



**MINISTÈRE
DES ARMÉES**

*Liberté
Égalité
Fraternité*



HAVERSACK SYNDROME

October 21st 2022 – Paris SOF CMC





Haversack ?



Somme, 1916. Infantrymen

2022. 13^{ème} RDP

● Haversack Syndrome ?

= **Thoracic outlet syndrome** defined by its cause :
carrying a bag

● Thoracic Outlet Syndrome (TOS) or ...

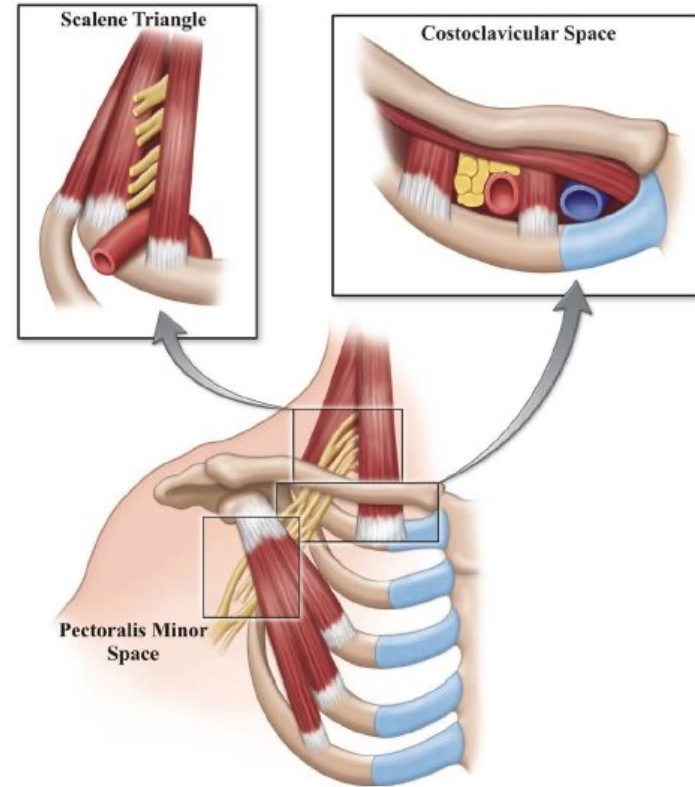
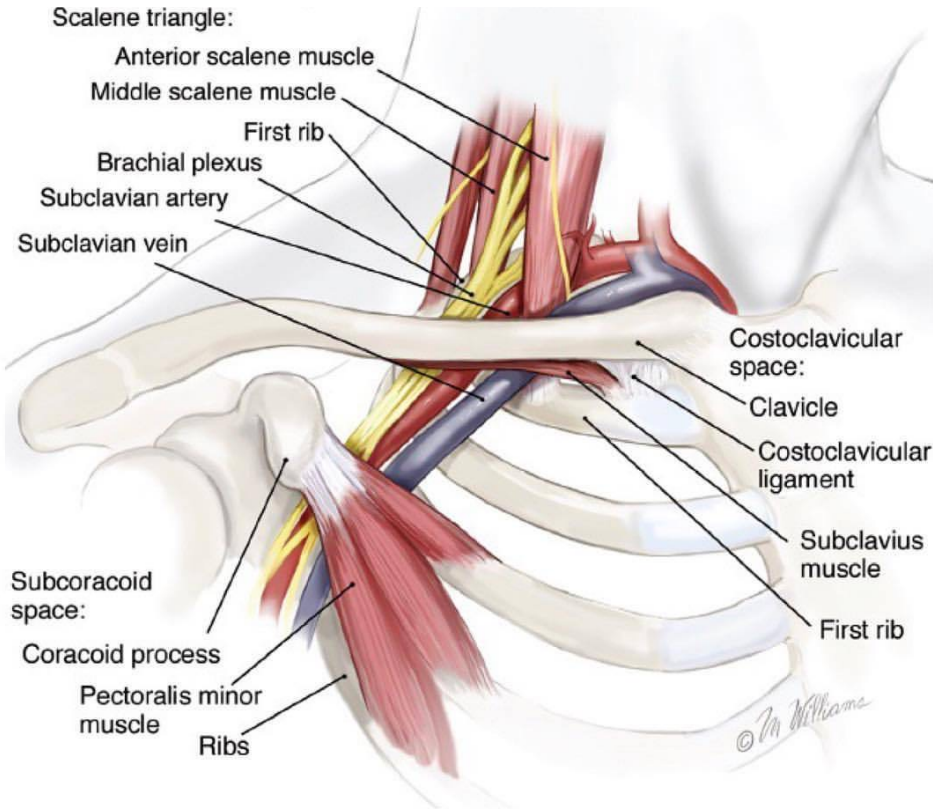
- First rib syndrome
- Syndrome of cervico-axillary defile
- Interscalen defile syndrome
- Scalenus outlet syndrome
- Thoracobrachial syndrome
- ...

