Applied Anatomy of the Marginal Mandibular Branch

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The study was undertaken following approval from the ethical committee (Semmelweis University, Regional and Institutional Committee of Science and Research Ethics; TUKEB No. 127/2014) and in accordance with the declaration of Helsinki, using the National Research, Development and Innovation Office – NKFIH, OTKA K-116189 grant.
The aim of the presentation:

I. To clinically and culturally illustrate the importance of the mandibular branch of the facial nerve

II. To present the usual anatomy

III. To demonstrate our anatomical findings in a Hungarian population related to biomechanical forces
Faces of the world
Basilary artery

Pons

Intracranial 23-24 mm

Sigmoid sinus

Intratemporal 29-40 mm

Stapes

VII.

LSC

SMAS

Masseter muscle

MMB

Extratemporal

Temporo-facial

Cervico-facial

Stenon

Cervico-facial

Masseter muscle
Surgical specimen:

Pleomorph adenoma

Conley

MMB
Neighbouring structures

- Facial artery
- MMB
- Collateral from the buccal branch
- Submandibular gland
- Lingual artery
- Carotids
- XII.
Innervated main muscles:

m. depressor labii inferioris
m. depressor anguli oris
m. mentalis
Main types in our study I.: 1 branch
Main types in our study III.: 2 branches
Main types in our study II.: Collateral
Main types in our study IV.

Loop
Main types in our study V.: Arcades

MMB

Arcades
Complexity with other structures:

- Buccal branch
- Anastomosis
- Retromandibular vein
- MMB
Mechanical lesions

**The House-Brackmann grading system**

**MICROTURMA, ISCHAEMIA**

I. Normal facial function in all areas
II. Slight weakness on close inspection
III. Obvious, not disfiguring difference, no functional deficit
IV. Obvious weakness +/- disfiguring asymmetry
V. Only barely perceptible motion
VI. No motion

**THERMAL, ELECTRICAL**

**EDEMA, CICATRISATION**

IATROGENY 5,6-7%

- Oral & maxillofacial surgery 40%
- Parotidectomy 25%
- Otosurgery 17%
- Cosmetic surgery 11%
- Other 7%


RESULTS

• 31 corpses, 55 hemifaces

• 13 Male (11 included) 18 Female (all included)

• L:9 R:10 (altogether 19HF) L:18 R:18 (altogether 36HF)

• 58-94y, m: 76,69y 60-90y, m: 73,73y

• Non dissected: haemorrhage, autolysis, time not allowed
<table>
<thead>
<tr>
<th>No.</th>
<th>% all hemifaces</th>
<th>% all MMB branches</th>
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<tbody>
<tr>
<td>1</td>
<td>74.54</td>
<td>58.57</td>
</tr>
<tr>
<td>2</td>
<td>23.63</td>
<td>37.14</td>
</tr>
<tr>
<td>3</td>
<td>1.81</td>
<td>4.28</td>
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<tr>
<td>No.</td>
<td>%</td>
<td>M/F (19/36) (of included hemifaces)</td>
</tr>
<tr>
<td>-----</td>
<td>---</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>41</td>
<td>73.68/75</td>
</tr>
<tr>
<td>2</td>
<td>13</td>
<td>26.31/22.22</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>0/2.77</td>
</tr>
</tbody>
</table>
Course

μ ↑ in males

65.71%

Vertical origin

V o E r

R i T g 78.57%

I i C n

A

Horizontal origin

64.28%
6 COLLATERALS

8,57% of all specimens

83,33% : 16,66% = female : male

66,66% to buccal area

16,66% to cervical area

16,66% from buccal branch
ANASTOMOSIS

14.28% of all MMB (loop included)
8.57% of all MMB (without loop)
60% female
80% left

<table>
<thead>
<tr>
<th>No.</th>
<th>%/70</th>
<th>M/F</th>
<th>L/R</th>
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</thead>
<tbody>
<tr>
<td>M-M</td>
<td>2</td>
<td>2.85</td>
<td>female</td>
</tr>
<tr>
<td>M-C</td>
<td>1</td>
<td>1.42</td>
<td>male</td>
</tr>
<tr>
<td>M-B</td>
<td>4</td>
<td>5.71</td>
<td>50-50%</td>
</tr>
<tr>
<td>2x M-B</td>
<td>1</td>
<td>1.42</td>
<td>female</td>
</tr>
<tr>
<td>M loop</td>
<td>4</td>
<td>5.71</td>
<td>1/3</td>
</tr>
</tbody>
</table>
CONCLUSIONS

• 1 branch is present in the majority of cases, /1,27 MMB/hemiface in this study/

• Double or triple branching is more frequent on the left

• Usually originates behind the mandibula, over the level of the rim

• Inframandibular origin is more frequent in males

• Submandibular course in about 2/3 of the cases

• Collaterals & anastomosis may occur, especially in females

• The anatomy of the MMB & neighbouring structures is unstable

• Other pathologies may be associated