

Neurogenic thoracic outlet syndrome in an adolescent presenting with intrinsic hand muscle atrophy: Clinical case

Ana Isabel Moreira Ribeiro*; Mário Ribeiro; Angela Pereira; Alexandra Dos Santos; César Silva

***Corresponding Author: Ana Isabel Moreira Ribeiro**

Pediatric Service, Braga Hospital, Portugal.

Email: anabarrostribeiro@gmail.com

Keywords: Neurogenic thoracic outlet syndrome; First rib anomaly.

Description

We report the case of a 15-year-old caucasian male, with no relevant past medical history, who presented to a pediatric neurology consultation with a 10-month history of paresthesias in the lateral side of the right hand. This was accompanied by progressive motor deficit and increasing difficulty in performing Activities of Daily Living (ADLs), particularly writing and playing the drums.

Neurological examination revealed marked atrophy of the thenar eminence and interosseous muscles of the right hand, as well as mild atrophy of the muscles of the right forearm (Figure 1). Electromyography demonstrated signs of injury to the lower trunk of the right brachial plexus and hypoesthesia in the territory of the ulnar nerve. Ultrasound showed diffuse atrophy of the ventral muscles of the right hand, most prominent in the thenar region. A chest X-ray revealed a complete supernumerary cervical rib on the right side.

The patient underwent surgical resection of the anomalous rib via a supraclavicular approach with clavicular osteotomy. He has since been undergoing thrice-weekly physical therapy, which he continues to date, with gradual recovery of right hand strength, progressive reversal of muscle atrophy, and functional improvement in ADLs.

Neurogenic Thoracic Outlet Syndrome (TOS) is a rare but important pediatric condition, often caused by brachial plexus compression due to congenital bony anomalies like cervical ribs. Diagnosis is mainly clinical, supported by electromyography and imaging to confirm nerve involvement and structural defects, but clinical assessment remains key. Early diagnosis is vital to prevent irreversible nerve damage, muscle atrophy, and vascular complications. Treatment usually involves surgical decompression and physical therapy, with multidisciplinary care essential for optimal recovery [1-3].

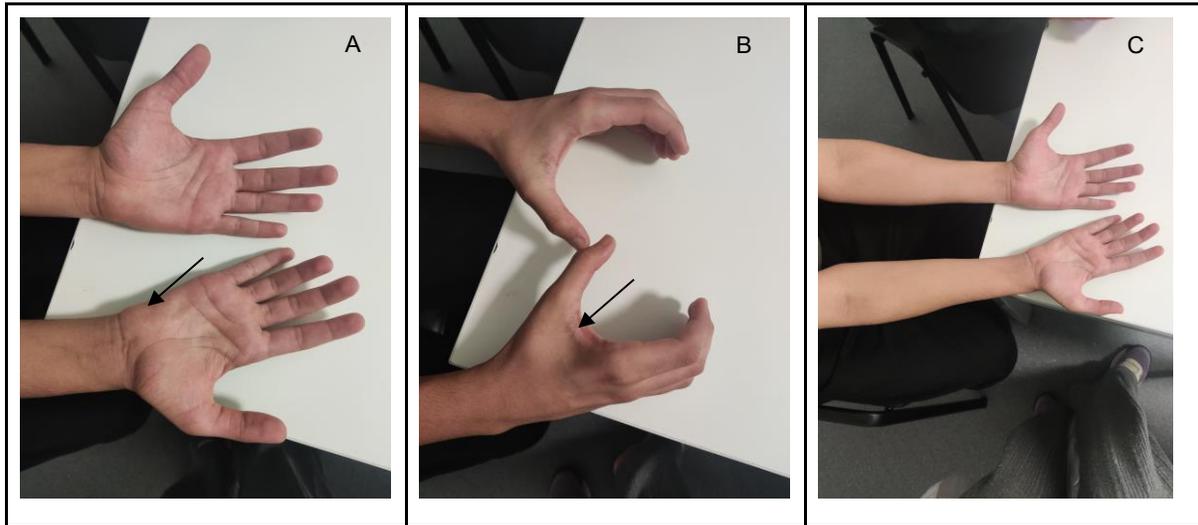


Figure 1: Atrophy of the thenar eminence **(A)** and interosseous muscles of the right hand **(B)**, along with mild atrophy of the muscles of the right forearm **(C)**.

References

1. Rehemutula A, Zhang L, Chen L, Chen D, Gu Y. Managing pediatric thoracic outlet syndrome. *Ital J Pediatr.* 2015; 41: 22.
2. Price A, Fredricks N, Truong N, North RY. Pediatric thoracic outlet syndrome: a systematic review and meta-analysis. *J Neurosurg Pediatr.* 2024; 33: 484-495.
3. Abdalla BA, Kakamad FH, Namiq HS, et al. Pediatric thoracic outlet syndrome: a systematic review with metadata. *Pediatr Surg Int.* 2024; 40: 186.

Manuscript Information: Received: August 01, 2025; Accepted: September 24, 2025; Published: September 30, 2025

Authors Information: Ana Isabel Moreira Ribeiro^{1*}; Mário Ribeiro¹; Angela Pereira¹; Alexandra dos Santos²; César Silva²

¹Pediatric Service, Braga Hospital, Portugal.

²Trofa Hospital, Gaia, Portugal.

Citation: Ribeiro AIM, Ribeiro M, Pereira A, Santos AD, Silva C. Neurogenic thoracic outlet syndrome in an adolescent presenting with intrinsic hand muscle atrophy: Clinical case. *Open J Clin Med Case Rep.* 2025; 2383.

Copy right statement: Content published in the journal follows Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>). © Ribeiro AIM (2025)

About the Journal: Open Journal of Clinical and Medical Case Reports is an international, open access, peer reviewed Journal focusing exclusively on case reports covering all areas of clinical & medical sciences.

Visit the journal website at www.jclinmedcasereports.com

For reprints and other information, contact info@jclinmedcasereports.com