Muscle Pedicle Thyroplasty: a New Approach to Difficult or Revision Thyroplasty

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Muscle Flap Thyroplasty

Medialization Thyroplasty
- Commonly utilized procedure for patients with vocal fold paresis or paralysis
- What can go wrong?
  - Intraoperative
    - Mucosal injury
    - Fracture of cartilage struts
    - Cannot position implant for appropriate medialization

Patients

<table>
<thead>
<tr>
<th>Patient</th>
<th>Sex</th>
<th>Age</th>
<th>Previous Thyroplasty</th>
<th>Diagnosis</th>
<th>Indication for Muscle Flap Thyroplasty</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>45</td>
<td>Yes</td>
<td>Post surgical R VF paralysis</td>
<td>Mucosal extrusion</td>
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<tr>
<td>2</td>
<td>M</td>
<td>86</td>
<td>No</td>
<td>Idiopathic R VF paralysis</td>
<td>Failed primary placement</td>
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<tr>
<td>3</td>
<td>F</td>
<td>67</td>
<td>Yes</td>
<td>Idiopathic L VF paralysis</td>
<td>Displaced prosthesis</td>
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<tr>
<td>4</td>
<td>F</td>
<td>63</td>
<td>Yes</td>
<td>Post-surgical L VF paralysis</td>
<td>Poor implant fit</td>
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<tr>
<td>5</td>
<td>F</td>
<td>64</td>
<td>No</td>
<td>Idiopathic laryngeal stenosis, idiopathic R VF paralysis</td>
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<td>80</td>
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<td>Post-surgical L VF paralysis</td>
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<tr>
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<td>Post-surgical B/L VF scar</td>
<td>Poor implant fit</td>
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<tr>
<td>8</td>
<td>M</td>
<td>72</td>
<td>Yes</td>
<td>Neurologic injury, R VF paralysis</td>
<td>Displaced prosthesis</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>90</td>
<td>Yes</td>
<td>Idiopathic R VF paralysis</td>
<td>Implant extrusion</td>
</tr>
</tbody>
</table>
**Procedure**

- Medialization thyroplasty
  - 5mm x 9mm in females
  - 6mm x 11mm in males
- Any previously placed implant material was removed
- A superiorly based muscle pedicle was developed from the ipsilateral sternohyoid muscle
  - 2cm to 4cm wide pedicle
  - 2cm to 4cm length below the inferior rim of the cartilage window
- Flap is rotated through the cartilage window and is secured with sutures

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**Results**

<table>
<thead>
<tr>
<th>Patient</th>
<th>Additional procedure at time of surgery</th>
<th>Complications</th>
<th>Additional procedure after surgery</th>
<th>Follow-up duration (mos)</th>
<th>Subjective voice assessment after surgery</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Radiesse injection</td>
<td>Wound healing</td>
<td>Soreness</td>
<td>19</td>
<td>Improved</td>
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<td>Thyroplasty implant</td>
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<tr>
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<td>Radiesse injection</td>
<td>No</td>
<td>No</td>
<td>18</td>
<td>Improved</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>17</td>
<td>Improved</td>
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<tr>
<td>5</td>
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<td>No</td>
<td>Voice ger injection</td>
<td>14</td>
<td>Slightly improved</td>
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<tr>
<td>6</td>
<td>No</td>
<td>No</td>
<td>Radiesse injection</td>
<td>14</td>
<td>Slightly improved</td>
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<tr>
<td>7</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>7</td>
<td>Improved</td>
</tr>
<tr>
<td>8</td>
<td>Radiesse injection</td>
<td>No</td>
<td>No</td>
<td>6</td>
<td>Lost to follow-up</td>
</tr>
<tr>
<td>9</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>6</td>
<td>Improved</td>
</tr>
</tbody>
</table>
Results

- Patient 7

Outcomes

- Subjective voice outcomes (patient, family and surgeon)
  - 2/9 lost to follow-up
  - 2/9 slight improvement
  - 5/9 improved
- Complications
  - 1/9 required scar revision
- Additional treatment
  - 2/9 patients

Muscle flap thyroplasty

- Proposed indications
  - Alternative to provide some medialization in cases when intraoperative complications preclude placement of an implant
  - Reduce the risk of infectious complications when there has been a mucosal injury
  - Prevent loss of all medialization in cases when removal of the implant is indicated

Muscle flap thyroplasty

- Advantages
  - Local tissue (within the thyroplasty incision)
  - Vascularized tissue
  - Does not preclude or limit further procedures
  - Not technically difficult or time consuming
  - Safe
Muscle flap thyroplasty

- Disadvantages
  - Medialization is not dependable
  - Flap may not be durable
  - Tissue is compressible

Conclusions

- Local superiorly-based sternohyoid muscle flap is a safe alternative as a “rescue” procedure in selected cases
- Not intended to be used as a primary means of medialization in patients where an implant would provide adequate medialization
- Low complication rate

Thank you