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CASE REPORT

Rehabilitation of a repatriated worker with spinal cord and brain injuries in a low-resource setting: A case report

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Abstract

Background: Combined spinal cord injury and traumatic brain injury pose complex rehabilitation challenges, particularly in low- and middle-income countries where structured neurorehabilitation services and transitional care pathways are limited. Repatriated migrant workers often return without ongoing rehabilitation, increasing reliance on family caregivers and risk of suboptimal functional recovery.

Case description and management: We report a 27-year-old construction worker who sustained an incomplete L1 spinal cord injury (American Spinal Injury Association C) with mild traumatic brain injury following a fall abroad. After surgical stabilisation, he was repatriated to Bangladesh without rehabilitation and remained wheelchair dependent. On admission, he presented with paraplegia, spasticity, bowel and bladder incontinence, cognitive impairment, anxiety, and a sacral pressure ulcer. A physiatrist-led multidisciplinary team-based rehabilitation program was offered with intensive family caregiver training. His spouse was actively involved in daily care, learning pressure relief techniques, bladder management, transfer assistance, and emotional support strategies. Over ten weeks, the patient demonstrated significant improvements in motor strength, spasticity, cognitive orientation, bladder control, pain, and functional mobility, progressing to supervised ambulation. The spouse's consistent involvement and skill acquisition were central to adherence and recovery.

Conclusion: This case highlights that structured family caregiver training is a pivotal component of successful rehabilitation, enabling meaningful functional gains even in resource-constrained settings. Integrating caregivers into multidisciplinary care offers a practical, sustainable model aligned with WHO Rehabilitation 2030 priorities.

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Key messages

A coordinated multidisciplinary team, combined with active family participation, enabled meaningful recovery for a repatriated worker with spinal cord injury and traumatic brain injury in a low-resource setting. This case highlights how caregiver involvement, especially spousal support alongside structured, physiatrist-led rehabilitation team work, can bridge service gaps and significantly improve functional and psychosocial outcomes.

Introduction

Spinal cord injury combined with traumatic brain injury [1] presents substantial challenges for rehabilitation, particularly in low- and middle-income countries where coordinated neurorehabilitation services remain limited. Migrant construction workers from low- and middle-income countries often sustain injuries abroad, receive acute surgical treatment, and are subsequently repatriated without a structured rehabilitation plan [2]. Upon return, they commonly face health care problems, no care guidance, fragmented healthcare systems, minimal insurance coverage, and dependence on family caregivers who receive little formal guidance [3]. Bangladesh is experiencing a growing number of such injured returnees, yet it lacks transitional care pathways tailored to their complex needs.

The case highlights how a physiatrist-led multidisciplinary team working in close collaboration with a motivated family caregiver can facilitate meaningful functional recovery even within a low-resource environment. The report further underscores the essential role of family participation, especially spousal involvement, and advocates for coordinated team-based care and structured discharge planning in similar contexts.

Case description and management

A 27-year-old migrant construction worker sustained a fall from a second-story building at his overseas worksite. He lost consciousness immediately and was transported to a nearby hospital, where imaging and neurological assessment confirmed a mild traumatic brain injury and an unstable L1 burst fracture with spinal cord compression. He underwent intensive care management followed by posterior spinal fixation with plates and screws (Figure 1). Although inpatient rehabilitation was recommended, limited insurance support and lack of employer facilitation led to his repatriation four weeks post-surgery, still wheelchair-dependent and without ongoing care.

Figure 1 Posterior spinal fixation with plates and screws

Upon returning to Bangladesh, the patient was brought to the Physical Medicine and Rehabilitation outpatient department of a tertiary university hospital and admitted for comprehensive inpatient rehabilitation. Initial evaluation showed an L1 incomplete spinal cord injury (American Spinal Injury Association C). Lower limbs demonstrated weakness according to Medical Research Council (MRC) grade 3/5 [4] with spasticity (grade 2) [5], intact upper-limb strength (MRC 4/5), and bowel and bladder incontinence with a pain score of 5/10 in visual analog scale. A grade 2 sacral pressure ulcer was noted. Cognitive assessment indicated Rancho Los Amigos Level III [6] with confusion, inconsistent responses, and moderate anxiety. His spouse, who had accompanied him to the hospital, expressed a strong commitment to participating actively in his rehabilitation.

Given the combination of neurological, cognitive, and psychosocial impairments, a structured multidisciplinary rehabilitation plan was initiated under the supervision of a physiatrist. The core rehabilitation team included physiotherapists, occupational therapists, a rehabilitation nurse, a clinical psychologist, a medical social worker, and a nutritionist, with the patient's wife integrated as an essential caregiver within the team. Care giver focused management priorities included: a) Pressure ulcer care: daily wound dressing, repositioning strategies, and caregiver training on pressure-relief techniques, b) Psychological support: counseling for both patient and spouse focusing on adjustment, caregiver stress, and motivation and c) Caregiver empowerment: Hands-on training was emphasized throughout, with the spouse learning transfer techniques, bladder care, skin inspection, and emotional regulation strategies.

Over ten weeks, the patient demonstrated consistent improvement: lower-limb strength increased (MRC grade 4/5), spasticity reduced, and independent bladder emptying was achieved. Cognitive orientation improved significantly (Rancho Los Amigos Level VII), with a reduction in pain (Visual Analog Scale 2/10), anxiety, and behavioral disorganisation. Functionally, he progressed from dependent wheelchair mobility to supervised ambulation with assistive devices. His spouse's continuous involvement in reinforcing therapy goals, assisting in exercises, and providing emotional support proved central to his adherence and overall recovery trajectory.

Discussion

The case illustrates the value of integrated, team-based neurorehabilitation for a repatriated worker with combined Spinal cord injury combined with traumatic brain injury in a resource-constrained setting. Mild traumatic brain injury complicated the patient's presentation, affecting cognition, emotional stability, and functional learning [1]. International guidelines recommend coordinated post-acute rehabilitation for such cases [7], yet access is limited in many low- and middle-income countries. In Bangladesh, physiatrist-led rehabilitation units exist, but structured inpatient programs and community follow-up remain insufficient (12.5%) [8].

Nobi MG | Bangabandhu Sheikh Mujib Medical University Journal | 2025;18(4):e85222

A key strength of this case was the continuity of multidisciplinary care—addressing pressure injury, spasticity, bladder and bowel dysfunction, mobility limitations, and cognitive issues simultaneously. Equally critical was the active participation of the patient's spouse, whose presence provided psychological security, consistent reinforcement of therapy goals, and reliable caregiving support [9]. Evidence from low- and middle-income countries rehabilitation literature consistently affirms the impact of family engagement on functional outcomes, therapy adherence, and long-term reintegration [10].

This case demonstrates that even in low-resource contexts, functional gains are achievable when rehabilitation is coordinated, patient-centered, and family-supported.

Conclusion

This case shows that functional recovery after complex neurological injury is achievable in low-resource settings through coordinated multidisciplinary rehabilitation and active family participation. The physiatrist-led team addressed physical, cognitive, and psychosocial needs, while the patient's spouse provided consistent caregiving and emotional support. Together, the team's work strengthened the patient's functional gains and reintegration potential, demonstrating a practical, sustainable model aligned with the WHO Rehabilitation 2030 goals.

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Conflict of interest

I do not have any conflict of interest.

Data availability statement

I confirm that the data supporting the findings of the study will be shared upon reasonable request.

Supplementary file

None

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