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Management of the Patient with Facial Paralysis

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Day 2

FACIAL PHYSICAL THERAPY

• History: onset, recovery to date, prior intervention
• Chief Complaint:
  • Functional limitations
  • Eating
  • Drinking
  • Speaking
  • Facial expressions/Smiling
  • Vision
  • Pain/muscle tightness or tension
  • Involuntary movements (synkinesis)
• Review of Systems
• Evaluation: FACE Instrument, Facial Grading Scale, House-Brackman
### Sunnybrook Facial Grading System

#### Resting Symmetry

<table>
<thead>
<tr>
<th>Compared to normal side</th>
<th></th>
</tr>
</thead>
</table>
| Eye (choose one only)   | 0
| normal                  | 1
| narrow                  | 1
| eye ptosis              | 1
| cheek (masseter)        | 0
| normal                  | 1
| absent                  | 0
| less pronounced         | 1
| more pronounced         | 0
| Mouth                   | 0
| normal                  | 0
| corner dropped          | 1
| corner pulled upward    | 1
| Resting symmetry score  | Total X 5 | 0 |

#### Symmetry of Voluntary Movement

<table>
<thead>
<tr>
<th>Degree of muscle EXCURSION compared to normal side</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Expressions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forehead Wrinkles (FWR)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Gentle eye closure (GEC)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Upper mouth click (UMC)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Smile (GLAS/S)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Lip Filler (DIL/F)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Synkinesis

<table>
<thead>
<tr>
<th>Rate the degree of INVOLUNTARY MUSCLE CONTRACTION associated with each expression</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper eye closure s (UECS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower eye closure s (LECS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper lip Filler s (ULFS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower lip Filler s (LLFS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower lip Filler p (LLFP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper lip Filler p (ULFP)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper lip Filler d (ULFD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower lip Filler d (LLFD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Voluntary movement score = Total X 4
Synkinesis score = Total
Right sided Bell’s palsy

Resting Symmetry

Voluntary movement:
Forehead wrinkle
Right sided bell’s palsy

Voluntary movement:
Gentle eye closure

Right sided bell’s palsy

Voluntary movement:
Open mouth smile
Right sided bell’s palsy

Voluntary movement
Snarl

Lip pucker
CLASSIFICATION OF TREATMENT


- Initiation
- Facilitation
- Movement control
- Relaxation
CLASSIFICATION OF TREATMENT

Initiation Category

- Impairments
  - moderate to severe facial asymmetry at rest due to flaccid facial regions
  - unable to initiate movement on the affected side
  - (-) synkinesis

- Interventions
  - gentle superficial massage
  - active assistive movement exercises
  - avoid mass movement patterns
    - avoid overuse of the uninvolved side, such as forming a wide smile

Facilitation Category

- Impairments
  - mild to moderate facial asymmetry at rest
  - able to initiate slight movement (scores of 2 on the voluntary movement section of the FGS) in any or all regions of the face
  - (-) synkinesis

- Interventions
  - more aggressive soft tissue mobilization of the facial muscles
  - neuromuscular reeducation in front of a mirror - slow, controlled, graded facial expressions to generate symmetry between the sides of the face
  - EMG
  - Educate about synkinesis
Movement Control Category

- **Impairments**
  - mild to moderate facial asymmetry at rest
  - able to initiate at least slight movement (scores of 2 on the voluntary movement section of the FGS) in any or all regions of the face
  - (+) synkinesis

- **Interventions**
  - aggressive deep soft tissue mobilization of the facial muscles and neck,
  - neuromuscular re-education in front of a mirror, perform slow, controlled, graded facial expressions to generate symmetry between the sides of the face while simultaneously controlling synkinetic movements in other regions of their face
  - initiation of relaxation/meditation strategies

Relaxation category

- **Impairments**
  - Mild to moderate facial asymmetry at rest
  - able to initiate at least slight movement in any or all regions of the face
  - (+) synkinesis, severe
  - limited movement because of tightness rather than weakness

- **Interventions**
  - aggressive deep soft tissue mobilization of the facial muscles
  - meditation-relaxation strategies
  - neuromuscular re-education in front of a mirror
FACIAL REHABILITATION

