



# **Physiotherapeutic Rehabilitation of a 48-Year Male with Buccal Mucosa Carcinoma of Squamous Cell: A Case Report**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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**Case Study**

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## **ABSTRACT**

Buccal mucosa carcinoma of squamous cell is an uncommon kind of oral cavity cancer that is known to be dangerous. It's also linked to a high probability of local regional recurrence, and it's more likely in persons who chew tobacco and/or smoke, whether or not they drink alcohol. A 48-year patient is an elderly man who works as a farmer, mesomorphic built with right-hand dominance came to the tertiary care hospital with complaints of painful ulcers in upper left Jaw's front portion, which was relatively small initially and further increases to 6 x 4 cm approx., since last 4 months. Patient was complaining of pain, difficulty in mastication and manipulations etc. He has history of kharra chewing and tobacco chewing since last 10 years. With these complaints patient has come to the oral surgery department with buccal mucosa skin involvement and underwent surgery as compartmental resection of lesion, Modified Radical neck dissection and segmental mandibulectomy. Following surgical procedure patient has complaints of discomfort, limitation of movements at the operated site, chest pain, and limited mouth opening. For these complaints, programmed physiotherapy treatment was given to the patient which mainly concentrates on mouth opening and increasing range of motion of affected side.

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## 1. INTRODUCTION

The most common kind of oral cancer is oral carcinoma of squamous cell, which accounts for the great majority of cases [1]. Whereas the oral cancer is quite common, prevalence of oral cancer varies widely throughout the world, it is generally agreed that the oral cavity is the 6th to 9th most frequent anatomical site for cancer, depending primarily on the nation (and even geographical area in certain countries) and gender of the patients [2].

Chewing tobacco, kharra, and consuming alcohol are all known risk factors for oral carcinoma of squamous cell [3]. Oral carcinoma of squamous cell is a condition that affects adults and the elderly, with the most frequent clinical manifestation being an ulcerated tumor with a necrotic core region and raised rolling borders [2,1]. The most common postsurgical oral problems after any surgical technique includes pain, infection, swallowing problems, speech difficulties etc. The most fundamental concept of surgical oncology is to remove the primary tumor while leaving a broad margin of healthy tissue [3,4].

For post operative rehabilitation, with oral or buccal mucosa carcinoma of squamous cell, physiotherapy plays an important role, which

includes various techniques such as mouth opening exercises, shoulder shrugs and shoulder mobility exercises, head and neck mobility exercises, pursed lip breathing exercises, thoracic expansion exercises, bilateral upper and lower limb strengthening exercises etc. [5]. It helps to prevent and/or treat a variety of side effects that might occur as a result of cancer treatment. Physiotherapy therapeutic interventions assist cancer survivors, particularly postoperatively, in regaining normal movement range and thereby enhance the standard of living [1,6].

## 2. PATIENT INFORMATION

A 48 year patient is an elderly man who works as a farmer, mesomorphic built and right-hand dominance came to the tertiary care hospital with complaints of painful ulcers in upper left Jaw's front portion, which was relatively small initially and further increases to 6 x 4 cm approx., since last 4 months. Pain was dull aching, periodic, and localized in character, with a slow start. Pain got aggravates on consumption of hot and spicy food, mastication and manipulations and relieves by analgesics. With that, patient was also complaining of increased salivation and difficulty in mastication. Patient has given a history of 7-8 times tobacco chewing each day, and alcohol consumption from last 10 years.

### 2.1 Clinical Findings

Patient had undergone biopsy, and it shows carcinoma of left buccal mucosa (T4a N1 Mx) in oral cavity.

### 2.2 Diagnosis

Oral cavity carcinoma of squamous cell.

### 2.3 Timeline

Patient was undergone for surgical procedures such as compartmental resection of lesion, Modified radical neck dissection on left side, segmental mandibulectomy on 08-09-2021.

**Chart 1. Surgery timelines**

Date of surgery	08-09-2021
Day 1- physiotherapy treatment	09-09-2021
Day 7- physiotherapy treatment	16-09-2021

On the first postoperative day (POD), physiotherapy evaluation was performed, and the patient complained of discomfort, limited movements of the upper extremities, swollen areas of the neck and shoulders, eating difficulties, limited mouth opening, drowsiness, muscle pain.

## 2.4 Diagnostic Assessments

**Table 1. Musculoskeletal examination of patient**

Variable	Movement	Post operative Day 1	
		Right side	Left side
Pain		8/10	
Range of motion (cervical)	1.Fexion	35	30
	2.Extension	30	25
	3.Lateral flexion	30	30
Range of motion (upper limb)	1.Shoulder flexion	135	120
	2.Shoulder extension	45	45
	3. Abduction	90	70
	4. Adduction	30	25
	5. Medial rotation	40	85
	6. Lateral rotation	50	30
Temporomandibular joint (cm)	Mouth opening	2	
Manual Muscle Testing (MMT)	1. Cervical flexors	2/5	2/5
	2. Cervical extensors	2/5	2/5
	3. Side flexors	3/5	2/5
	4. Shoulder flexors	3/5	2/5
	5. Shoulder extensors	3/5	2/5
	6. Abductors	3/5	2/5
	7. Adductors	3/5	2/5
	8. Medial rotators	2/5	2/5
	9. Lateral rotators	2/5	2/5

## 2.5 Therapeutic Interventions

### 2.5.1 Treatment protocol

#### 1. WEEK 1:

- Day 1:

Chest physiotherapy: deep breathing exercises  
10 repetitions 1 set  
Bed side mobility

