

Spectacular recovery after complex rehabilitation approaches - including specific nursing - in an initially paraplegic old female patient

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Disclosure statement

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

INTRODUCTION

Spinal cord rehabilitation is one of the most complex and intensive components of our neurorehabilitation department. It is intended for patients with spinal cord injuries and disorders such as:

- spinal trauma (e.g., motor vehicle accidents, falls)
- spinal cord compression (due to tumors or severe disc herniations)
- myelopathies
- degenerative spinal disorders

For all these patients, the main objective is to achieve the highest possible level of functional independence, enabling performance of activities of daily living.

Case presentation

With the approval of the TEHBA Bioethics Committee No. 10088/27.02.2026, this paper presents the case of a 72-year-old female patient with a history of multiple spinal surgeries over the past 2 years (L1–S1 spinal stenosis, L4–L5 disc herniation with cauda eqina, right paramedian C7–T1 disc herniation), who was admitted first time to our clinic on April 2025, presenting **motor** (severe flaccid paraplegia, AIS/Frankel B) and **sensory deficit** (T8 - level hipoesthesia), **neurogenic retention-type bladder and bowel**, and **severe locomotor and self-care dysfunction**

HISTORY OF THE DISEASE

February 2024

L1–S1 spinal canal
stenosis

→ **NEUROSURGERY**

→ **Fully recovery**

March 2025

cauda equina
syndrome caused by
L4–L5 disc
herniation

→ AIS Frankel D
paraparesis

→ **NEUROSURGERY**

→ **Fully recovery**

April 2025

right paramedian
C7–T1 disc herniation

→ AIS Frankel B
paraplegia

→ **NEUROSURGERY**

April 2025

-motor and sensory
deficit

-bladder and bowel
sphincter disorders

-severe locomotor and
self-care dysfunctions

**NEURO
REHABILITATION**

PHYSICAL EXAMINATION AT ADMISSION

- ***General health state:*** relative good, afebrile, **supraponderal**
- **Integuments:** midline cervical postoperative scar, pliable, with sutures in situ



PHYSICAL EXAMINATION AT ADMISSION

- ***Cardiovascular system***: rhythmic heart sounds, without pathological murmurs, AV= 77 bpm, TA=120/80 mmHg
- ***Respiratory system***: kyphotic thorax, MV present bilaterally, SpO₂=98% aa
- ***Digestive system***: Supple abdomen, painless on superficial or deep palpation, **neurogenic bowel retention type**
- ***Urogenital system***: neurogenic bladder (urethro-vesical catheter from another unit)

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NEURO-MIO-ARTRO-KINETIC (NMAK) EXAMINATION AT ADMISSION:

- Conscious, cooperative, temporo-spatially oriented and self-aware patient
- Cranial nerves: within normal limits
- ***Sensitivity impairment: T8 neurological level hypoesthesia***
- ***Motor deficit: paraplegia***
- ***Deep tendon reflexes (ROT): Absent on lower limbs***
- ***Babinski + bilateral;***
- ***Sphincter disorders: neurogenic bowel and bladder retention type***

Functional Status at Admission: the patient was on bed rest, with an indication for fully mobilization using of a cervical collar.

The patient was evaluated both clinically and functionally using various *evaluation scales* (AIS, WHOQOL-Bref, SCIM, FAC, B/ADL), *paraclinical investigations* and received *multiple interdisciplinary consultations* in order to establish an appropriate rehabilitation program.

Bulbo-cavernosus reflex (with permission, by elearnSCI.org)
Submodule:
Clinical assessment of patients with SCI - Doctor's Module - Aito S (Coordinator) et al., 2012 - <http://www.elearnsci.org/>



ASIA INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI)

Patient Name _____ Date/Time of Exam _____
Examiner Name _____ Signature _____

RIGHT MOTOR KEY MUSCLES

Upper Extremity Right (UER): Elbow flexors C5, Wrist extensors C6, Elbow extensors C7, Finger flexors C8, Finger abductors (little finger) T1

Lower Extremity Right (LER): Hip flexors L2, Knee extensors L3, Ankle dorsiflexors L4, Long toe extensors L5, Ankle plantar flexors S1

(VAC) Voluntary Anal Contraction (Yes/No) ☐

RIGHT TOTALS (MAXIMUM)

MOTOR SUBSCORES: UER ☐ + UEL ☐ = UEMS TOTAL ☐ (MAX 25)
LER ☐ + LEL ☐ = LEMS TOTAL ☐ (MAX 25)

LEFT MOTOR KEY MUSCLES

Upper Extremity Left (UEL): Elbow flexors C5, Wrist extensors C6, Elbow extensors C7, Finger flexors C8, Finger abductors (little finger) T1

Lower Extremity Left (LEL): Hip flexors L2, Knee extensors L3, Ankle dorsiflexors L4, Long toe extensors L5, Ankle plantar flexors S1

(DAP) Deep Anal Pressure (Yes/No) ☐

LEFT TOTALS (MAXIMUM)

MOTOR SUBSCORES: UEL ☐ + UEL ☐ = UEMS TOTAL ☐ (MAX 25)
LER ☐ + LEL ☐ = LEMS TOTAL ☐ (MAX 25)

SENSORY KEY SENSORY POINTS

Light Touch (LTR) Pin Prick (PPR)