Patient’s Goals

- Soft tissue
- Neuromuscular
- Functional Retraining
- Relaxation
- Psycho-social Support

PATIENT EDUCATION
EYE / CORNEAL PROTECTION

- Tape the eye closed, use of an eye patch
- Eye drops
- Manual eye lid stretch
- Surgical implantation of a thin profile gold or platinum weight

EYELID STRETCH
LEVATOR PALPEBRAE SUPERIOR
SOFT TISSUE MOBILIZATION

- Palpation of the flaccid muscles will feel loose in the patients in the initiation and facilitation category.
  - Soft tissue massage is more superficial; effleurage
- Palpation of the synkinetic muscles will feel tight, restricted in the movement control and relaxation category. Patients will respond immediately to your touch.
  - Soft tissue massage is more aggressive in the opposite direction of the pull of the muscle; pettrissage
- Target muscle groups are the zygomaticus and platysma muscles, however all muscles are typically massaged independently
  - Recommend 2-4x/day, 10x each muscle
  - Moist heat prior to the massage is helpful
    - shower

ZYGOMATICUS MASSAGE

Example of self massage for the cheek muscles

[Images of self massage]
NEUROMUSCULAR RE-EDUCATION

- Small movements of symmetrical facial expression (initiation and facilitation)
- Decrease synkinetic movements on affected side and decrease overactive compensatory movements on the unaffected side; balance (movement control and relaxation group)
- Mirror feedback initially for visual cues, then decrease to proprioceptive cues
- EMG Biofeedback can be used
- Electrical Stimulation is not indicated.

ACTIVE ASSISTIVE
NEUROMUSCULAR RE-EDUCATION
PATIENT VIDEO

BALANCE

Tug of war example
Mona Lisa example
FUNCTIONAL RETRAINING WITH MIDLINE CONTROL

Oral Motor Exercises
- Bubbles, straw, lollipops, tongue twisters, musical recorder, pinwheel.
- iPad

FUNCTIONAL RETRAINING
MULTIMODALITY MANAGEMENT

- Physical Therapy
- Medical Therapy
- Surgical Therapy
BOTULINUM TOXIN (BOTOX) FOR THE PARALYZED FACE

- Botulinum Toxin (Botox) partially paralyzes the muscle and is typically aimed at weakening the synkinetic muscles; typically the obicularis oculi, platysma and mentalis
- Weakening the contralateral side of the face can also be used to achieve facial symmetry: frontalis and depressor labii
- Rarely to never do we botox the affected zygomaticus, or contralateral zygomaticus
- Effects last an average of 3-6 months

BOTOX TO THE OCULI

Initial

Post PT and botox

Oculi

Mentalis

Platysma
IMPROVEMENT WITH PT AND BOTOX

SURGICAL MANAGEMENT
STATIC SURGICAL INTERVENTION

- Upper lid: tarsorrhaphy or platinum weight
- Lower lid: tarsal strip
- Unilateral brow lift
- Nasal Valve/Nasolabial Folds: Fascia Lata Sling

TREATMENT FOR INCOMPLETE EYE CLOSURE: PLATINUM WEIGHT
DYNAMIC SURGICAL INTERVENTION
FREE MUSCLE MICROVASCULAR TRANSFER TECHNIQUES

Nerve transfer to native musculature
• Hypoglossal Nerve to Affected Facial Nerve (XII to VII)
• Trigeminal Nerve (masseteric nerve) to the Facial Nerve (V to VII)
• Contralateral Facial Nerve to Affected Facial Nerve (Cross Face)
Average activation 4-8 months

Free Muscle with Nerve Transfer
• Gracilis Free Flap Muscle Transfer
  • driven by the contralateral facial nerve average activation 8-10 months
  • driven by the ipsilateral masseteric branch of the trigeminal nerve average activation 3-6 months

Regional Muscle Transfer
• Temporalis Tendon Transfer
Average activation 2-4 months

1ST STAGE CROSS FACE NERVE GRAFT

• Smile Reanimation

[Diagram of facial nerve and graft]
Free Muscle Transfer: gracilis

This surgery takes place 7-9 months after the cross-face nerve grafting.

Free gracilis transfer driven by the masseter nerve
Free gracilis transfer driven by the masseter nerve

Before

After