Facial palsy

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## Upper Motor Neuron v Lower Motor Neuron Lesions

<table>
<thead>
<tr>
<th>UMN Lesion</th>
<th>LMN Lesion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forehead usually unaffected (bilateral innervation)</td>
<td>Forehead affected</td>
</tr>
<tr>
<td>Contralateral side</td>
<td>Ipsilateral side</td>
</tr>
<tr>
<td>Often relative preservation of spontaneous ‘emotional’ movement</td>
<td>No preservation of spontaneous emotional movement</td>
</tr>
</tbody>
</table>
Figure 12.13  Upper Neuron Facial Weakness

Lesion (Lesion A), the upper motor neuron pathways contribute to weakness in the affected hemisphere, while unaffected hemisphere neurons contribute to the unaffected hemisphere. Lesion (Lesion B) affects the lower motor neurons, leading to weakness in the facial muscles.
UMN Problems

- CVA
- Tumour- primary brain or metastases
- Multiple Sclerosis

This leads to upper motor neuron facial weakness and hemiparesis.
Affects seen on contralateral side
## Cranial nerves

<table>
<thead>
<tr>
<th>Cranial nerves</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Olfactory</td>
<td>Smell</td>
</tr>
<tr>
<td>2. Optic</td>
<td>Sight</td>
</tr>
<tr>
<td>3. Oculomotor</td>
<td></td>
</tr>
<tr>
<td>4. Trochlear</td>
<td>Movement of eye ball</td>
</tr>
<tr>
<td>5. Trigeminal</td>
<td>Sensation to face &amp; head. Motor to jaw</td>
</tr>
<tr>
<td>6. Abducent</td>
<td>Motor to eye</td>
</tr>
<tr>
<td>7. Facial</td>
<td>Facial expression</td>
</tr>
<tr>
<td>8. Auditory</td>
<td>Hearing</td>
</tr>
<tr>
<td>9. Glossopharyngeal</td>
<td>Tongue- throat</td>
</tr>
<tr>
<td>10. Vagus</td>
<td>Voice and respiration</td>
</tr>
<tr>
<td>11. Spinal Accessory</td>
<td>Muscles of the neck &amp; shoulder</td>
</tr>
<tr>
<td>12. Hypoglossal</td>
<td>Motor to tongue</td>
</tr>
</tbody>
</table>
Lower Motor Neuron problems

At cerebellopontine angle (structure at the margin of the cerebellum and pons)

- Vth, VIth, VIIth & VIIIth nerves can all be affected - ipsilateral side
- Causes include acoustic neuroma, meningioma and secondary neoplasm
- Sensory loss in face and cornea, lateral gaze affected, hearing and balance problems plus facial palsy
Lower Motor Neuron problems

At Pons

- VI & VII CN affected
- Conjugate gaze palsy = inability of both eyes to move in same direction at same time
- May also get accompanying damage to the cortospinal tract which may lead to UMN signs
Lower Motor Neuron problems

Within the petrous temporal bone
Lower Motor Neuron problems

Lesions of the facial nerve within the petrous temporal bone cause:

- Loss of taste on anterior two thirds of the tongue
- Hyperacusis (Due to stapedius muscle paralysis)
- Causes include-
  - Bell’s palsy
  - Trauma
  - Infection of middle ear
  - Herpes Zoster
  - Tumours (glomus)
Lower Motor Neuron problems

Within the face

- Parotid tumours
- Trauma
- Polyneuritis (e.g. G.B. Syndrome) often bilateral
Anatomy
Damage to a peripheral nerve

1\textsuperscript{st} degree - Neuropraxia

- Concussion of nerve. Nerve undamaged but not conducting due to pressure on it.
- Myelin sheath unaffected
- Recovery 6-8 weeks
Damage to a peripheral nerve

2\textsuperscript{nd} Degree - Axonotnemesis

- Nerve or part of nerve damaged
- Nerve sheath continuous
- Inside nerve the fibrils are breaking down
- Needs nerve to regenerate for recovery
- Causes changes in muscle fibres

TES effective
Damage to a peripheral nerve

3rd Degree - Neurotнемesis
- Nerve cut
- End of sheath separated
- Requires surgery

TES pre-surgery and post-surgery
Bells palsy

- Lifetime prevalence: 6.4 to 20 per 1000
- Increases with age
- Male = Female or slight female predominance
- Recurrence 7%
- Right side in 63%
- Increased incidence
  - Diabetes
  - Pregnancy
Bells Palsy

- Usually happens suddenly
- Progresses to maximum deficit over 3 – 72 hrs
- May start with pain behind the ear
- ?virus- may be shingles/ may be herpes simplex
- lacrimation
- Taste
- Sensory loss- mild or none, may be present in face or tongue

Initial treatment- steroids for 1-2 weeks
Prognosis

Usually better if:-

- Incomplete paralysis
- Early improvement
- Slow progression
- Normal
  - Taste
  - Hearing
  - Salivary flow
- Younger patients
- No previous history
- 80% better at 6-8 weeks.
Ramsay Hunt Syndrome