RIGHT SENSORY

Light Touch (LTR) Pin Prick (PPR)

LEFT SENSORY

Light Touch (LTR) Pin Prick (PPR)

RIGHT TOTALS (MAXIMUM)

MOTOR SUBSCORES: UER ☐ + UEL ☐ = UEMS TOTAL ☐ (MAX 25)
LER ☐ + LEL ☐ = LEMS TOTAL ☐ (MAX 25)

LEFT TOTALS (MAXIMUM)

MOTOR SUBSCORES: UEL ☐ + UEL ☐ = UEMS TOTAL ☐ (MAX 25)
LER ☐ + LEL ☐ = LEMS TOTAL ☐ (MAX 25)

NEUROLOGICAL LEVELS

1. SENSORY ☐ 2. MOTOR ☐

3. NEUROLOGICAL LEVEL OF INJURY (NLI)

4. COMPLETE OR INCOMPLETE?

5. ASIA IMPAIRMENT SCALE (AIS)

6. ZONE OF PARTIAL PRESERVATION

7. ZONE OF PARTIAL PRESERVATION

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AIS motor:

C5-T1: 5/5 MRC bilateral
L2-S1: 0/5 MRC bilateral
Score AIS motor=50/100
-Without voluntary anal
contaction

AIS sensitive:

C2-T8: 2 bilateral
T9-S3: 1 bilateral
**Score AIS sensitive (light
touch + pin prick) 86/224**
- With sensivity perianal
region

(se completează de către pacient)

(după Flanagan modificată – instrument agreat de OMS)

		INCANTAT	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, oferi 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

Admission: 80/112

(Flanagan – 1982 - citat de Burckhardt, 1993)

Scor total = _____ / 112

*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>

Spinal Cord Independency Measure (SCIM)

Zona	Item	Scor maxim			
Autoingrijire	1.Hranire	3	Mobilizare	9. mobilizare in pat/ prevenire escare de decubit	6
	2A. Imbaiere parte superioara a corpului	3		10. Transfer pat-fotoliu rulant	2
	2B. Imbaiere parte inferioara a corpului	3		11. Transfer fotoliu-rulant- toaleta-cada	2
	3A. Imbracare parte superioara a corpului	4		12. Mobilizare in interior	8
	3B. Imbracare parte inferioara a corpului	4		13. Mobilizare pe distante medii (10-100 m)	8
	4. Toaleta (ingrijire)	3		14. Mobilizare in exterior	8
	Scor total al zonei	20		15. Urcare-coborare pe scari	3
				16. Transfer fotoliu-rulant- masina	3
Aparat respirator si management sfincterian	5. Respiratie	10		17. Transfer sol-fotoliu-rulant	1
	6. Management sfincter vezica	15		Scor total al zonei	40
	7.Management sfincter intestin	10		Scor total al SCIM	100
	8. Folosirea toaletei	5			
		40			

Admission: 26/100
Total dependency

(after:[http://www.scientificspine.com/spine-scores/spinal-cord-independency-measure_\(SCIM\).html](http://www.scientificspine.com/spine-scores/spinal-cord-independency-measure_(SCIM).html))

Scala Internațională FAC – Functional Ambulation Categories

Admission : 0

Nr. crt.	Categorie	Caracterizare
0.	Nefunctionalitate	Pacientul nu poate merge sau necesita ajutor de la 2 sau mai multe persoane
1.	Dependentă – nivel 2	Pacientul necesita sprijin ferm si continuu din partea unei persoane
2.	Dependentă – nivel 1	Pacientul necesita sprijin continuu sau intermitent din partea unei persoane pentru ajutor cu echilibrul sau coordonarea
3.	Dependentă - supraveghere	Pacientul necesita coordonarea verbala sau ajutor potential din partea unei persoane fara contact fizic
4.	Independenta – pe teren plan	Pacientul poate merge independent pe teren plan , dar necesita ajutor la scari, pante sau suprafete denivelate
5.	Independenta	Pacientul poate merge independent oriunde

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„Scala de evaluare a independenței în activitățile zilnice (ADL)		
Activitate	Independență/ Autonomie: (1 punct)	Dependență: (0 puncte)
	Fără supervizare, direcționare sau asistență personală	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 dizabiliate	(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”

Admission: 0/6
Severe dependency

6 puncte: pacient independent

2 puncte: înalt grad de dependență

4 puncte: dependență moderată

0 puncte: dependență totală

* 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>

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Data F.O.....
NUME PRENUME

PLAN DE INVESTIGAȚII (alfabetic):

HEMATOLOGIE

- ☐ Hemogramă
- ☐ Nr. Reticulocite
- ☐ Trombocitemie
- ☐ VSH

EVALUARE HEMOSTAZA

- ☐ APTT (Timp de Tromboplastină Parțial Activată)
- ☐ PT (Timp de Protrombină/ Timp Quick)
- ☐ INR (International Normalized Ratio)
- ☐ Fibrinogenemie
- ☐ TMF (testul monomerilor de fibrina)
- ☐ TS (Timp de sangerare)
- ☐ TC (Timp de coagulare pe lama)
- ☐ D-dimeri (titru plasmatic)

BIOCHIMIE (parametri serici)