➔ More than 18 names since 1821...





Thoracic Outlet Syndrome - TOS



Klassen et al. 2013

Consequence of the compression of upper limbs vascular or nervous elements



Thoracic Outlet Syndrome - TOS

- Neurogenic form (>95%)
- Vascular form
 - Arterial (1%)
 - Venous (3%)

Sanders RJ, Hammond SL, Rao NM. Diagnosis of thoracic outlet syndrome. *J Vasc Surg.* 2007

- **Aethiological forms :**
 - Congenitals abnormalities
 - Post-traumatic – isolated or repeted trauma
 - Functional acquired causes : overhead workers
 - Other acquired forms : tumors, hyperostosis, osteomyelitis

Haversack syndrome

Haversack syndrome : a challenging diagnosis

● Symptoms :

● **Neurogenic** : systematized symptoms rarely present.

✓ Upper limb paresthesia (98%)

✓ Pain at rest (87%)

✓ Feeling of numbness (66%)

✓ Decreased strength – weakness (55%)

✓ Raynaud phenomenon

Sanders RJ, Hammond SL, Rao NM. Diagnosis of thoracic outlet syndrome. *J Vasc Surg.* 2007

● **Vascular** :

● **Venous** : Oedema, cyanosis, phlebitis form, thoracic venous collateral circulation

● **Arterial** : ischemia on effort, claudication, pallor, cold intolerance

Haversack syndrome : a challenging diagnosis

Differential diagnosis

- Cervical pathology
 - Cervico brachial neuralgia

- Rotator cuff syndrome

- Medullar pathology : Syringomyelia, Amyotrophic lateral sclerosis. Cervical spondylotic myelopathy degenerative disease of the upper limb and certain peripheral neuropathies

- tunnel syndromes
- Pancoast Tobias syndrome
- Parsonage-Turner syndrome

Paraclinical explorations

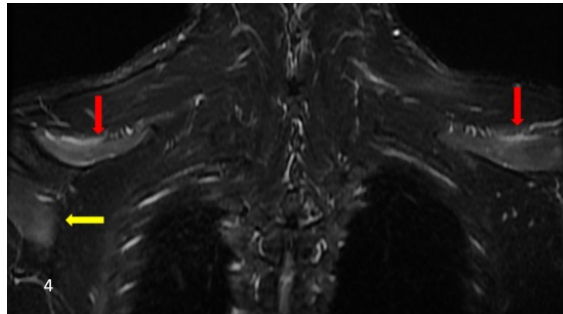
Li, N. Thoracic Outlet Syndrome: A Narrative Review. J. Clin. Med. 2021

● Chest X-Rays

● ENMG :

- ✓ Conduction velocities are decreased
- ✓ Territory of cutaneous nerve seems to be an earlier sign
- ✓ Detect an associated upper limb distal tunnel syndrome

● MRI



● Ultrasound studies : venous and arterial. (+/- angiography)

Therapy management

- Rest

- Physiotherapy

Aligne C, Barral X. La rééducation des syndromes de la traversée thoraco-brachiale. (2011)

- Rehabilitation & Multidisciplinary management

Collins E, Orpin M. Physical therapy management of neurogenic thoracic outlet syndrome (2021)

- Surgery remains controversial

- Preventive measures



Feedbacks

12 cases in the last 7 years at the 5th AMS – All Neurogenic TOS

● Patient 1, 2016

- 31 yo
- Unilateral upper limb dysesthesia
- Omitting to specify it occurs after a military march with 50kg backpack
- Cervical MRI : normal
- ENMG : velocities of the long thoracic nerve
- 3 months to confirm the Haversack Sd
- 1 year to resorb symptoms
- Recurrence when he carries a bag again
- Retire from the army



● Patient 2, 2022

- 26 yo
- Right upper limb paresis (abduction)
- Medial antebrachial numbness and paresthesia
- No pain
- STRATEVAC to France
- ENMG and MRI within 4 days
- Physio & rehab begin within 7 days
- Total relief of symptoms in 3 months
- New deployment abroad in the 6th month

Early diagnosis & rehab decrease risks of sequela ??



Upcoming thesis

Management of Haversack syndrome in the French Military Health Service

B. Lampe, A. Becheau

- Evaluate knowledges and medical practices in french Health Service
- Write medical recommendations with neurologists, thoracic and vascular surgeons, rehab physicians and general practitioners
- Standardize explorations and therapies practices



Take home messages

- Haversack syndrome can be considered as a particular form of post-traumatic TOS
- Easy diagnosis after patient interview
- Rigorous clinical exam – Eliminate differential diagnosis
- X-Rays - ENMG – MRI
- Early rehabilitation

Thanks for your attention !!

