Congresul Național de Medicină Fizică, de Recuperare și Balneoclimatologie
Covasna, 23 – 25 Aprilie 2026

COMPREHENSIVE REHABILITATION AND FUNCTIONAL GAIT TRAINING IN A CASE OF INCOMPLETE THORACIC PARAPLEGIA FOLLOWING SEVERE SPINAL STENOSIS IN AN ELDERLY PATIENT WITH MULTIPLE COMORBIDITIES

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Disclosure statement

I have no actual or potential conflict of interest in relation to this program/presentation.

INTRODUCTION

- Thoracic spinal canal stenosis is defined as the narrowing of the spinal canal at the thoracic level, leading to compression of the spinal cord and potential development of incomplete spinal cord injury.*

- It is a relatively rare condition, accounting for approximately 0.5–4% of all spinal stenosis cases.*

- The most frequent causes are:*

-degenerative changes (especially ossification or hypertrophy of the ligamentum flavum and posterior longitudinal ligament)
-thoracic disc herniation
-trauma (spinal fractures or dislocations)
-spinal tumors (primary or metastatic)
-congenital spinal canal narrowing

*Ailon T, Smith JS, Shaffrey CI. *Thoracic Spinal Stenosis*. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/

INTRODUCTION

- Clinical presentation is often progressive and may include:*

-lower limb weakness
-sensory disturbances
-spasticity
-gait imbalance
-paraplegia and sphincter dysfunction (in more severe cases)

- Evaluation includes a thorough neurological examination, while imaging studies- particularly MRI-are essential for confirming spinal cord compression and identifying the underlying cause.

*Ailon T, Smith JS, Shaffrey CI. Thoracic Spinal Stenosis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/.

INTRODUCTION

- Management depends on symptom severity and neurological involvement. Conservative treatment (including medication, physical therapy, and monitoring) may be considered in mild cases. However, in patients with significant or progressive neurological deficits, surgical decompression is the treatment of choice.

- The recovery process following incomplete spinal cord injury due to thoracic spinal canal stenosis is complex and extends beyond surgical decompression. Rehabilitation plays a critical role in restoring motor function, improving mobility, enhancing balance and coordination, and promoting functional independence.*

**Spinal Cord Injury Rehabilitation Evidence (SCIRE Project). University of British Columbia. Updated reviews on rehabilitation and functional recovery after SCI.*

INTRODUCTION

- Consequences of inadequate or delayed rehabilitation:*



-persistent motor deficits and muscle weakness
-impaired gait and reduced mobility
-spasticity and poor coordination
-neuropathic pain
-bladder and bowel dysfunction
-psychological effects (anxiety, depression, reduced quality of life)
-increased risk of complications such as pressure ulcers and recurrent hospitalizations

**Spinal Cord Injury Rehabilitation Evidence (SCIRE Project). University of British Columbia. Updated reviews on rehabilitation and functional recovery after SCI.*

INTRODUCTION

- In elderly patients with thoracic spinal canal stenosis, the recovery process after surgical decompression is often challenging due to the presence of multiple comorbidities.*

- These patients require a tailored and multidisciplinary rehabilitation approach, focused not only on neuromuscular recovery but also on managing associated chronic conditions and preventing further functional decline.*

*Campbell's Physical Therapy for Medical Conditions
O'Sullivan SB, Schmitz TJ, Fulk GD. Physical Rehabilitation. Elsevier.

CASE PRESENTATION

This paper presents a case report of a patient with paraplegia, classified as AIS (ASIA Impairment Scale) Frankel C, with a neurological level of T9, following severe thoracic spinal canal stenosis at the T10-T11 level, who underwent surgical decompression.

The patient, G.M., aged 69, was addmited to our clinic with:

- Lower limb motor deficit
- Sensory disturbances
- Sphincter dysfunction
- Severe locomotor and self-care dysfunction

HEREDOCOLATERAL HISTORY:
INSIGNIFICANT

PERSONAL PATHOLOGIC HISTORY:
⇨Primary hypertension
⇨Type II diabetes mellitus under oral antidiabetics
⇨Multinodular goiter
⇨Cholelithiasis
⇨Atypical meningioma of the right sphenoid wing (surgically treated in October 2015)

LIFESTYLE AND WORKING CONDITIONS:
Retired. No occupational exposure of note. Sedentary lifestyle.

THE HISTORY OF THE DISEASE

• A 69-year-old female patient with a medical history of arterial hypertension, type II diabetes mellitus treated with oral antidiabetic drugs, anxiety disorder, cholelithiasis, multinodular goiter, and atypical right sphenoid wing meningioma (surgically treated in October 2015) was admitted on August 26, 2025, to the Neurosurgery Department of SCUBA. She presented with progressive paraparesis predominantly affecting the right side, right-sided hypoesthesia with a sensory level at T9, and sphincter dysfunction, with symptom onset approximately two weeks prior to admission.

• Following clinical and imaging investigations, she was diagnosed with thoracic spinal canal stenosis at the T10–T11 level. Surgical intervention was performed on September 4, 2025, consisting of T10 laminectomy with partial laminectomy of T9 and T11, thoracic spinal canal recalibration, and dural sac decompression. After the surgery, the patient was transferred to the Neuro-Muscular Rehabilitation Department of SCUBA, in order to begin staged rehabilitation treatment.

•The patient has had multiple admissions to the Neuro-Muscular Rehabilitation Department of SCUBA.

OBJECTIVE EXAMINATION UPON ADMISSION

Good general state
Afebrile
Supple postoperative thoracic wound
Normal represented adipose-connective tissue
Superficial lymph nodes not palpable
Respiratory system:chest with normal shape and configuration, oxygen saturation (SaO_2): 96% spontaneously, no bronchial rales, vesicular murmur present bilaterally, no signs of respiratory insufficiency
Cardiovascular system:blood pressure (BP): 130/70 mmHg, heart rate (HR): 68 bpm, rhythmic heart sounds, no signs of heart failure
Digestive system:mobile with respiratory movements, non-tender on spontaneous or palpation examination, slowed intestinal transit, liver within normal limits, spleen not palpable
Uro-genital system: bilaterally negative Giordano, urinary catheter placed in another medical unit

NMAK EXAMINATION

- Conscious, cooperative, temporally and spatially oriented, auto and allopsychically oriented.
- Cranial nerves within normal limits. No signs of meningeal irritation.
- Paretic motor deficit in lower limbs (right>left).
- Spasticity in the right lower limb.
- Sensory impairment with hypoesthesia corresponding to a T9 neurological level.
- Sphincter dysfunction: neurogenic bladder with urinary retention.
- Hyperreflexia in lower limbs, Babinski sign bilateral positive.