- ☐ Acid uric
- ☐ Albumină
- ☐ ALT/ ALAT/ GPT (Alanin-Amino-Transferază/ Transaminaza Glutamic-Piruvică)
- ☐ AST/ ASAT/ GOT (Aspartat-Amino-Transferază/ Transaminaza Glutamic-Oxalacetică)
- ☐ Amilază
- ☐ Bilirubină totală
- ☐ Bilirubina directă/ indirectă
- ☐ Calciu
- ☐ CK (Creatin-Kinaza)
- ☐ CK-MB (Creatin-Kinaza - izoenzima MB Myocardial Band)
- ☐ Colesterol
- ☐ Creatinină
- ☐ CRP (Proteina C Reactivă)
- ☐ Electroforeza proteinelor
- ☐ Fier/ Sideremie
- ☐ Fosfataza acidă
- ☐ Fosfataza alcalină
- ☐ GGT (Gama-Glutamil-Transpeptidază)
- ☐ Glucoză
- ☐ Ionogramă (Na, K, Cl)
- ☐ HDL (Heavy Density Lipoprotein)-Colesterol
- ☐ LDH (Lactat Dehidrogenază)
- ☐ LDL (Light Density Lipoprotein)-Colesterol
- ☐ Magneziu
- ☐ Proteine totale
- ☐ RISK (estimarea riscului unui viitor evenim. c.-v.)
- ☐ Trigliceride
- ☐ Uree

IMUNOLOGIE

- ☐ ASLO (Anticorpi anitistreptolizina O streptococică)
- ☐ AFP (AlfaFetoproteină)
- ☐ Complement total
- ☐ C3 (Fracțiunea 3 a complementului)
- ☐ FT4 (Fractia libera - Free - a T4)
- ☐ HbsAg (Antigen de suprafață - virusul hepatia B)
- ☐ HIV (Human Immune-deficiency virus)
- ☐ T 3 (Tri-iodo-tironină), T4 (Tetra-iodo-tironină/ Tiroxină)
- ☐ TPSA (Testul pentru antigenul specific prostatic)
- ☐ TSH (Tiro-stimulent hormon/ Tirotropină)
- ☐ VDRL (Venereal Disease Research Laboratory) test

EXAMEN DE URINĂ

- ☐ Ex. sumar de urină
- ☐ Proba Stansfeld-Webb
- ☐ Proteina Bence-Jones

MICROBIOLOGIE

- ☐ Coprocultură
- ☐ Cultură secreție/ colecție purulentă, plagă
- ☐ Ex. bacteriologic al exudatului faringian
- ☐ Ex. coproparazitologic
- ☐ Urocultură

ECG (Electrocardiografie)

EEG (Electroencefalografie)

EMG (Electromiografie)

Radiografii:

.....

.....

.....

Ecodiagnostic: Etj. Sup.: abdominal, renal, Pelvis (inclusiv lichid în fundul de sac Douglas ?)

Eco-cord

Probe ventilatorii

Oscilometrie

CT (Computer tomografie)

IRM/ RMN (Imagistică Prin Rezonanță Magnetică)

SEMNĂTURA ȘI PARAFA MEDICULUI CURANT

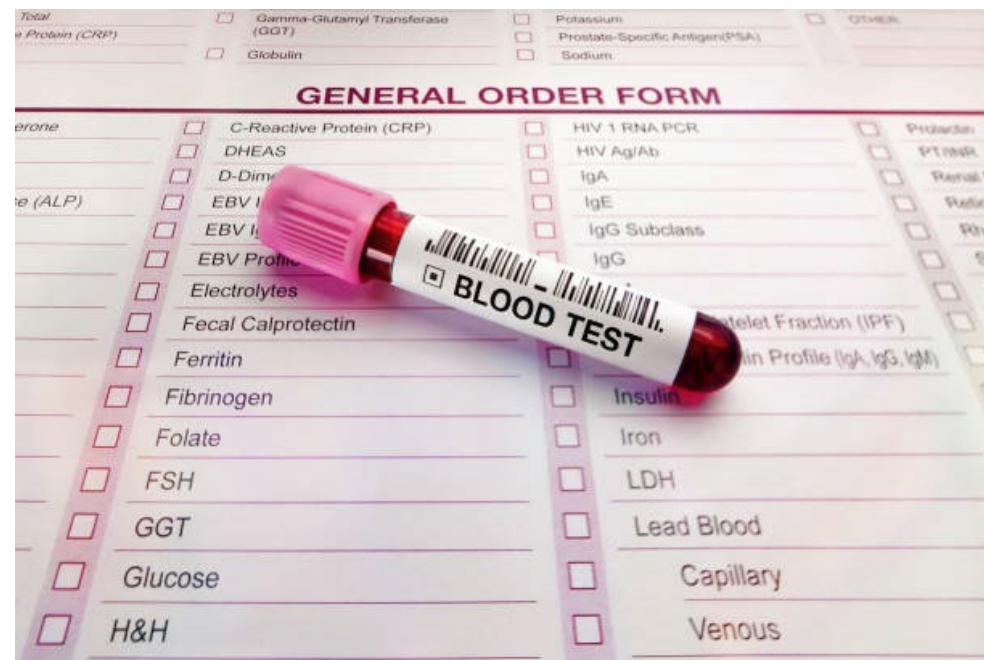
Plan-cadru de
explorare paraclinică
recomandat la
nivelul Clinicii de
Recuperare neuro-
musculară (RNM) a
Spitalului Clinic de
Urgență "Bagdasar-
Arseni" (SCUBA),
București*

