

# Getting Back on Their Feet: A Single Case Study

Chetna Prakash Waradkar<sup>1</sup>, Shilpshree Prashant Palsule<sup>2</sup>

<sup>1</sup>Master of Occupational Therapy, Occupational Therapy School & Centre, Seth G.S. Medical College & KEMH, Mumbai, Maharashtra, India.

<sup>2</sup>Assistant Professor, Occupational Therapy School & Centre, Seth G.S. Medical College & KEMH, Mumbai, Maharashtra, India.

Corresponding Author: Chetna Prakash Waradkar

## ABSTRACT

A 56 years old female, operated case of D6 Koch's spine with complete paraplegia was re-admitted in a tertiary care hospital, post discharge 7 months for further rehabilitation. Her functional performance was assessed using International Classification of Functioning (ICF) framework. Problem areas were assessed. Client centred approach used while planning therapy program. Contextual factors were taken in consideration. Modifications were suggested in Basic and Instrumental activities of daily living (BADL and IADL) using Compensatory and adaptive approach & biomechanical frame of reference. Post intervention patient showed improvement in spinal cord independence measure (SCIM) scores and performance & satisfaction on COPM. As per ICF improvement is seen in the domains of Body function, Activity & participation, Products & technology. The results suggest that early focus on IADL activity might be helpful to improve overall function.

**Keywords:** COPM, ICF, SCIM, Spinal cord injury

## INTRODUCTION

Tuberculosis is an extremely infectious disease caused by the bacterium *Mycobacterium tuberculosis*. It's one of the top-10 causes of death worldwide. Koch's spine is described as clinical and radiological manifestation of a sequence of generalised weakness, malaise to symptom free period and sudden leap of vertebral body destruction, collapse to kyphotic deformity with or without neurological encroachment. The incidence of

neurological involvement in Pott's disease is 10-20% in highly developed nations and 20-41% in underdeveloped countries, particularly if thoracic spine is involved<sup>1</sup>.

Among overall cases commonest involvement is seen in dorsal region of spinal cord (42%). The Tuberculosis (TB) disease has immense impact on physical, psychological, economic and social well-being of an individual. It is desired that the patient with any kind of TB disease should lead a respectable and happier life during their course of TB treatment. Early diagnosis and appropriate medical and/or surgical treatment together with a rehabilitation program will improve the life quality of patients with spinal tuberculosis<sup>2</sup>. Currently, the quality of life (QOL) is an important indicator to assess the well-being of a person and there is paucity of such information among TB patients<sup>3</sup>.

## CASE HISTORY

56 years old female resident of Diva was apparently alright till January 2019 when she experienced gradual onset of backpain, unable to get up from squat position, fatigue. Patient was shown to various physician and managed on medications; which gave her temporary relief. Patient was admitted to a tertiary care hospital for further management. After investigations she was diagnosed as a case of D6 Koch's spine with complete paraplegia and operated for same (:Posterior instrumentation with pedicle screw fixation 25th February 2019). Patient was discharged

post-surgery with home program (passive mobilization, in bed mobility). She was re-admitted again after 7 months of surgery for rehabilitation, and was referred to Occupational therapist for rehabilitation.

Patient was evaluated using

International classification of functioning, disability and health (ICF)

Canadian Occupational Performance Measure (COPM)

Spinal cord independence measure (SCIM)

Patient presented with functional difficulties in the area of

Self-care (grooming, dressing lower extremity, toileting)

Mobility (in bed, indoor, outdoor)  
Transfers skills.

**Evaluation:** Using the above-mentioned tools following is the evaluation pre- and post-intervention & OPD follow up. Baseline evaluation was done in first week of September 2019, Weekly assessment done till October 2019 (for 5 weeks) and one OPD follow up was done one month post discharge.

**ICF** (Table 1 to table 4): International classification of functioning, disability & health

**Table 1 : List of body functions**

List of body functions	Qualifiers		
	pre	post	Opd
<b>b 1. Mental functions</b>			
b130 energy and drive function	3	2	1
b134 sleep	3	1	0
b152 emotional functions	3	1	0
<b>B 7. Neuromusculoskeletal and movement related functions</b>			
b 710 mobility of joint	3	2	2
b 730 muscle power function	3	1	1
b 740 muscle endurance function	2	1	1
b 770 gait pattern functions	4	2	2
b780 sensations related to muscle and movement function	2	1	1

**Table 2 list of body structures**

List of body structure	Extent of impairment		Nature of the change	
	pre	post	Pre	post
<b>S1 Structure of the nervous system</b>				
<b>S120</b> spinal cord and related structures	3	3	8	8

