

# Knee Pain Following Total Knee Arthroplasty Secondary to Cervical Spondylotic Myelopathy

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**ABSTRACT:** We report the case of a 78-year-old woman who presented with a 14-month history of progressive bilateral knee spasms and pain and reduced quality of life. The patient had undergone bilateral total knee arthroplasty after a diagnosis of osteoarthritis and failure of conservative treatment. Symptoms reappeared 8 months postoperatively, and the patient was diagnosed with cervical spondylotic myelopathy. Consequently, she was successfully treated with chiropractic rehabilitation which involved scraping therapy, spinal manipulation, and intermittent motorized traction to relieve cervical nerve pressure. Thus, cervical spondylotic myelopathy should be considered in the differential diagnosis of cases of persistent knee pain.

**KEYWORDS:** Cervical spondylotic myelopathy, chiropractic, knee pain, knee arthroplasty, knee rehabilitation.

## Introduction

Recent studies have identified that up to 30% of patients are not satisfied with the surgical results of total knee arthroplasty (TKA) [1], and this discontent is directly tied to the patients' symptoms and perceived diminished quality of life after TKA [1].

Moreover, quality of life is influenced by many physical, behavioral, social, and psychological aspects, which are not taken into consideration by the functional outcome ratings [1].

In some cases, the persistence of symptoms after TKA may be attributed to the presence of another underlying etiology.

Nociceptive knee pain is often associated with knee osteoarthritis, while neuropathic pain has a different origin and may be linked to the development of persistent postoperative pain [2].

Compression of the spinal cord can cause pain to radiate below the affected segment.

It can manifest as sciatic neuropathy or knee discomfort, and the pain caused by cervical spondylotic myelopathy can cause delays in diagnosis and therapy, as well as needless medical and surgical therapies [3].

Herein, we report an atypical case of post-TKA pain with neurological symptoms.

Cervical spondylotic myelopathy was eventually confirmed as the etiology of localized knee pain resulting from spasticity and repetitive knee flexion.

We reviewed the literature for similar scenarios and briefly reviewed the diagnosis and management of cervical spondylotic myelopathy.

## Case Report

A 78-year-old woman presented with a 14-month history of progressive bilateral knee tightness and pain, particularly on the left side after bilateral TKA.

Prior to the surgery, the patient complained of a 24-month history of severe knee pain and could not walk properly.

She was diagnosed with bilateral osteoarthritic knees and received rehabilitation and medication for six months with no significant improvement.

Subsequently, the patient underwent uncomplicated bilateral total knee arthroplasty through a medial parapatellar approach.

Postoperative physiotherapy was prescribed, and the patient partially recovered within 6 months.

Her post-TKA evaluation was satisfactory with EOS® imaging (Figure 1).

After 8 months of rehabilitation, the patient experienced severe knee pain.

Gait instability and lower limb weakness progressed over the next 6 months despite repeated medication and exercise rehabilitation approaches.

The patient had difficulty handling household work, such as washing dishes, and difficulty sleeping due to leg muscle spasms at night.

She sought 5 different orthopedic consultations due to recurrent muscular spasms, restricted flexion and extension of the knee, and concomitant posterior knee discomfort.



**Figure 1. EOS® imaging evaluation showing satisfactory bilateral knee arthroplasty in a 78-year-old female patient.**

Psychological illness was ruled out by a psychiatrist, and the patient was referred to chiropractic rehabilitation to manage the knee pain.

At the chiropractic consultation, the patient exhibited a slow, irregular gait.

The peak pain intensity of the patient's knee spasm was 8 out of 10 on an 11-point numeric pain rating scale.

The patient's clinical examination was unremarkable, and the patient's laboratory tests

(complete blood count, liver function tests, kidney function tests) showed normal results.

Physical examination revealed tenderness to palpation in the upper trapezius muscles, reduced muscle strength of the left elbow flexors and wrist extensors, hypertonicity of the left hamstring muscles, and reduced muscle strength.

Her right knee was restricted to 125° (normal range, 140°) in flexion and 125° in extension (normal range, 135°), and the left knee was restricted to 130° during flexion (normal, 140°) and 120° during extension (normal, 135°).

The Hoffmann test was positive for the left upper extremity.

Motor function measurements of the left upper and lower limbs were graded as 4/5 using a dynamometer.

Cervical magnetic resonance imaging (MRI) revealed spondylosis with grade I degenerative spondylolisthesis at multiple segments, and C2/C3 and C3/C4 disc herniation causing central spinal canal stenosis, as well as myelomalacia and cord edema (Figure 2).