* Onose G – Cap. 7.5. – Noțiuni sintetice de management neuroreabilitativ în statusuri post traumatisme cerebrale – în: Tratat de Chirurgie" (Ediția a II-a – sub red. Popescu I, Ciuce C) – Vol. VI: Neurochirurgie (Coord.: Florian I Ș, Popeată I). Editura Academiei Române (the Publishing House of the Romanian Academy), București, 2014

PARACLINICAL INVESTIGATIONS

Blood tests - admission

- NE $6.4 \times 10^9/\mu\text{L}$ ↑
- HGB 10.9 g/dL ↓
- Albumin 2,8 g/dl ↓
- K 3.0 mmol/L ↓
- Na 135 mmol/L ↓
- VSH 17 mm/h ↑
- CRP 5,3 mg/l ↑

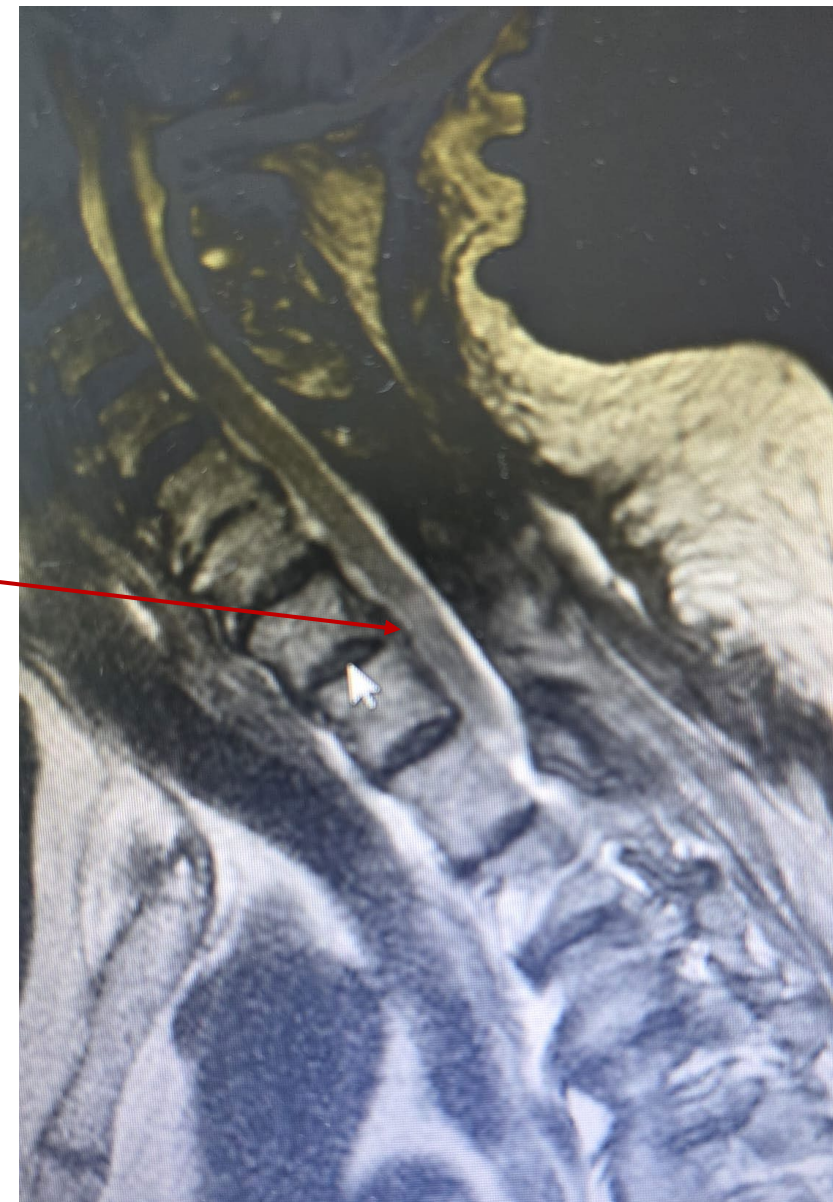


<https://www.istockphoto.com/ro/fotografii/blood-test-results>

PARACLINICAL INVESTIGATIONS

MRI cervical spine:

- Status post right C6–T1 hemilaminectomy;***
- Persistent adjacent myelopathic changes** (~12 mm cranio-caudal extent);
- C5–C6: circumferential disc-osteophytic complex** causing severe **canal stenosis** (~6.2 mm AP), bilateral foraminal narrowing and **root conflict**
- C6–C7: right paramedian disc herniation** (11 × 5 mm) with cord and right root compression



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MRI thorac-lumbar spine:

- No significant disc–radicular conflict from T6 to L4
- Thoracic spinal cord: normal size, morphology, and signal
-
- Status post multilevel (L2–L5) hemilaminectomies**
- Normal spinal alignment; normal vertebral bone marrow signal
- **Circumferential disc protrusion L4–L5, L5-S1**, indenting the dural sac with **bilateral disc–root contact**
- Conus medullaris: normal termination

POSITIVE DIAGNOSIS

Incomplete flaccid paraplegia, AIS/Frankel B, with T8 neurological level, with neurogenic bladder (urinary catheter placed in another medical unit) and bowel, post C7–T1 disc herniation operated on 17.04.2025. Status post L1–S1 spinal canal stenosis surgery (Febr 2024), and status post L4–L5 disc herniation complicated by cauda equina syndrome (Frankel D), surgery (March 2025).