Name given to a set of 6 symptoms which occur in patients suffering from herpes zoster oticus

- Severe pain (may get post hepatic neuralgia)
- Rash-outer ear & sometimes extends further
- Vertigo
- Deafness
- Dense facial paralysis
- Tinnitus

Treat with steroids and antivirals & ? Diazepam for vertigo
Acoustic Neuroma

- Usually only seen in Physiotherapy following surgery
- Rarely present with a facial palsy pre-operatively
Assessment

- Subjective and objective assessment
- Photography
- Facial grading scale
- EMG
Assessment

- **HPC**
  - Sudden/gradual onset of facial palsy
  - Feeling generally well/unwell/recently unwell
  - Recent activities – Lyme disease
- **Pain**
- **Other symptoms** – headaches, dizziness, altered balance, altered sensation, hearing loss, etc
- **PMH**
- **Medication**
Specific questions

- Eyes - dry/ watery
- Drinking
- Taste
- Eating
- Speech - telephone
- Balance
- Hearing
Objective Assessment

Resting position of face
- Contours/ creases
- Eye
- Mouth

Active movements

?Synkinesis

Mouth opening

Myofascial length if synkinesis
Eye Lid Ectropion
### Sunnybrook Facial Grading System

#### Resting Symmetry

<table>
<thead>
<tr>
<th>Eye (choose one only)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>0</td>
</tr>
<tr>
<td>narrow</td>
<td>1</td>
</tr>
<tr>
<td>wide</td>
<td>1</td>
</tr>
<tr>
<td>eyelid surgery</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cheek (nasolabial fold)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>0</td>
</tr>
<tr>
<td>absent</td>
<td>2</td>
</tr>
<tr>
<td>less pronounced</td>
<td>1</td>
</tr>
<tr>
<td>more pronounced</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mouth</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>normal</td>
<td>0</td>
</tr>
<tr>
<td>corner dropped</td>
<td>1</td>
</tr>
<tr>
<td>corner pulled up/out</td>
<td>1</td>
</tr>
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</table>

**Total Resting Symmetry Score**

#### Symmetry of Voluntary Movement

<table>
<thead>
<tr>
<th>Standard Expressions</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forehead Wrinkle (FRO)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Gentle eye closure (OCS)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Open mouth smile (ZYG/RIS)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Snarl (LLA/LLS)</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Lip Pucker (DOS/DOO)</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

**Voluntary movement score: Total x 4**

#### Synkinesis

<table>
<thead>
<tr>
<th>Rate the degree of INVOLUNTARY MUSCLE CONTRACTION associated with each expression</th>
</tr>
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<tbody>
<tr>
<td>NONE: No synkinesis or movement</td>
</tr>
<tr>
<td>MILD: slight synkinesis, no movement</td>
</tr>
<tr>
<td>MODERATE: significant synkinesis, may affect control of expression</td>
</tr>
<tr>
<td>SEVERE: Synkinesis and movement interferes with expression</td>
</tr>
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**Synkinesis score: Total**

**Composite score**
Treatment in first 6 weeks

- Massage
- Support cheek
- Keep affected side of mouth clean
- Don’t emphasise movement of good side
- Use straw
- Rest
- Eye care
- Mix with people early
- Exercises if appropriate
- Taping
Eye care

- Get someone else to check eye closing - Bells Phenomena
- Never screw face up tight
- Passive close
- Eye drops - hourly or more frequently
- Eye baths
- Protection
- Avoid smoke / air conditioning

Tarsorr naphy, gold weight, botox, taping
Exercises

Evaluate for when to introduce exercises- ideal if access to EMG

Exercises to be done in front of a mirror

1) Eye brow lift
2) Eye close & correct Bell’s Phenomena as appropriate
3) Flexible cheeks (also hold water in mouth and try to force from one side to the other)
4) Passive, active-assisted movements
Trophic Electrical Stimulation

Treatment aim:-

- To promote nutrition and blood supply
- To enhance specific metabolic pathways (oxygen, glycogen or both)
- To prevent or reverse the changes of atrophy

i.e. Artificially doing the nerve’s normal job

With trophic stimulation you are not aiming to see or feel movement
Recovery

- Branches to forehead and chin longer – slower recovery
Synkineses

Speculation as to cause

- Stage of partial recovery
- Different areas of the face move together
- Nerve with little insulation
- At the nerve / muscle junction the nerve isn’t capable of producing switch off chemicals – all systems go
- Improves with maturity
- Avoid bad habits
Synkinesis

Management

• TES- Reduce resting tone, strengthen long branches, promote selective movement
• Myofascial Release Techniques
• Stretches
• Relaxation
• Dissociation exercises
Synkinesis

Relaxation exercise

- Let your eyes rest on object approx 1 ½ metre away
- Feel what your face feels like
- Keep gaze and consciously let affected side of face go - teeth slightly apart
- Maintain for approx 1 minute
- Practice several times a day
- Progress