects of Scarring

- Anxiety
- Self-consciousness
- Social stigma
- Perceive physician as unempathetic
The Nose

- Centrally located
- Prominent during face to face encounters
- Difficult reconstruction
Tethering Effect
- Bulbous sebaceous skin emphasizes scar
- More prominent and atrophic in appearance
Resurfacing Methods
Chemical Skin Resurfacing

- Collagen remodeling
- Reepithelialization
C.R.O.S.S. Technique

- Published in 2002.
- Use of highly potent trichloroacetic acid placed within the scar
## C.R.O.S.S. Technique

<table>
<thead>
<tr>
<th>Effects of CROSS</th>
<th>Number of Courses</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>No. of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>65% TCA</td>
<td>Excellent</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>12 (36)</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>15 (46)</td>
</tr>
<tr>
<td></td>
<td>Fair</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3 (9)</td>
</tr>
<tr>
<td></td>
<td>Poor</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>3 (9)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>15</td>
<td>33</td>
</tr>
<tr>
<td>100% TCA</td>
<td>Excellent</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>19 (59)</td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>8</td>
<td>3</td>
<td>2</td>
<td>11</td>
<td>11 (34)</td>
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<tr>
<td></td>
<td>Fair</td>
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<td>0</td>
<td>0</td>
<td>2</td>
<td>2 (6)</td>
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<tr>
<td></td>
<td>Poor</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0 (0)</td>
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<tr>
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<td>Total</td>
<td>17</td>
<td>8</td>
<td>2</td>
<td>5</td>
<td>32</td>
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</table>

Percentages are in parentheses.
Excellent, more than 70% of the lesions disappeared; good, 50–70% of the lesions disappeared; fair, 30–50% of the lesions disappeared; poor, less than 30% of the lesions disappeared.
Hematoxylin/eosin-stained sections (original magnification, 100) of acne scars before (left) and at 1-year follow-up (right) after therapy with 95% trichloroacetic acid. Note overall increased hyalinization of dermal collagenous tissue, with focal knobby collagen fibers visible in bottom left corner.
Masson trichrome special-stained sections (original magnification, 100) of acne scars before (left) and at 1-year follow-up (right) after therapy with 95% trichloroacetic acid. Note overall increased hyalinization of dermal collagenous tissue (blue).
Our Study

- Post-surgical scarring on nose following Mohs
- Applied 50% TCA to scarring 6-12 weeks following surgery
- Evaluated 3 months later
Visual Analogue Scale

- 2 independent evaluators
- Scores given for Atrophy, Skin Texture, and Overall Improvement

<table>
<thead>
<tr>
<th>Scale</th>
<th>Change in Scar Appearance</th>
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<tbody>
<tr>
<td>0</td>
<td>Worsening or no improvement</td>
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<tr>
<td>1</td>
<td>1-25% Improvement</td>
</tr>
<tr>
<td>2</td>
<td>26-50% Improvement</td>
</tr>
<tr>
<td>3</td>
<td>51-75% Improvement</td>
</tr>
<tr>
<td>4</td>
<td>76-100% Improvement</td>
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## Investigator 1

<table>
<thead>
<tr>
<th>Patient #1</th>
<th>Atrophy</th>
<th>Texture</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td>Patient #2</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Patient #3</td>
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<td>4</td>
</tr>
<tr>
<td>Patient #4</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
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<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Patient #6</td>
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<td>3</td>
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<tr>
<td>Patient #7</td>
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</tr>
<tr>
<td>Patient #8</td>
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</tr>
<tr>
<td>Patient #9</td>
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## Investigator 2

<table>
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<th>Texture</th>
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</thead>
<tbody>
<tr>
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<td>3</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Patient #3</td>
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<td>3</td>
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</tr>
<tr>
<td>Patient #4</td>
<td>3</td>
<td>2</td>
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</tr>
<tr>
<td>Patient #5</td>
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</tr>
<tr>
<td>Patient #6</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Patient #7</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Patient #8</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Patient #9</td>
<td>3</td>
<td>4</td>
<td>4</td>
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</tbody>
</table>
Average Investigator Scores of Improvement on Quartile Scale

- **Atrophy**
  - Mean 2.67 (± 1.1)
- **Texture**
  - Mean 3 (± 1.1)
- **Overall**
  - Mean 2.72 (± 1.1)

- 2 out of 3 patients had a good or excellent response to treatment (>50% improvement)
Before and After
Adverse Events

- All patients experienced mild discomfort/burning with TCA application
- No significant complications at the treatment sites such as persistent erythema, hyper/hypopigmentation, HSV flare, scarring, or keloids
Conclusion

- CROSS technique is a safe and very effective modality for treatment of post-operative scarring with no significant complications.
Conclusion

- Inexpensive
- Simple application
- Minimal pain or discomfort
- As effective as other resurfacing methods
References

References

- Yug A, Lane JE, Howard MS, Kent DE. Histologic study of depressed acne scars treated with serial high-concentration (95%) trichloroacetic acid. Dermatol Surg 2006;32:985-90
- Nilforoushzadeh MA, Jaffary F, Ansari N, Moradi S, Siadat AH. The comparison between trichloroacetic acid 50% and CO2 laser in the treatment of cutaneous leishmaniasis scar. Indian J Dermatol Venereol Leprol 2011;77(Suppl 1):S1-S5
Thank You!