NMAK EXAMINATION

Muscle strength (Medical Research Council scale):

Upper limbs: 5/5 bilaterally

Right lower limb:

- L2: 3/5
- L3: 2/5
- L4: 2/5
- L5: 2/5
- S1: 2/5

Left lower limb:

- L2: 4/5
- L3: 4/5
- L4: 4/5
- L5: 3/5
- S1: 3/5

NMAK EXAMINATION

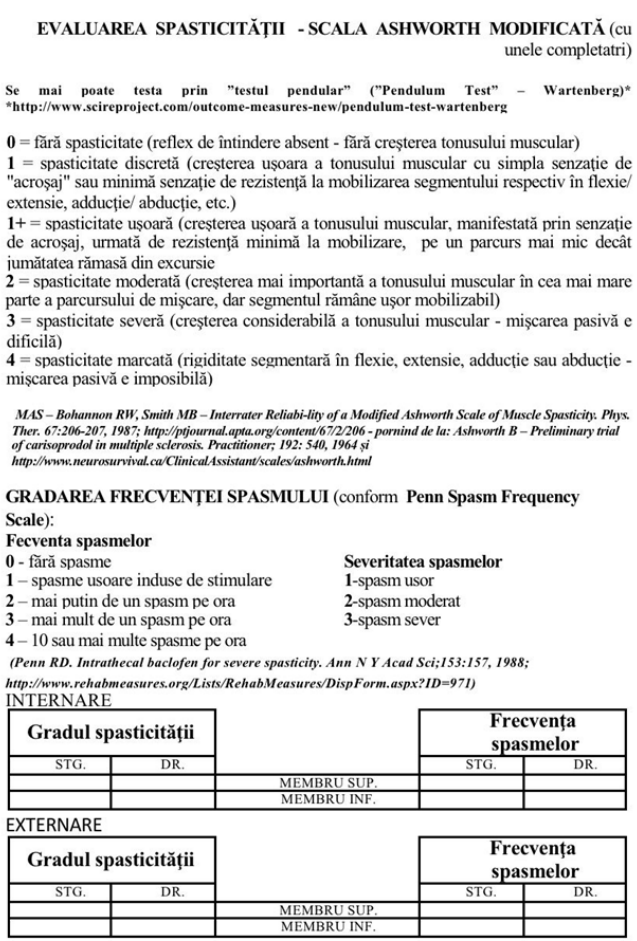
Functional status:

Maintains supine position. Able to sustain a sitting position at the edge of the bed.
The patient performs bed-to-wheelchair transfers with assistance.
The patient mobilizes in a wheelchair with assistance.

NMAK EXAMINATION

The patient was clinically and functionally assessed, according to the standardized protocols implemented in our clinic by means of the assessment grading scales:

1. *Modified Ashworth Scale*
2. *Independence Assessment Scale in Daily Activities (ADL)*
3. *Barthel Index*
4. *Medical Research Council (MRC) Scale for Muscle Strength*
5. *Life Quality Assessment (QOL)*
6. *Functional Ambulation Categories (FAC)*



EVALUAREA SPASTICITĂȚII - SCALA ASHWORTH MODIFICATĂ (cu unele completatri)

Se mai poate testa prin "testul pendular" ("Pendulum Test" – Wartenberg)*
***http://www.scireproject.com/outcome-measures-new/pendulum-test-wartenberg**

0 = fără spasticitate (reflex de întindere absent - fără creşterea tonusului muscular)
1 = spasticitate discretă (creşterea uşoara a tonusului muscular cu simpla senzaţie de "acroşaj" sau minimă senzaţie de rezistenţă la mobilizarea segmentului respectiv în flexie/ extensie, adducţie/ abducţie, etc.)
1+ = spasticitate uşoară (creşterea uşoară a tonusului muscular, manifestată prin senzaţie de acroşaj, urmată de rezistenţă minimă la mobilizare, pe un parcurs mai mic decât jumătatea rămasă din excursie
2 = spasticitate moderată (creşterea mai importantă a tonusului muscular în cea mai mare parte a parcursului de mişcare, dar segmentul rămâne uşor mobilizabil)
3 = spasticitate severă (creşterea considerabilă a tonusului muscular - mişcarea pasivă e dificilă)
4 = spasticitate marcată (rigiditate segmentară în flexie, extensie, adducţie sau abducţie - mişcarea pasivă e imposibilă)

MAS – Bohannon RW, Smith MB – Interrater Reliabi-lity of a Modified Ashworth Scale of Muscle Spasticity. Phys. Ther. 67:206-207, 1987; http://ptjournal.apta.org/content/67/2/206 - pornind de la: Ashworth B – Preliminary trial of carisoprodol in multiple sclerosis. Practitioner; 192: 540, 1964 și http://www.neurosurvival.ca/ClinicalAssistant/scales/ashworth.html

GRADAREA FRECVENȚEI SPASMULUI (conform **Penn Spasm Frequency Scale**):

Fecventa spasmelor
0 - fără spasme
1 – spasme usoare induse de stimulare
2 – mai putin de un spasm pe ora
3 – mai mult de un spasm pe ora
4 – 10 sau mai multe spasme pe ora

Severitatea spasmelor
1-spasm usor
2-spasm moderat
3-spasm sever

(Penn RD. Intrathecal baclofen for severe spasticity. Ann N Y Acad Sci;153:157, 1988; http://www.rehabmeasures.org/Lists/RehabMeasures/DispForm.aspx?ID=971)

INTERNARE

Gradul spasticității			Frecvența spasmelor	
STG.	DR.		STG.	DR.
		MEMBRU SUP.		
		MEMBRU INF.		