**Table 3 : Activity & performance domain**

	A & P Domain	Extent of participation restriction ( performance / capacity )		
		PRE	POST	OPD F/U
<b>d 4.Mobility</b>				
	d410 changing basic position	3/8	1/8	1/8
	d415 maintaining a position	3/8	1/8	1/8
	d420 transferring oneself	3/8	1/8	1/8
	d450 walking	4/8	3/8	2/8
	d460 moving around in different locations	4/8	3/8	2/8
	d465 moving around using equipment	4/8	2/8	1/8
<b>d 5.self -care</b>				
	d510 washing body parts	4/8	3/8	2/8
	d540 dressing	3/8	1/8	1/8
<b>d 6.domestic life</b>				
	d 630 Preparing meals	8/8	8/8	3/8

**Table 4 : Product & technology**

<b>E1. PRODUCTS AND TECHNOLOGY</b>	Pre	Post	OPD F/U
e 120 Products and technology for personal indoor and outdoor mobility and transportation	2	2	1
e 150 Design, construction and building products and technology of buildings for public use	2	2	1
e 155 Design, construction and building products and technology of buildings for private use	2	2	1+

**SCIM and COPM**

**Table 5 : Scores of COPM ( Canadian occupational performance model )  
SCIM ( Spinal cord independence measures )**

Scales	Scores Pre intervention		Scores Post intervention		Scores post intervention 19/11/2019	
	Performance	Satisfaction	Performance	Satisfaction	Performance	Satisfaction
Canadian occupational performance model						
<b>SELF CARE-</b>						
Bathing-						
Hygiene	1	1	3	3	3	3
<b>FUNCTIONAL</b>	1	1	2	3	3	4
<b>MOBILITY-</b>						
Transfers						
Indoors	1	1	2	3	3	3
<b>Productivity</b> -cooking	1	1	2	2	3	3
Total score	1	1	1	1	2	2
	5/50	5/50	10/50	12/50	14/50	15/50
<b>Spinal cord independence measure</b>	48/100		63 /100		70 /100	

## Intervention

The programme was designed using client centred approach. Baseline evaluation was done on the first day using the COPM, SCIM and ICF model. Intervention program was formed to focus on problem areas found after evaluation. Using biomechanical frame of reference, cognitive behaviour frame of reference. It was 5 weeks graded exercise program which included

Patient & family education, psychological upliftment,  
Breathing exercises  
In bed mobility,  
Core & abdominals activation, strengthening  
Lower & upper extremity strengthening  
Transfer (supine to sit, sit to stand)  
Balance training & Gait training.

Timelines	Intervention
1 <sup>st</sup> week	Patient and relative's education and counselling. Psychological upliftment of the patient Positioning in (supine, sitting) Safe transfer techniques (supine-side lying -sitting) Education about donning and doffing of a brace Breathing exercises General body exercises and stretching (TA & hamstring) (active & passive)
2 <sup>nd</sup> week	Along with continuation of week one protocol Lower extremity strengthening exercises Core and abdominal muscle activation and strengthening . Exercises to improve sitting balance Exercises to improve quadriceps control
3 <sup>rd</sup> week & 4 <sup>th</sup> week	Continuation of above-mentioned program Sit to stand transfers Standing with support Improving standing balance Walking with maximal assistance with walker
5 <sup>th</sup> week	Waling with walker with minimal support Gait training Home programme.

## DISCUSSION

We used ICF model to evaluate patient's functional skills and factors affecting the condition.

Post intervention on ICF improvement is seen in following domain

Table 1 Body function - mental functions, neuromusculoskeletal & movement related functions might be because of the intervention which included holistic approach. Table 3 Activity & participation – mobility, selfcare, domestic life .Table 4 Products & technology in this design ,construction technology of private building acted as facilitator when patient went back to her home environment .

From the Table 5 Client's satisfaction improved from 5 to15 and patient's performance improved from 5 to 14 on Canadian occupational performance model. SCIM score also improved post intervention which indicated that improvement in the functions.

In a busy acute care set-up, more focus is given on the evaluation of physical aspects of a patient, their social, psychosocial & environmental aspects may not be taken into consideration. In this case study, since we addressed to the patients' need and functional capabilities using the COPM and ICF framework, we were able to get a better insight to the patients' functioning abilities. At time of discharge, the patient was still improving in terms of muscle strength, however, was able to stand up on her own, and with a much more satisfied and positive attitude to accomplish her life roles.

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