PREDICTIVE ACCURACY OF CLINICAL, RADIOLOGICAL AND NEUROPHYSIOLOGICAL PRE-OPERATIVE TESTS IN THE DIAGNOSIS OF THORACIC OUTLET SYNDROME

Mark Mikhail1, Roisin T Dolan1, Michelle Baker1, Ciara Deall1, Ravi Knight2, David Wilson3, Henk P Giele1

1Department of Plastic and Reconstructive surgery; 2Department of Neurophysiology; 3Department of Radiology
Oxford University Hospitals NHS Trust, Oxford UK

Introduction and Objectives
Thoracic outlet syndrome is a symptom complex caused by compression of one or more of three neurovascular structures: The Brachial plexus, Subclavian artery and Subclavian vein between the clavicle and the first rib. There is a paucity of standardised reliable diagnostic criteria rendering Thoracic Outlet Syndrome (TOS) diagnosis and decisions regarding surgical intervention challenging.

The aim of this study is to correlate symptoms, pre-operative clinical provocative tests, radiological and neurophysiological studies with findings at surgical exploration and outcomes.

Patients and Methods
We performed a retrospective review of consecutive patients at Oxford University Hospitals who had undergone assessment and thoracic outlet exploration by a single surgeon (senior author) between 1997-2017.

Each patient was assessed as follows:
1. Clinical history
2. Clinical tests for vascular compression (Adson’s manoeuvre, Reverse Adson’s test, Wright’s hyperabduction test, Military brace test) and for neural compression (Roos’s test, Spurling’s test, Morley’s compression test and Tinel’s sign over the supraclavicular area).
3. Radiological investigations (MRI of cervical spine and brachial plexus, plain film x-ray of the c-spine) and

Surgical outcomes (resolution of symptoms, recurrence rate) were assessed at latest follow-up using Derkash’s classification category. Outcomes were then correlated with pre-operative clinical examination/investigations to identify predictive accuracy of these screening modalities - ROC/AUC analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>AUC</th>
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<tbody>
<tr>
<td>Arteriogram</td>
<td>0.9</td>
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<tr>
<td>MR Imaging</td>
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<tr>
<td>Nerve Conduction Studies</td>
<td>0.55</td>
</tr>
<tr>
<td>C-rib on X-ray</td>
<td>0.63</td>
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<tr>
<td>Plexural Symptomatology</td>
<td>0.53</td>
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Conclusion and Discussion
Thoracic outlet syndrome is often a diagnostic conundrum and one of exclusion. Standardised clinical diagnostic criteria are less useful in this setting.

We have demonstrated the validated criterion with highest diagnostic accuracy and correlation with resolution of symptoms which can be applied alongside a structured assessment approach to allow more informed patient counsel and management decision making. Future studies should focus on the diagnostic work-up of TOS.