EXTERNARE

Gradul spasticității			Frecvența spasmelor	
STG.	DR.		STG.	DR.
		MEMBRU SUP.		
		MEMBRU INF.		

Fig.1. The Ashworth Scale and its modified version (MAS)

The Ashworth Scale and its modified version (MAS) assess resistance to passive muscle movement and help evaluate muscle tone abnormalities. It is commonly used in stroke, spinal cord injury, traumatic brain injury, and conditions like HIE.*

Scores range from 0 to 4, where lower scores represent normal muscle tone and higher scores represent spasticity or increased resistance to passive movement.*

Modified Ashworth Scale		Admission 1		Admission 2		Admission 3	
		Admission	Discharge	Admission	Discharge	Admission	Discharge
Upper limbs	Left	0/4	0/4	0/4	0/4	0/4	0/4
	Right	0/4	0/4	0/4	0/4	0/4	0/4
Lower limbs	Left	0/4	0/4	0/4	0/4	0/4	0/4
	Right	1/4	1/4	1/4	1/4	1/4	0/4

Table 1. The Ashworth Scale and its modified version (MAS) throughout the three hospital admissions

*Harb A, Kishner S. Modified Ashworth Scale. [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554572/

„Scala de evaluare a independenței în activitățile zilnice (ADL)		
Activitate	**Independență/ Autonomie: (1 punct)** Fără supervizare, direcționare sau asistență personală	**Dependență: (0 puncte)** Cu supervizare, direcționare asistență personală sau îngrijire totală
Igiena corporală Puncte:.....	**(1 punct)** Se spală complet singur sau are nevoie de ajutor în spălarea unei regiuni a corpului cum ar fi spatele, zona genitală sau extremitățile dizabilitate	**(0 puncte)** Are nevoie de ajutor la spălarea mai multor părți ale corpului sau la ieșirea din cadă sau duș. Necesită ajutor total la spălare.
Îmbrăcare Puncte:.....	**(1 punct)** Își scoate hainele din dulap sau sertare și se îmbracă complet inclusiv cu haine de exterior cu nasturi/ fermoare. Poate să aibă nevoie de ajutor la încălțat (legatul șireturilor și al cataramelor).	**(0 puncte)** Are nevoie de ajutor la îmbrăcare sau trebuie să fie îmbrăcat complet de către o altă persoană.
Mersul la toaletă Puncte:.....	**(1 punct)** Merge la toaletă, se ridică și se așează pe toaletă, își poate aranja corespunzător hainele, își curăță zona genitală fără ajutor.	**(0 puncte)** Are nevoie de ajutor la transferul pe toaletă, curățarea zonei genitale, utilizarea colacului de toaletă.
Transferul Puncte:.....	**(1 punct)** Se mută în/ din pat sau scaun, neasistat. Pentru transfer sunt acceptabile dispozitivele mecanice asistive	**(0 puncte)** Are nevoie de ajutor la trecerea din pat pe scaun sau necesită un transfer complet
Continența sfincteriană Puncte:.....	**(1 punct)** Control complet sfincterian, vezical și anal.	**(0 puncte)** Incontinența,parțială,sau totală la nivelul colonului și a vezicii urinare.
Alimentația Puncte:.....	**(1 punct)** Duce mâncarea din farfurie la gură fără ajutor. Prepararea mâncării poate fi făcută de o altă persoană.	**(0 puncte)** Are nevoie de ajutor parțial sau total la alimentație sau necesită alimentație parenterală"

Cheie de scor:

6 puncte: pacient independent

4 puncte: dependenta moderata

2 puncte: inalt grad de dependenta

0 puncte: dependenta totala

* Wallace M and Shelkey M, Katz Index of Independence in Activities of Daily Living (ADL). New York University College of Nursing, Issue Number 2, Revised 2007 – https://www.alz.org/careplanning/downloads/katz-adl.pdf

Fig.2. Independence Assessment Scale in Daily Activities (ADL)

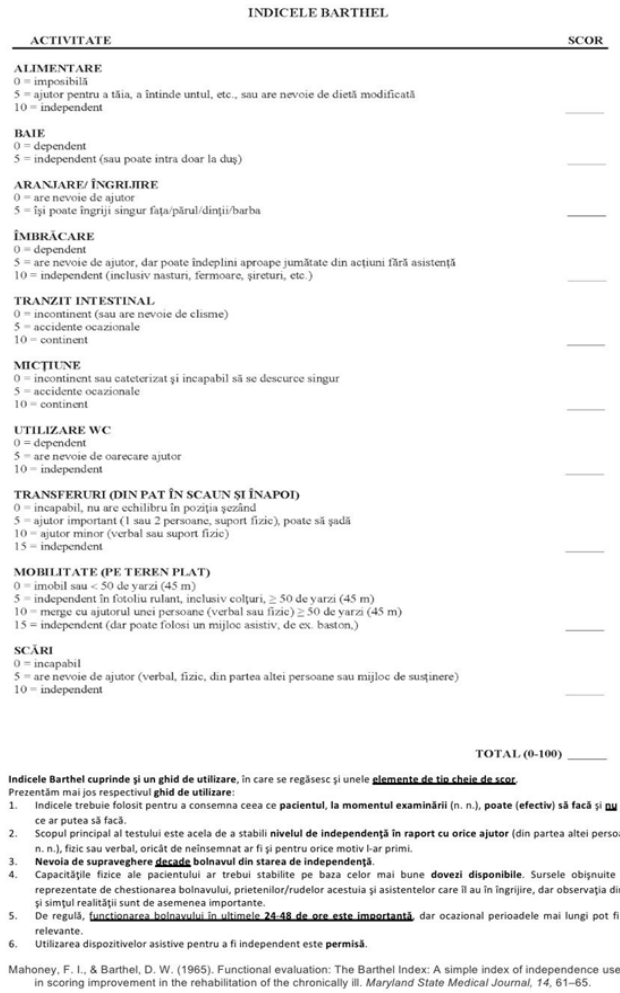
Independence Assessment Scale in Daily Activities (ADL) is used as an indicator of a person's functional status. The inability to perform ADLs results in the dependence of other individuals and/or mechanical devices. The inability to accomplish essential activities of daily living may lead to unsafe conditions and poor quality of life.*