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
Active assisted shoulder exercises  
(10 repetitions 3 sets)

Strength: Toe curls

Ankle toe movements  
Heel slides  
Ball squeeze  
10 repetitions 3 sets

- Day 2:

Chest Physiotherapy: Deep breathing exercises

Bed side mobility including supported sitting and standing

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
Active assisted shoulder exercises  
(10 repetitions 3 sets)

Strength: Toe curls

Ankle toe movements  
Heel slides  
Ball squeeze  
(10 repetitions 3 sets)

- Day 3:

Chest Physiotherapy: Deep breathing exercises

Bed side mobility including standing without support and ambulation

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
Active assisted shoulder exercises  
(10 repetitions 3 sets)

Strength: Toe curls

Ankle toe movements  
Heel slides  
Ball squeeze  
(10 repetitions 3 sets)

- Day 4:

Chest Physiotherapy: Deep breathing exercises

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
Active assisted shoulder exercises  
(10 repetitions 3 sets)

Strength: Toe curls  
 Ankle toe movements  
 Heel slides  
 Ball squeeze  
 (10 repetitions 3 sets)

- Day 5:

Chest Physiotherapy: Deep breathing exercises

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
 Active assisted shoulder exercises  
 (10 repetitions 3 sets)

Strength: Toe curls  
 Ankle toe movements  
 Heel slides  
 Ball squeeze  
 (10 repetitions 3 sets)

- Day 6:

Chest Physiotherapy: Deep breathing exercises

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
 Active assisted shoulder exercises  
 (10 repetitions 3 sets)

Strength: Toe curls  
 Ankle toe movements  
 Heel slides  
 Ball squeeze  
 (10 repetitions 3 sets)

- Day 7:

Chest Physiotherapy: Deep breathing exercises

ROM: Mouth opening and closing exercises

Cervical ROM exercises  
 Active assisted shoulder exercises  
 (10 repetitions 3 sets)

Strength: Toe curls  
 Ankle toe movements  
 Heel slides  
 Ball squeeze  
 (10 repetitions 3 sets)

### 3. RESULTS

**Table 2. There is significant increase in mouth opening, ROM of cervical and shoulder joint in patient undergoing physiotherapy treatment**

Variable	Movement	Pre-treatment Day 1		Post-treatment Day 7	
		Right side	Left side	Right side	Left side
Pain (On NPRS: 0 to 10)		8		3	
Range of motion (cervical)	1.Fexion	35	30	70	65
	2.Extension	30	25	80	80
	3.Lateral flexion	30	30	48	45
Range of motion (upper limb)	1.Shoulder flexion	135	120	160	155
	2.Shoulder extension	45	45	70	70
	3. Abduction	90	70	130	90
	4. Adduction	30	25	35	30
	5. Medial rotation	40	85	70	90
	6. Lateral rotation	50	30	60	45
Temporomandibular joint (cm)	Mouth opening	2		5	
Manual Muscle Testing (MMT) (Grade: 0 to 5)	1. Cervical flexors	2	2	3	3
	2. Cervical extensors	2	2	3	3
	3. Side flexors	3	2	3	3
	4. Shoulder flexors	3	2	3	3
	5. Shoulder extensors	3	2	3	3
	6. Abductors	3	2	3	3
	7. Adductors	3	2	3	3
	8. Medial rotators	2	2	3	3
	9. Lateral rotators	2	2	3	3

#### 4. DISCUSSION

This case report details the patient's entire physical rehabilitation requirements after undergoing surgery for buccal mucosa carcinoma of squamous cell which includes composite resection of lesion, segmental mandibulectomy, MRND of left side and reconstruction under PMMC flap. Survivors with cancer face a high rate of morbidity due to different therapies including surgery radiation and chemotherapy. Positive outcomes from rehabilitation after surgical activities have been reported, suggesting that they enhance the standard of living in these patients. The findings of this study revealed improvements in mouth range of motion using Thera-bite range of motion scale, shoulder and cervical movement using goniometer, and strength of muscles using manual muscle testing [7]. Post operative physiotherapy treatment also improves the standard of living of patient, this has been assessed by quality of life scale. The QOLS was initially a 15-item questionnaire that assessed five different aspects of standard of living: interpersonal connections, material and physical well-being, interpersonal connections, social, communal, and civic engagement, personal development and fulfilment, and enjoyment [8].

Physical therapy has been found to promote physical and functional well-being by relaxing muscles, developing joint flexibility, reducing tiredness, increasing awareness of changed posture, walking, and breathing patterns, managing problems swallowing and mouth opening, and so on. Used difficulty in eating and talking [9,10]. In palliative care, the therapeutic consequences of physiotherapy treatment techniques to reduce cancer pain have been thoroughly established. Physiotherapy for the chest, muscle stretching, and mobility exercises have been identified as the most effective rehabilitation approaches [11]. Multidisciplinary rehabilitation including physiotherapy should be considered an intrinsic element of the whole care of cancer survivors for reducing further complications and improving quality of life of patient

#### 5. CONCLUSION

The value of a well-designed physiotherapy management during the inpatient phase for buccal mucosa carcinoma postoperative patients in terms of pain reduction, progress in upper limb and cervical movement, mouth movements are

highlighted in this case study. However, clinical studies in a comparable clinical setting employing a similar therapist-designed procedure might support the findings of the investigation.

#### CONSENT AND ETHICAL APPROVAL

As per international standard or university standard guideline Patient's consent and ethical approval has been collected and preserved by the authors.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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