Stage II arterial hypertension.

Bilateral gonarthrosis, currently in quiescent phase.

Moderate: hypoalbuminemia, inflammatory biological syndrome, neutrophilia

Mild: normocytic normochromic anemia, lymphocytosis and monocytosis, hyponatremia, hypokaliemia

INTERDISCIPLINARY CONSULTATIONS

The patient received multiple interdisciplinary consultations:

- **Neurosurgery:** periodic evaluation and guidance regarding safe mobilization
- **Neurology** – evaluation and treatment: Milgamma, 1 tb/day, Tiolin Duo, 1 tb/day, Clexane 0.6 ml, 1 vial/day s.c. during immobilization period
- **Gynecology:** Abundant, non-painful whitish-yellow leukorrhea, vaginal samples resulted Mixed colpitis (vulvovaginal candidiasis and Proteus MDR)
- **Infectious Diseases:** treatment of **mixed colpitis (MDR Proteus spp infection)** and **urinary tract infection (Klebsiella pn);**

PARACLINICAL INVESTIGATIONS

Abdominal ultrasound:

- No free fluid is present in the peritoneal cavity.
- **Steatotic liver**
- Normal
- Mildly distended, without calculi gallbladder
- Both kidneys show no hydronephrosis.
- Normal spleen
- ***Urinary bladder without calculi or intraluminal protruding masses.***

REHABILITATION PROGRAM

GENERAL OBJECTIVES

1. Fighting neuropathic pain
2. Functional objective: achieve the highest possible level of functional independence, enabling performance of activities of daily living
3. Prevention or treatment of comorbidities and complications of the underlying disease

METHODS

1. Hygienic-prophylactic, kinesiological and medical supervision treatment:

- hyposodate, hyperprotein diet, rich in vitamins and minerals, adequate hydration
- will use anti-pressure ulcer mattress
- will use anti-pressure ulcer cushion for the wheelchair; she should not remain in the wheelchair for longer than 2–4 hours at a time, with postural rest in a lying position for at least 30 minutes in between
- will manage bowel evacuation – an increase in fiber intake (psyllium) is recommended;
- urethro-vesical catheter monitoring, with replacement every 2–4 weeks or as needed and further bladder and sphincter re-education

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2. Medical treatment: (for underlying pathology and associated comorbidities)

- **Voltage-gated sodium channel blocker:** Gabaran 300 mg – neuropathic pain
 - **Anticoagulant:** Clexane 0.6 ml/day S.C. -prophylaxis of deep vein thrombosis (DVT)
 - **Antihypertensive:** Noliprel
 - **Beta-blocker:** Concor
 - **Neurotrophic agents:** Milgamma, Tiolin, Actovegin, Urimil
 - **Anti-reflux agent:** Gaviscon
 - **Antibiotic therapy** (Tagremin; Gentamicin)
 - **Urinary antiseptic:** Urinal, Urocare, Urinex, Uractiv
- Hydro-electrolytic rebalancing (KCl, human albumin, iron, hydration with Ringer's solution)

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3. Kinetic treatment

- progressive mobilization: reclined seated position in bed, an upright seated position at the edge of the bed, in a wheelchair, standing position training
- initially needed a Schanz cervical collar during mobilization

Physical objectives and methods

- Improving mobility: passive, passivo-active and active mobilization

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Increasing muscle strength: active mobilization with resistance
-Improvement of muscle tone (hypotonia): – MARO, TFNP techniques