A **score** of 6 indicates the patient is independent, 4 indicates the patient has moderate impairment, and 0 indicates the patient is very dependent.*

Independence Assessment Scale in Daily Activities (ADL)	Admission 1		Admission 2		Admission 3	
	Admission	Discharge	Admission	Discharge	Admission	Discharge
	3	3	3	4	4	5

Table 2. ADL Scale throughout the three hospital admissions

*Edemekong PF, Bomgaars DL, Sukumaran S, et al. Activities of Daily Living. [Updated 2023 Jun 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470404/



INDICELE BARTHEL

ACTIVITATE	SCOR
ALIMENTARE 0 = imposibilă 5 = ajutor pentru a tăia, a întinde untul, etc., sau are nevoie de dietă modificată 10 = independent	
BAIE 0 = dependent 5 = independent (sau poate intra doar la duș)	
ARANJARE/ ÎNGRIJIRE 0 = are nevoie de ajutor 5 = își poate îngriji singur fața/părul/dinții/barba	
ÎMBRĂCARE 0 = dependent 5 = are nevoie de ajutor, dar poate îndeplini aproape jumătate din acțiuni fără asistență 10 = independent (inclusiv nasturi, fermoare, șireturi, etc.)	
TRANZIT INTESTINAL 0 = incontinent (sau are nevoie de clisme) 5 = accidente ocazionale 10 = continent	
MICȚIUNE 0 = incontinent sau cateterizat și incapabil să se descurce singur 5 = accidente ocazionale 10 = continent	
UTILIZARE WC 0 = dependent 5 = are nevoie de oarecare ajutor 10 = independent	
TRANSFERURI (DIN PAT ÎN SCAUN ȘI ÎNAPOI) 0 = incapabil, nu are echilibru în poziția șezând 5 = ajutor important (1 sau 2 persoane, suport fizic), poate să șadă 10 = ajutor minor (verbal sau suport fizic) 15 = independent	
MOBILITATE (PE TEREN PLAT) 0 = imobil sau < 50 de yarzi (45 m) 5 = independent în fotoliu rulant, inclusiv colțuri, ≥ 50 de yarzi (45 m) 10 = merge cu ajutorul unei persoane (verbal sau fizic) ≥ 50 de yarzi (45 m) 15 = independent (dar poate folosi un mijloc asistiv, de ex. baston,)	
SCĂRI 0 = incapabil 5 = are nevoie de ajutor (verbal, fizic, din partea altei persoane sau mijloc de susținere) 10 = independent	
	TOTAL (0-100)

Indicele Barthel cuprinde și un ghid de utilizare, în care se regăsesc și unele **elemente de tip cheie de scor**.
Prezentăm mai jos respectivul **ghid de utilizare**:

1. Indicele trebuie folosit pentru a consemna ceea ce **pacientul, la momentul examinării** (n. n.), **poate (efectiv) să facă** și **nu** ceea ce ar putea să facă.
2. Scopul principal al testului este acela de a stabili **nivelul de independență în raport cu orice ajutor** (din partea altei persoane - n. n.), fizic sau verbal, oricât de neînsemnat ar fi și pentru orice motiv l-ar primi.
3. **Nevoia de supraveghere decade bolnavul din starea de independență**.
4. Capacitățile fizice ale pacientului ar trebui stabilite pe baza celor mai bune **dovezi disponibile**. Sursele obișnuite sunt reprezentate de chestionarea bolnavului, prietenilor/rudelor acestuia și asistentelor care îl au în îngrijire, dar observația directă și simțul realității sunt de asemenea importante.
5. De regulă, **functionarea bolnavului în ultimele 24-48 de ore este importantă**, dar ocazional perioadele mai lungi pot fi cele relevante.
6. Utilizarea dispozitivelor asistive pentru a fi independent este **permisă**.

Mahoney, F. I., & Barthel, D. W. (1965). Functional evaluation: The Barthel Index: A simple index of independence useful in scoring improvement in the rehabilitation of the chronically ill. *Maryland State Medical Journal, 14*, 61–65.

Fig.3. The Barthel Index

The Barthel Index is a measure of ability to perform ADLs on a ten-item scale, examining functions such as feeding, bathing, continence, mobility and dressing.*

Total possible score range from 0-100, with lower scores indicating increased disability. *

The Barthel Index	Admission 1		Admission 2		Admission 3	
	Admission	Discharge	Admission	Discharge	Admission	Discharge
	30	40	40	60	65	85

Table 3. The Barthel Index throughout the three hospital admissions

*Collin C, Wade DT, Davies S, Horne V. The Barthel ADL Index: a reliability study. Int Disabil Stud. 1988;10(2):61-3. doi: 10.3109/09638288809164103. PMID: 3403500.

Evaluarea fortei musculare segmentare pe scala MRC

(după http://www.meducator3.net/algorithms/content/grading-muscle-strength-mrc-scale-and-its-modifications – cu minime completări asociate traducerii)

Membrele superioare		INTERNARE		EXTERNARE	
		stanga	dreapta	stanga	dreapta
m. biceps brahial	C5				
m. extensor al pumnului	C6				
m. triceps brachial	C7				
m. flexor profund al degetelor	C8				
m.abductor degetmic	T1				

Membrele inferioare		INTERNARE		EXTERNARE	
		stanga	dreapta	stanga	dreapta
m. iliopsoas	L2				
m. cvadriceps	L3				
m. tibial anterior	L4				
m. lung extensor al halucelui	L5				
m. triceps sural	S1				

LEGENDA:

"5= forță normală" (musculară voluntară segmentară)

"4 = mișcare activă, împotriva gravitației și a unei rezistențe"

"3 = mișcare activă, împotriva gravitației (dar fără rezistență)"

"2 = mișcare activă, cu eliminarea gravitației"

"1 = contracție (sau urmă de contracție) musculară" – vizibilă sau palpabilă ("tremurare") – ineficientă

"0 = absența contracției musculare" (voluntare segmentare – paralizire totală)

Fig.4. The Medical Research Council (MRC) Scale for Muscle Strength

The Medical Research Council (MRC) Scale for Muscle Strength is a commonly used scale for assessing muscle strength from Grade 5 (normal) to Grade 0 (no visible contraction). *

The patient showed significant improvement in lower limb muscle strength on the MRC scale, progressing from:
Right lower limb: *L2: 3/5, L3-S1: 2/5*
Left lower limb: *L2-L4: 4/5, L5-S1: 3/5*
(during the first admission)
to:
Right lower limb: *L2-L4: 4+/5, L5-S1: 4/5;*
Left lower limb: *L2-L3: 4+/5, L4: 4-/5, L5-S1: 5/5.*
(during the third admission)

* RUSBY NL. The Medical Research Council. Postgrad Med J. 1950 May;26(295):251-2. doi: 10.1136/pgmj.26.295.251. PMID: 15412860; PMCID: PMC2530106.

