A Proposal to Organize Nomenclature of Far and Extreme Lateral Approaches to the Craniocervical Junction

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DISCLOSURE

• No Disclosure

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INTRODUCTION

Far and extreme lateral approaches have become a mainstay treatment for lesions located at the anterolateral aspect of foramen magnum and its vicinity. However, there is a significant discrepancy between authors on what these approaches truly are, which leads to producing papers naming different techniques the same and same techniques differently.
METHODS

Two independent researchers performed literature search employing PubMed-MEDLINE and Scopus databases. The search terms referred to the nomenclature of far lateral approach, extreme lateral approach, and their variants. Finally, important papers on the topic from article references were also included, if deemed contributory.
37 articles were collected. Surprisingly, we found that not a single paper has addressed the confusing nomenclature directly yet. Nine truly separate variants of FL and EL were found that can be implemented intraoperatively depending on both patient and lesion characteristics.
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<tr>
<th>Approach name</th>
<th>Synonyms</th>
<th>Approach description</th>
<th>Indication</th>
<th>Advantages</th>
<th>Drawbacks</th>
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<tbody>
<tr>
<td>Retrocondylar</td>
<td>Paracondylar</td>
<td>Standard far-lateral approach</td>
<td>Lateral/anterolateral lesions</td>
<td>No OC drilling</td>
<td>Limited access</td>
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<tr>
<td>Partial transcondylar</td>
<td>&lt;75% OC resection</td>
<td>VA medial transposition, OC drilling (until HC), C1 sup facet removal</td>
<td>Anterior clival-medullary area lesions</td>
<td>More working space, VA control</td>
<td>VA and CN manipulation</td>
</tr>
<tr>
<td>Complete transcondylar</td>
<td>&gt;75% OC resection</td>
<td>VA medial transposition, complete OC, anterior arch and lateral mass removal</td>
<td>Anterior clival-medullary area lesions</td>
<td>Mid and lower clival exposure</td>
<td>Fusion needed</td>
</tr>
<tr>
<td>Transtubercular</td>
<td></td>
<td>VA control, post-medial OC and C1 lateral mass removal, JT drilling above HC</td>
<td>Vertebro-basilar aneurysms</td>
<td>PICA and CN exposure</td>
<td>Vascular and CN manipulation</td>
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<tr>
<td>Extreme lateral</td>
<td>Transjugular; juxtacondylar</td>
<td>With/without mastoidectomy, VA medial transposition, post-medial third OC drilling</td>
<td>JF lesions</td>
<td>JF exposure</td>
<td>Arterial and CN manipulation, SS ligation</td>
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</table>

- OC: Occipito-Cervical
- HC: Hyoid chain
- VA: Vertebral Artery
- JF: Jugular Foramen
- PICA: Posterior Inferior Cerebellar Artery
- CN: Cranial Nerve
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<tr>
<td>ELITE</td>
<td>Extreme lateral inferior (infrajugular) transcondylar-transstubercular exposure</td>
<td>OC removal parallel to its inferior surface to expose HC, drilling of the JT</td>
<td>JF lesions</td>
<td>JF exposure without mastoidectomy, minimal OC removal</td>
<td>Arterial and CN manipulation, SS ligation</td>
</tr>
<tr>
<td>TCFA</td>
<td>Transcondylar fossa; supracondylar</td>
<td>CF drilling (removal of the JT post part, intact OC and atlanto-occipital joint)</td>
<td>JF lesions</td>
<td>JF exposure</td>
<td>Arterial and CN manipulation, SS ligation</td>
</tr>
<tr>
<td>MIST</td>
<td>Minimal invasive supracondylar transtubercular</td>
<td>Post JT removal (minimal OC drilling through CC; intact atlanto-occipital joint)</td>
<td>JF lesions</td>
<td>Endoscope assisted smaller JF exposure</td>
<td>Arterial and CN manipulation, SS ligation</td>
</tr>
<tr>
<td>Transfacetal</td>
<td>Trancervical</td>
<td>Medial VA transposition; C1-C2 hemilaminectomy, lateral mass removal</td>
<td>Upper cervical lesions</td>
<td>Upper cervical exposure, no craniectomy</td>
<td>Limited cranial exposure</td>
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CONCLUSIONS

Over the years far and extreme lateral approaches to the anterior and anterolateral CCJ region have been modified multiple times. The ultimate goal of all these changes is to maximize their safety and efficiency.

We believe that this organized classification with clear synonyms will help authors to define at what point one approach stops being FLA and becomes EL, or a variant thereof. Thus, it will serve better communication between researchers enabling safe and easy extrapolation of their results.
REFERENCES


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