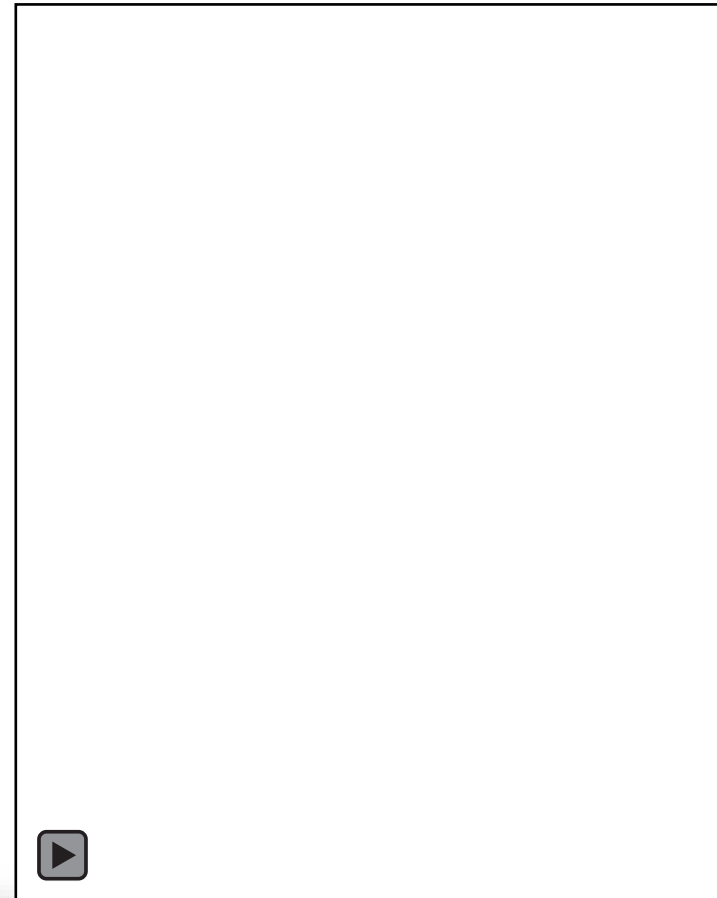
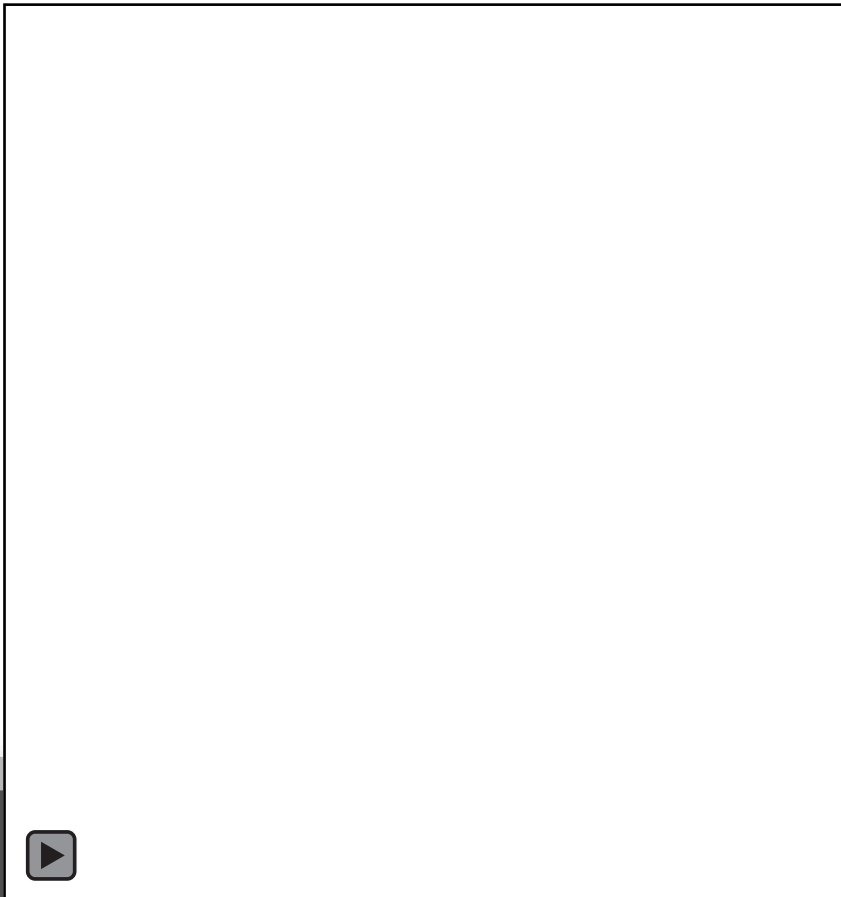
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-Retraining orthostatism