SCALA DE EVALUARE CUANTIFICATĂ A QOL

(după Flanagan modificată – instrument agreat de OMS)

		ÎNCÂNTAT	MULȚUMIT	MAI DEGRABĂ MULȚUMIT	"AȘA ȘI AȘA"	MAI DEGRABĂ NEMULȚUMIT	NEMULȚUMIT	NEFERICIT
1	Confortul material: casă, mâncare, facilități casnice, securitate financiară	7	6	5	4	3	2	1
2	Sănătatea: buna formă fizică și vigoarea	7	6	5	4	3	2	1
3	Relații cu părinții, frații/ surorile, alte rude: comunicare, vizite, ajutorare	7	6	5	4	3	2	1
4	Rolul parental: creșterea copiilor	7	6	5	4	3	2	1
5	Relația matrimonială sau de concubinaj	7	6	5	4	3	2	1
6	Prieteni apropiați	7	6	5	4	3	2	1
7	Ajutorarea și încurajarea celorlalți, acțiuni de voluntariat, oferire de sfaturi	7	6	5	4	3	2	1
8	Participarea în organizații și activități publice	7	6	5	4	3	2	1
9	Autoperfecționarea: participare la diverse forme de învățământ, îmbunătățirea nivelului de înțelegere și de cunoaștere	7	6	5	4	3	2	1
10	Autocunoașterea, cunoașterea propriilor calități și limite, cunoașterea înțelesului vieții	7	6	5	4	3	2	1
11	Munca – la serviciu sau acasă	7	6	5	4	3	2	1
12	Exprimarea creativă a personalității	7	6	5	4	3	2	1
13	Socializarea: întâlniri interpersonale, relaționare, petreceri	7	6	5	4	3	2	1
14	Lectura, audițiile muzicale, vizionarea de divertisment	7	6	5	4	3	2	1
15	Participarea la acțiuni recreaționale active	7	6	5	4	3	2	1
16	Independența, capacitatea de rezolvare propriile probleme	7	6	5	4	3	2	1

Scor total = _____ / 112

Notă pentru pacient:

- se recomandă completarea răspunsurilor la toate întrebările, chiar și la cele care nu par să aibă o legătură directă cu preocupările dvs.
- se va încercui câte un singur răspuns (număr) la fiecare întrebare

Notă pentru examinator:

- acolo un de pacientul nu a completat opțiunea de răspuns, se va compensa lipsa informației conform următoarei convenții: se va introduce valoarea medie a rezultatului scorului întrebării respective

(Flanagan - 1982 - citat de Burckhardt, 1993)

(Burckhardt CS, Anderson KL – The Quality of Life Scale (QOLS): Reliability, Validity, and Utilization. BioMed Central:1-7, 2003; http://www.hqlo.com/content/1/1/60)

Fig.5. Life Quality Assessment (QOL)

The QOLS is a 16-item instrument that measures five conceptual domains of quality of life: material and physical well-being, relationships with other people, social, community and civic activities, personal development and fulfillment, recreation and independence. *

The QOLS is scored by adding up the score on each item to yield a total score for the instrument. Scores can range from 16 to 112.The QOLS scores are summed so that a higher score indicates higher quality of life. Average total score for healthy populations is about 90.*

Life Quality Assessment (QOL)	Admission 1		Admission 2		Admission 3	
	Admission	Discharge	Admission	Discharge	Admission	Discharge
	70	75	75	80	80	95

Table 4. Life Quality Assessment (QOL) throughout the three hospital admissions

*Burckhardt CS, Anderson KL. The Quality of Life Scale (QOLS): reliability, validity, and utilization. Health Qual Life Outcomes. 2003 Oct 23;1:60. doi: 10.1186/1477-7525-1-60. PMID: 14613562; PMCID: PMC269997.

Scala internaţională FAC (Functional Ambulation Categories) – (utilizată în cadrul PNS III/ IV. 10, al MS și CNAS/ 2010 și – încă – în

INTERNARE

Nr.	Categorie	Caracterizare
0	Nefuncţionalitate	Pacientul nu poate merge sau necesită ajutor de la 2 sau mai multe persoane
1	Dependenţă - nivel 2	Pacientul necesită sprijin ferm şi continuu din partea unei persoane
2	Dependenţă - nivel 1	Pacientul necesită sprijin continuu sau intermitent din partea unei persoane pentru ajutor cu echilibrul sau coordonarea
3	Dependenţă - supraveghere	Pacientul necesită coordonarea verbală sau ajutor potenţial din partea unei persoane fără contact fizic
4	Independenţă - pe teren plan	Pacientul poate merge independent pe teren plan, dar necesită ajutor la scări, pante sau suprafeţe denivelate
5	Independenţă	Pacientul poate merge independent oriunde

EXTERNARE

Nr.	Categorie	Caracterizare
0	Nefuncţionalitate	Pacientul nu poate merge sau necesită ajutor de la 2 sau mai multe persoane
1	Dependenţă - nivel 2	Pacientul necesită sprijin ferm şi continuu din partea unei persoane
2	Dependenţă - nivel 1	Pacientul necesită sprijin continuu sau intermitent din partea unei persoane pentru ajutor cu echilibrul sau coordonarea
3	Dependenţă - supraveghere	Pacientul necesită coordonarea verbală sau ajutor potenţial din partea unei persoane fără contact fizic
4	Independenţă - pe teren plan	Pacientul poate merge independent pe teren plan, dar necesită ajutor la scări, pante sau suprafeţe denivelate
5	Independenţă	Pacientul poate merge independent oriunde