**Figure 2. Magnetic resonance imaging of a 78-year-old female patient complaining of persistent pain after bilateral knee arthroplasty. Disc osteophyte complex is seen at C2/3 and C3/4, causing marked central canal stenosis. Cord edema and moderate right foraminal narrowing due to uncovertebral joint and facet hypertrophy are also seen.**

Based on the clinical history and radiological results, a diagnosis of cervical spondylotic myelopathy was established as the cause of knee pain and spasm.

Chiropractic rehabilitation aimed to reduce pain and increase motor strength to perform daily tasks and maintain a good quality of life.

Chiropractic treatment consisted of intermittent motorized lumbar traction and spinal manipulative therapy to relieve the cervical intervertebral stenosis.

Scraping therapy (gua sha) was applied to the hamstrings and quarts to induce muscle flexibility, along with proprioception training on the balance board to increase core muscle stabilization.

The frequency of treatment was three times a week for 4 weeks.

After 4 weeks of treatment, both the pain and range of motion of the knees returned to normal.

Increased muscle strength was recorded in the left hand and leg in dynamometer strength readings.

Additionally, improvement in the World Health Organization Quality of Life assessment ranged from 64% to 92%.

At the 6-month follow-up visit, the patient could maintain a normal daily routine without difficulty.

We obtained the patient's consent for publication of this case report.

## **Discussion**

We present a rare case report of bilateral post-TKA discomfort and spasms caused by cervical cord compression that was recovered with chiropractic therapy.

TKA can be avoided in cases of knee pain caused by cervical spondylotic myelopathy.

Many factors affect clinicians' ability to accurately diagnose cervical cord compressive myelopathy, such as the absence of pathognomonic indications, the variety of clinical presentations, and the typically insidious symptoms [4].

These diagnostic challenges can lead to failure to precisely and effectively identify individuals with cervical cord compressive myelopathy resulting in progressive discomfort often treated by unnecessary surgery [4].

Additionally, early recognition of spinal cord compressive myelopathy is crucial, as surgical treatment delays the effects of proper treatment [4].

Funicular pain occurs when the ascending tracts of the spinal cord (the spinothalamic or

posterior column tracts) are compressed or inflamed. Funicular discomfort usually manifests as sciatica and knee pain [3].

There are few cases of isolated knee pain and leg pain reported to be caused by cervical spinal cord compression in which the funicular pain was relieved by surgical decompression of the cervical spinal canal stenosis [5,6].

Additionally, cervical spondylosis with myelopathy is a contributing factor to ataxia and changes in postural responses.

This may be explained by the abnormal transmission of proprioceptive input to the supraspinal centers and descending commands to caudal cord levels [7].

Although the exact pathophysiology of knee pain secondary to spinal cord compression is still unknown, the compression may result in pain that is occasionally directed to locations far below the compression level.

The MRI examination can trace the neurodegenerate trend after spinal cord injury [3,8].

Additionally, nociceptive stimuli, such as a surgical procedure, can aggravate cervical myelopathy with minimal symptomatology [5].

Worsening spasticity might lead to an echoing cycle of pain and spasms [5].

Both conservative and surgical procedures are used to treat spondylotic myelopathy.

Medication, physiotherapy, chiropractic manipulative therapy, psychotherapy, and nerve stimulation/modulation techniques are among the conservative treatments that can help address most spinal issues [9].

Manipulative therapy has several biomechanical effects that may reduce symptoms, such as correction of spinal alignment, breakdown of fibrous adhesions, and reduction of hypertonicity of muscles [10].

Cervical traction is a decompression therapy that expands the intervertebral space and creates negative pressure.

Intermittent mechanical traction can assist the intervertebral disc in absorbing nutrients and starting the healing process [11].

Patients with spondylotic myelopathy and progressive neurological impairments are candidates for spinal decompression surgery [5].

A limitation of this case report is the lack of a control group.

According to our research in the literature, there is no evidence on the effect of TKA on the exacerbation of cervical myelopathy.

However, this is the second case of cervical spondylotic myelopathy associated with post-TKA knee pain and spasm [5].

Neurological pain should be one of the differential diagnosis in patients with leg pain before and after TKA.

A complete medical history and physical examination, including musculoskeletal and neurological examinations, are required.

Proper diagnosis and therapy of cervical cord compressive myelopathy can prevent unnecessary investigations, surgical treatments, and possible adverse effects.

### Abbreviations

MRI, magnetic resonance imaging;  
TKA, total knee arthroplasty.

### Conflict of interests

None to declare.

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