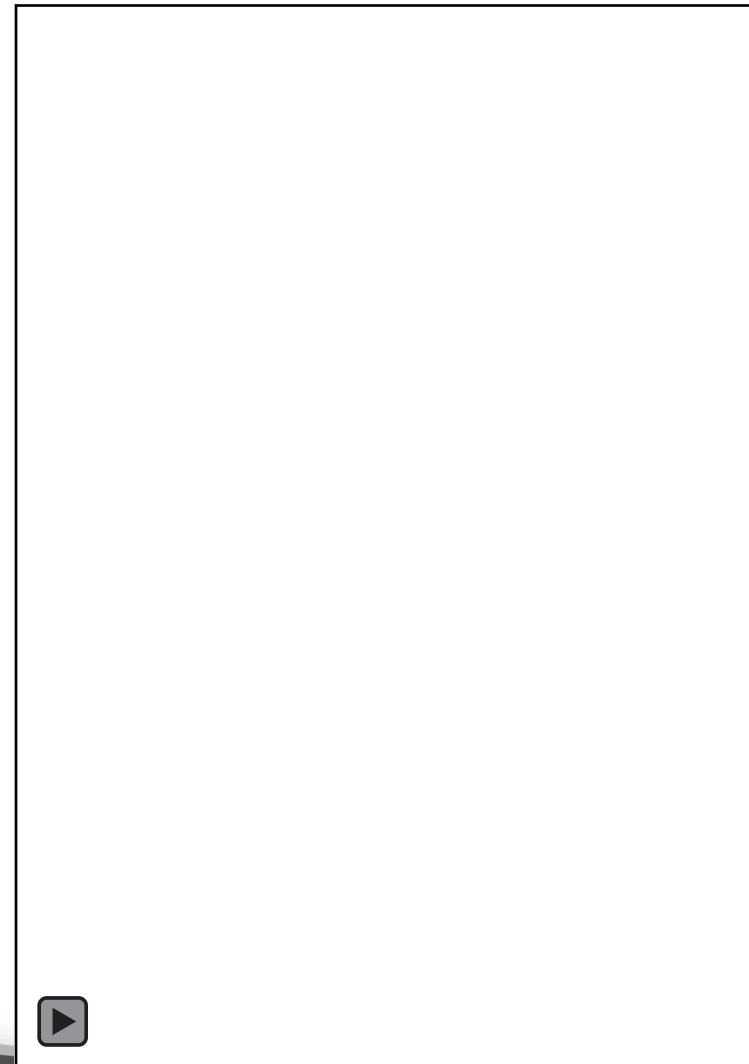
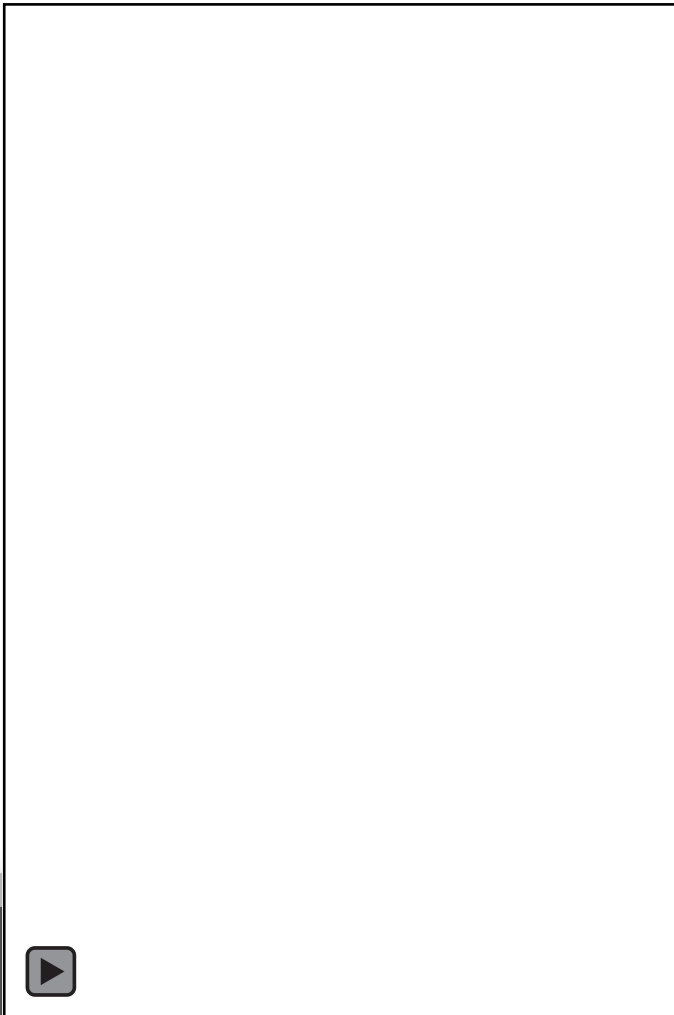
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-Gait retraining: walking between parallel bars, then using an assistive device – walker;



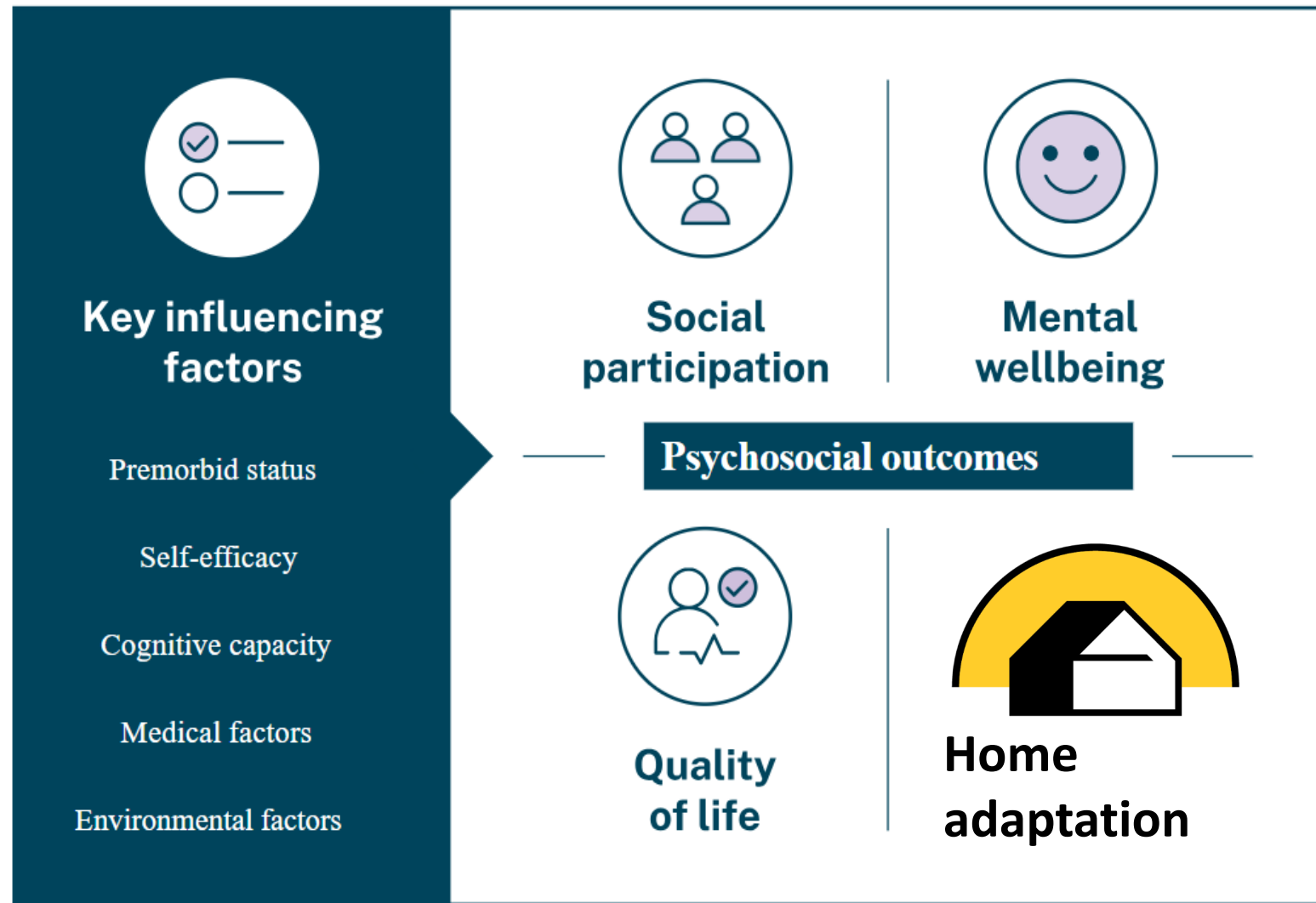
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-Gait retraining: walking on flat terrain, ascending/descending stairs