Fig.6. The Functional Ambulation Categories (FAC)

The Functional Ambulation Categories (FAC) is a measurement tool used to classify walking ability according to the amount of physical support required.*

The FAC has six categories ranging from 0 (non-functional ambulation) to 5 (independent). The intermediary categories quantify levels of assistance, supervision, and independent but limited mobility.*

The Functional Ambulation Categories (FAC)	Admission 1		Admission 2		Admission 3	
	Admission	Discharge	Admission	Discharge	Admission	Discharge
	0	1	1	2	2	3

Table 5. The Functional Ambulation Categories (FAC) throughout the three hospital admissions

* Mehrholz J, Wagner K, Rutte K, Meissner D, Pohl M. Predictive validity and responsiveness of the functional ambulation category in hemiparetic patients after stroke. Arch Phys Med Rehabil. 2007 Oct;88(10):1314-9. doi: 10.1016/j.apmr.2007.06.764. PMID: 17908575.

PARACLINICALLY– LABORATORY INVESTIGATIONS

Laboratory tests were monitored during the course of three hospitalizations.

- **Hypomagnesemia** (present on second and third admissions)
- **Hypoalbuminemia** (present on all admissions)
- **Mild hepatic cytolysis syndrome** (elevated AST and ALT on first admission)
- **Neutrophilic leukocytosis** (on first admission)
- **Hyperfibrinogenemia** (on third admission), consistent with an **inflammatory syndrome**

The rest of the tests performed were within normal limits.

PARACLINICALLY– LABORATORY INVESTIGATIONS

•FIRST ADMISSION:
WBC ***11.9 x 10³/uL*** [4.8 - 10.8 / x 10^3/uL]; **Neutrophils** ***8.7 x 10³/uL*** [2.2 – 4.8 / x 10^3/uL];
ALT ***87 U/L*** [12 – 78 U/L]; **AST** ***51 U/L*** [15 – 37 U/L]; **Albumin** *3.2 g/dL* [3.4 – 5 / g/dL].

•SECOND ADMISSION:
Magnesium ***1.3 mg/dL*** [1.8 - 2.4 / mg/dL]; **Albumin** ***3.3 g/dL*** [3.4 – 5 / g/dL].

• THIRD ADMISSION:
Magnesium ***1.4mg/dL*** [1.8-2.4/ mg/dL]; **Albumin** ***3.1mg/dL*** [3.4-5/ g/dL]; **Fibrinogen** ***545 mg/dL*** [220-496 mg/dL].

PARACLINICALLY– IMAGING

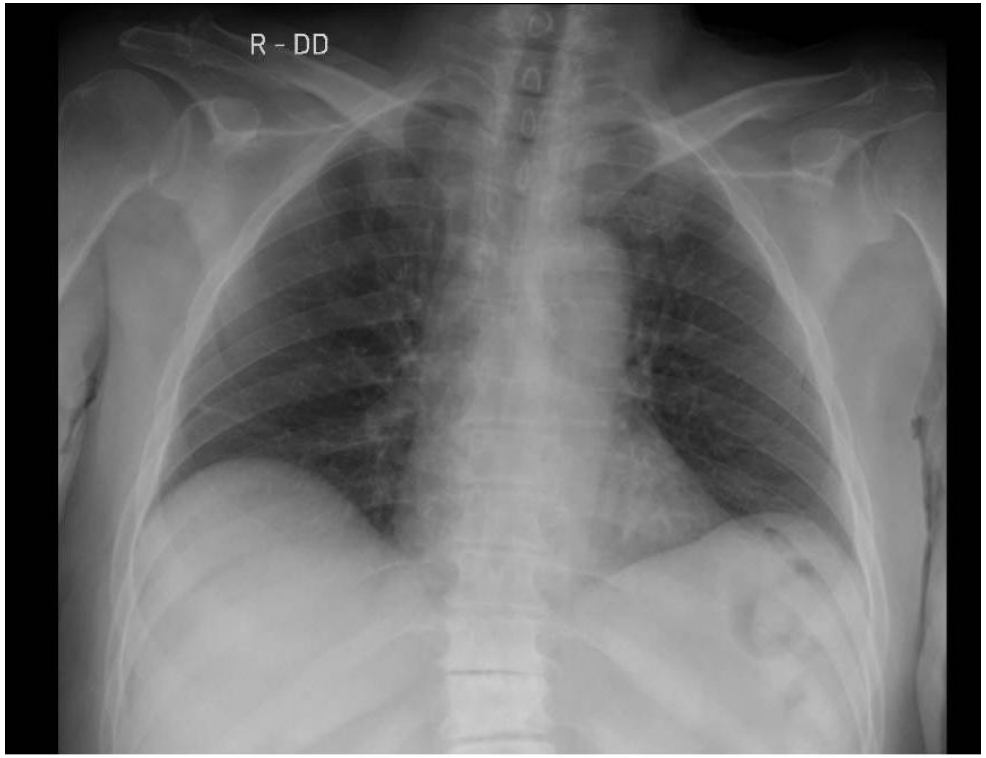


Fig.7. Chest X-ray (PA view): No evidence of interstitial consolidation. No pleural effusions. Vertebral bodies with preserved heights. Mild narrowing of the posterior intervertebral disc spaces.



Fig.8. Non-contrast brain CT: Sequelae encephalomalacic area in the right frontobasal and temporal regions. Right frontotemporal bone flap in normal position. No intracranial collections. Ventricular system normal in size and symmetric. Midline structures in normal position. Basal cisterns are patent.

DIAGNOSIS

Incomplete paraplegia (AIS/Frankel grade C) with neurological level at T9, following severe thoracic spinal canal stenosis at T10–T11 (surgically treated on 04/09/2025). Neurogenic bladder, retention type.

Comorbidities:

Essential arterial hypertension.

Type 2 diabetes mellitus treated with oral antidiabetic agents.

Anxiety disorder.

Cholelithiasis.

Multinodular goiter.

Past medical history: Atypical meningioma of the right sphenoid wing, surgically treated (October 2015).

