

Psychiatric Dimensions of Phantom Limb Syndrome: A Case Report Highlighting Comorbid Major Depression and Somatoform Interplay

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Abstract: Phantom Limb Syndrome (PLS) is frequently approached as a strictly neurological or surgical complication resulting from peripheral nerve trauma and subsequent central cortical remapping. However, the profound bidirectional dynamic between somatic phantom sensations and severe psychiatric comorbidities is regularly overlooked in baseline clinical settings. This case report describes a 42-year-old male who developed chronic, treatment-resistant Phantom Limb Pain (PLP) after a traumatic below-elbow amputation. The persistent pain was followed by severe Major Depressive Disorder (MDD), passive suicidal ideation, and post-traumatic panic symptoms. The clinical progression reveals how emotional distress directly accentuates central pain amplification pathways. A multidisciplinary framework combining dual-action neuro-psychopharmacology (Duloxetine and Pregabalin), structured Cognitive Behavioural Therapy (CBT), and Mirror Visual Feedback (MVF) yielded comprehensive symptomatic remission. This report serves an educational purpose by defining concrete management pathways for upcoming medical professionals navigating psychosomatic anomalies.

Key words: Peripheral nerve trauma, Cognitive Behavioural Therapy, Mirror Visual Feedback, Mental Status Examination, psychological amplification .

Introduction: Phantom Limb Syndrome [1] refers to the persistent perception of sensory or kinetic feedback emanating from an anatomical limb that has been surgically resected or traumatically avulsed. While neurobiological hypotheses explicitly document maladaptive neuroplasticity and thalamocortical reorganization as primary drivers, clinical evidence confirms that psychological states heavily modulate the threshold and severity of these phantom phenomena. In the Indian medical education landscape, integrated training bridging psychiatry, orthopaedics, and physical rehabilitation remains highly segregated. This case study bridges that diagnostic gap, mapping out how affective disorders amplify somatic distress and providing clear

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guidelines for clinicians to identify, evaluate, and counter this distressing condition.

Patient History: A 42-year-old male presented to the psychiatric outpatient department presenting with a 6-month history of debilitating, unremitting 'crushing and burning' sensations localized to a missing right forearm. The patient had undergone a right below elbow amputation 12 months prior following a high-impact motor vehicle accident. Initial post-operative healing was surgically uneventful, but within three weeks, the patient experienced an intrusive perception that his amputated right forearm was rigidly clenched in a painful, unnatural inversion.

Psychiatric Progression: Over the subsequent months, the severity of the phantom sensations scaled linearly with rising stress levels. The patient began avoiding physical rehabilitation, experienced acute panic flare-ups when encountering visual triggers of his residual stump, and developed profound sleep fragmentation (sleeping less than 3 hours per night). He described a complete loss of bodily integrity, stating he felt 'anatomically broken', leading to profound social isolation, self-neglect, and passive expressions of death wishes.

Mental Status Examination (MSE) :

General Appearance & Behavior: Disheveled appearance, poor self-care, minimal eye contact. The patient sat rigidly, guarding his stump defensively from any visual or physical contact.

Speech: Hypophonic, slow, prolonged reaction latency, and monotone delivery.

Mood & Affect: Mood reported as 'hopeless and completely depleted'; affect was profoundly restricted, dysphoric, and highly congruent with thought parameters.

Thought Content: Marked by severe somatic preoccupations focused on the clenching phantom arm, ideas of worthlessness, and passive suicidal ideation without active planning or intent. No formal thought disorders, delusions, or perceptual disturbances (outside the somatic phantom phenomenon) were present.

Cognition & Insight: Sensorium clear; attention and concentration mildly impaired secondary to pain-driven distraction. Orientation and memory intact. Insight was graded at Level 4 (Intellectual Insight: recognizing illness and pain origin but attributing it exclusively to an unresolvable structural deficit rather than realizing psychological amplification).

Diagnostic Formulation & Metric Assessment

The clinical presentation supported a multi-layered diagnostic formulation meeting ICD-11 criteria for Major Depressive Disorder (Severe Episode without

Psychotic Symptoms), comorbid Post-Traumatic Stress Disorder (PTSD) stemming from the vehicle accident, and Somatic Symptom Disorder. A comprehensive metric analysis was conducted at baseline to track treatment efficacy accurately.

Multidisciplinary Therapeutic Strategy

An integrated bio-psycho-social protocol was deployed to simultaneously break down the central pain hypersensitivity and the underlying emotional distress.

Pharmacological Intervention

1. Duloxetine (Serotonin-Norepinephrine Reuptake Inhibitor - SNRI): Initiated at 30 mg/day and up-titrated to 60 mg/day. Duloxetine was strategically selected to achieve a dual objective: addressing the severe depressive episode while reinforcing descending monoaminergic inhibitory pain pathways within the spinal cord.

2. Pregabalin (Gabapentinoid): Started at 75 mg/day at bedtime, gradually titrated to 150 mg/day. This served to modulate alpha-2-delta subunits of voltage-gated calcium channels, effectively reducing the release of pro-nociceptive neurotransmitters (such as glutamate and Substance P) from hyper-excited afferent neurons in the residual limb.

Psychotherapeutic & Somatosensory Interventions [2][3]

1. Mirror Visual Feedback (MVF): The patient participated in structured mirror therapy sessions for 15 minutes daily. By placing a vertical mirror between his upper extremities, the patient viewed the reflection of his intact left limb moving fluidly, creating a powerful visual illusion that the missing right arm was executing normal, painless motor commands. This effectively resolved the visual-proprioceptive mismatch locked within the sensorimotor cortex.

2. Cognitive Behavioral Therapy (CBT) for Chronic Pain: Focused on cognitive restructuring regarding somatic catastrophes. Behavioral interventions included progressive muscle relaxation (PMR) tailored around the non-amputated structures and systematic desensitization to counter the trauma-induced stump avoidance behavior.

Clinical Outcomes & Progress[4][5]

Following six months of consistent multidisciplinary adherence, the patient demonstrated profound clinical improvements:

- **Pain Mitigation[3]:** Subjective VAS pain scores dropped substantially from 8.5/10 to a manageable 3.0/10. The patient described the sensation shifting from a 'crushing

claw' to a transient, non-painful awareness.

- **Psychiatric Stabilization:** Repeat HADS testing revealed scores within normal thresholds (Depression: 6, Anxiety: 5). Passive suicidal ideation completely resolved within the first 6 weeks of SNRI optimization.
- **Functional Rehabilitation:** With the reduction of somatic fear and panic symptoms, the patient successfully achieved full prosthesis assimilation, returning to independent community ambulation and part-time employment.

Educational Value & Core Takeaways

For medical students, residents, and practitioners, this case highlights essential clinical axioms:

1. **Pain is Psychosomatic:** Chronic pain states like PLS cannot be treated in a silo. Emotional distress alters central pain processing, rendering standard peripheral analgesics ineffective.[4]
2. **Early Multidisciplinary Referral:** Post-amputation protocols must integrate mandatory psychiatric screenings. Early deployment of non-invasive tools like Mirror Visual Feedback alongside SNRIs can prevent long-term functional disability.
3. **Targeting Cortical Mismatch:** Interventions like MVF demonstrate that retraining the brain's spatial maps is just as vital as chemical modulation when resolving complex phantom phenomena.

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