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- Social and familial reintegration, improvement of quality of life
- Home adaptation: removal of thresholds, bathtub or installation of shower cabin with support bar
- Psychotherapy



<https://aci.health.nsw.gov.au/networks/spinal-cord-injury/resources/psychosocial-care>
<https://adaptyourhomeforlife.co.uk/an-online-survey-conducted-in-spring-2020-revealed-that-20-out-of-35-disabled-people-found-filling-in-a-dfg-application-difficult-or-very-difficult/>

PATIENT EVOLUTION

During her 3-month hospitalization in our clinic, **a comprehensive rehabilitation approach** was implemented, combining individualized **nursing care** (postoperative wound care, skin protection and prevention of pressure injuries) with **kinesiotherapy** (gradual mobilization, progressive upright positioning, and task-oriented gait training) and **physiotherapy**.

PATIENT EVOLUTION

She also benefited from **neurogenic bladder management**: initially, the Foley catheter was removed, followed by intermittent catheterization, currently the ***gold standard for neurogenic bladder management***.

The patient developed an urinary tract infection (UTI), which required reinsertion of the urinary catheter and administration of antibiotic therapy according to the antibiogram.

Subsequently, intermittent catheterization was resumed, combined with **physiotherapy (CIMF for neurogenic bladder)**

PATIENT EVOLUTION

Despite the occurrence of some complications, including *urinary tract infection*, *acute colpitis*, *electrolyte imbalances*, and *persistent cervical pain*,

the patient had a favorable functional evolution, with a remarkable recovery, advancing from bedridden to standing and gait training, ultimately achieving independent ambulation without assistive devices over medium-long distances.

Sphincter function also improved, with restoration of spontaneous voiding and discontinuation of catheterization

COMPLICATIONS

- **Decubitus ulcer**
- **Vascular:** deep vein thrombosis(DVT)
- **Osteoporosis/heterotopic calcifications**
- **Infectious :** urinary tract infection
- **Neurological deficit progression**
- **Neuropathic pain**
- **Spasticity**

The context of global degenerative spinal disease increases the risk of long-term complications; multilevel degenerative disease and prior spine surgeries, the concept of a “vulnerable spinal cord”

PROGNOSIS

- *Ad vitam* – relatively favorable short- and medium-term
- *Ad functionem –favorable* , initially incomplete paraplegia AIS Frankel B with good recovery and possible evolution toward AIS D (assisted ambulation).
- *At laborem – reserved*, retired, with no prospects for re-employment

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DISCUSSIONS

- Herniation at the C7–T1 level is **rare** ($\approx 4\text{--}8\%$ of cervical disc herniations) and typically presents with *C8 radiculopathy* rather than myelopathy.
- The occurrence of severe neurological deficit (AIS B paraplegia) at this level is therefore atypical and suggests significant central cord compression, often on a ***background of pre-existing spinal canal compromise*** (multilevel degenerative spinal disease)
- Rehabilitation is expected to be a long-term process and our patient took about 3 months to ***progress from AIS Frankel B paraplegia to AIS Frankel D paraparesis*** and from Foley catheter to finally ***restoration of spontaneous voiding***

PARTICULARITIES OF THE CASE

- **Clinico-anatomical discordance**
- **Complex pathological context** with multilevel degenerative spinal disease and multiple lumbar surgical interventions for spinal canal stenosis and cauda equina syndrome.
- **Cervical myelopathy** at the C7–T1 level in the context of global degenerative spinal disease („vulnerable cord”)
- **Incomplete paraplegia AIS Frankel B** has **potential for good recovery** despite severe onset

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