TREATMENT

For the rehabilitation program we had the main general objectives:

1.Combating pain and regaining functionality that allows the patient self-grooming and locomotion

2.Improving the patient's psycho-cognitive, mentally and emotionally status

3.Social reintegration and improvement of quality of life

TREATMENT

•During the course of hospitalization, the patient followed a multidisciplinary medical and rehabilitation plan.

•Initially, she was administered a subcutaneous anticoagulant at prophylactic dose, which was later transitioned to antiplatelet therapy. Treatment included beta-blockers, diuretics, vasodilators, anticonvulsants, gastric protection, oral antidiabetic medication. Additional support was provided through analgesics, muscle relaxants, urinary antiseptics, vitamins, and adequate hydration.

TREATMENT

Physical Therapy-Objectives:



- Prevention of vicious posture
- Improving joint mobility
- Restoration of motor control in the lower limbs
- Increasing muscle strength
- Improving muscle tone
- Improving coordination, control and balance
- Correcting the posture and alignment of body segments
- Reduction of spasticity
- Resuming orthostatism, walking re-education
- Increasing the level of functional independence, including Activities of Daily Living (ADL): mobility, transfers, sitting posture, balance, wheelchair maneuvering, dexterity, personal care, dressing, eating, bathing, hygiene.

TREATMENT

- A structured rehabilitation program played a central role in her recovery. The patient engaged in daily kinesiotherapy sessions.

•. In addition to physical training, the patient underwent targeted physiotherapy with electrical stimulation of the lower limbs, CIMF therapy for neurogenic bladder, ULTRASOUND and TENS for back and knee pain.

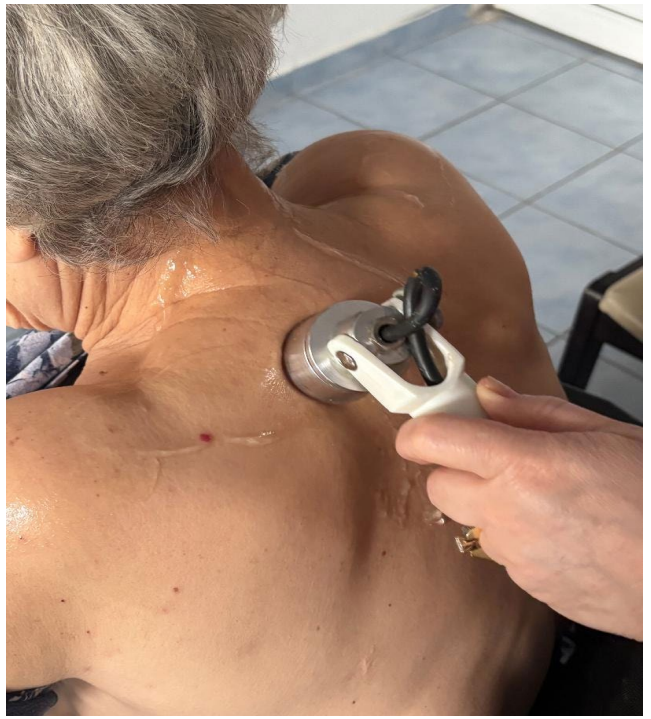


Fig.9. Ultrasound therapy

TREATMENT

- The patient engaged in a series of structured exercises designed to improve mobility, strength, and coordination.

- The session began with exercises on the MotoMed bicycle, which provided passive and active movement to enhance joint flexibility. The patient also performed exercises on a pedal exerciser, focusing on controlled movement to build endurance and improve lower limb coordination.

- Next, the patient participated in orthostatic lifting exercises at the wall bars, which aimed to improve postural control, stability, and overall strength. To improve walking technique and balance, the patient practiced walking through parallel bars, which provided guided support for safe and controlled movement.

TREATMENT



Fig.10. Exercises on the pedal exerciser



Fig.11. Lifting exercises at the wall bars



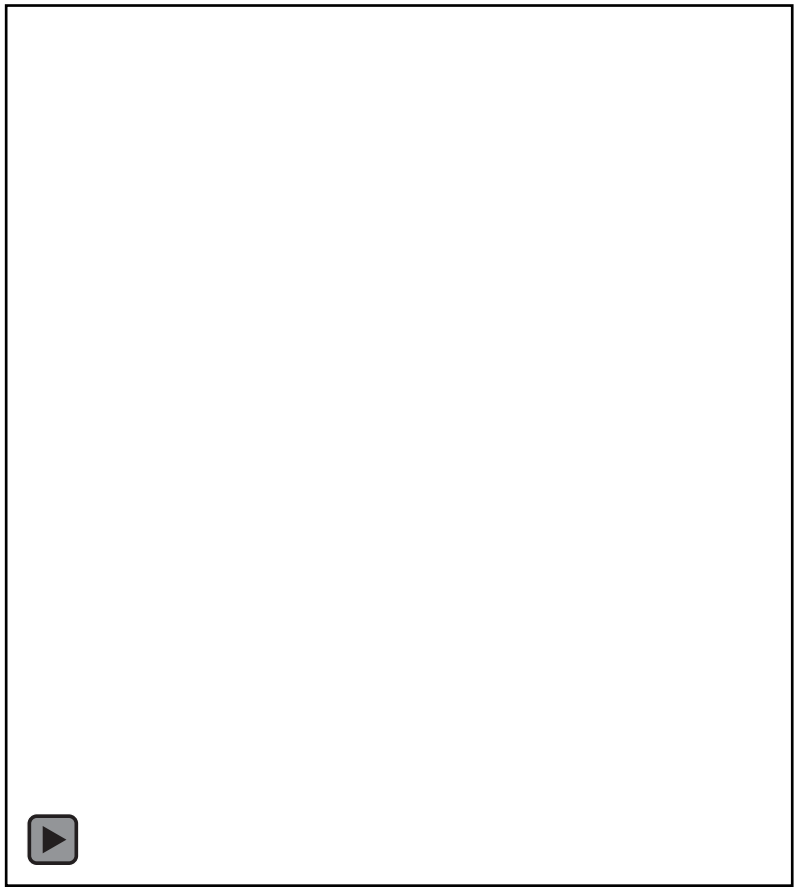
Fig.12. Lateral walking through parallel bars

EVOLUTION

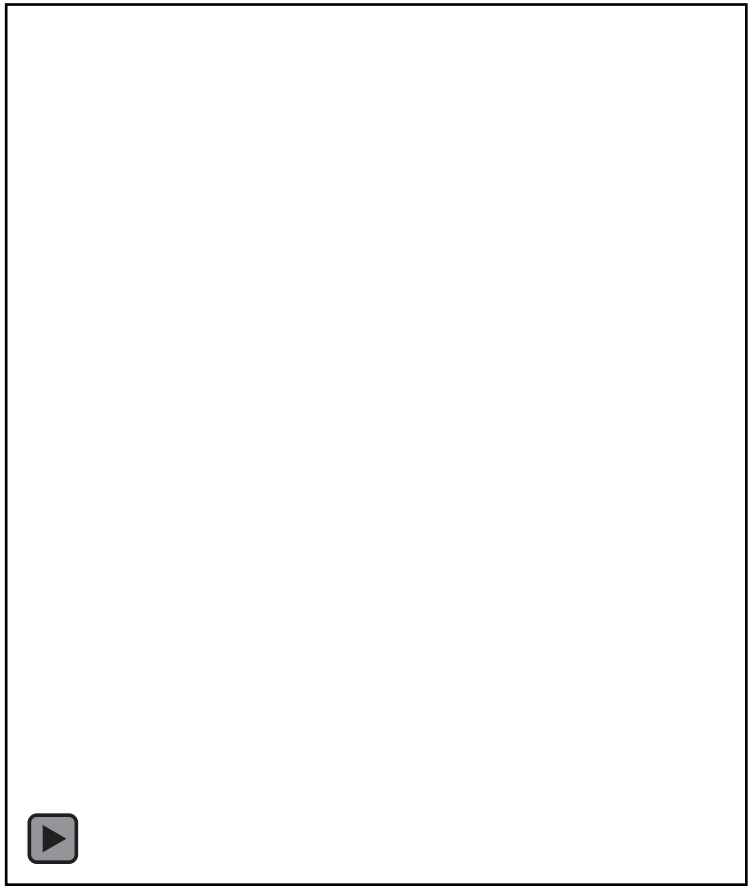
- The patient benefited from an adequate pharmacological treatment (including comorbidities) and a complex rehabilitation program.The clinical course has been favorable, with increased muscle strength in both lower limbs, as well as improved coordination and gait pattern.

- Functionally, at this moment, our patient performs transfers from the bed to a wheelchair without assistance and is able to ambulate with a modified gait pattern between parallel bars, aided by a walking-frame over medium distances, as well as ambulate with a single-point cane over short distances.

EVOLUTION



Video.2. Walking with wheelchair support



Video.3. Walking on the stairs with support

RECOMMANDATIONS

1.Continuation of the recovery program initiated

2. Continuation of medical treatment

3. Regular functional reassessment

CASE PARTICULARITY

- This case illustrates the rehabilitation journey of a 69-year-old patient with incomplete AIS/Frankel C paraplegia in a complex medical context.

- Unlike the more common traumatic spinal cord injuries, the neurological deficit resulted from severe degenerative thoracic spinal stenosis, highlighting a less frequent but clinically significant etiology. What makes this case particularly relevant is the discrepancy between the initial neurological impairment and the functional recovery achieved, despite multiple comorbidities- shifting the patient from dependency toward regained mobility and autonomy, emphasizing the role of early, structured and multidisciplinary rehabilitation.

- This case demonstrates how, even in elderly patients with complex pathology, functional independence can be significantly improved when rehabilitation is timely and personalized.
In rehabilitation medicine, prognosis is not a fixed endpoint-it is something we actively shape.

CONCLUSIONS

- This case challenges the assumption that age, comorbidities, and spinal cord injury inevitably lead to poor functional outcomes. Even in a complex clinical context-elderly patients with multiple comorbidities, incomplete spinal cord injuries can have a remarkable rehabilitation potential. The difference lies not only in the lesion itself, but in what follows: early intervention, individualized rehabilitation and continuity of care.

- Early initiation of a structured, individualized rehabilitation program can transform a patient from limited mobility to functional ambulation, significantly improving independence and quality of life.

This study has approval of the Ethics Commission of the Clinical Emergency Hospital "Bagdasar-Arseni" (N.O. 10088/27.02.2026).

BIBLIOGRAPHY

1. Ailon T, Smith JS, Shaffrey CI. Thoracic Spinal Stenosis. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024. Available from: https://www.ncbi.nlm.nih.gov/books/
2. Spinal Cord Injury Rehabilitation Evidence (SCIRE Project). University of British Columbia. Updated reviews on rehabilitation and functional recovery after SCI.
3. Campbell's Physical Therapy for Medical Conditions. O'Sullivan SB, Schmitz TJ, Fulk GD. Physical Rehabilitation. Elsevier.
4.Harb A, Kishner S. Modified Ashworth Scale. Updated 2023 May 1. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan–. Available from: https://www.ncbi.nlm.nih.gov/books/NBK554572/
5. Edemekong PF, Bomgaars DL, Sukumaran S, et al. Activities of Daily Living. [Updated 2023 Jun 26]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK470404/
6. Collin C, Wade DT, Davies S, Horne V. The Barthel ADL Index: a reliability study. Int Disabil Stud. 1988;10(2):61-3. doi: 10.3109/09638288809164103. PMID: 3403500.
7. RUSBY NL. The Medical Research Council. Postgrad Med J. 1950 May;26(295):251-2. doi:10.1136/pgmj.26.295.251. PMID: 15412860; PMCID: PMC2530106.
8. Burckhardt CS, Anderson KL. The Quality of Life Scale(QOLS): reliability, validity, and utilization. Health Qual Life Outcomes. 2003 Oct 23;1:60. doi: 10.1186/1477-7525-1-60. PMID: 14613562; PMCID:PMC269997.
9. Mehrholz, Wagner K, Rutte K, Meissner D, Pohl M. Predictive validity and responsiveness of the functional ambulation category in hemiparetic patients after stroke. Arch Phys Med Rehabil. 2007 Oct;88(10):1314-9. doi: 10.1016/j.apmr.2007.06.764. PMID:17908575.

THANK YOU FOR YOUR ATTENTION!

