



# UNILATERAL BERTOLOTTI SYNDROME: A CASE REPORT OF SYMPTOMATIC LUMBAR TRANSITIONAL VERTEBRAE AND CONSERVATIVE TREATMENT STRATEGIES

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**Abstract :** Bertolotti syndrome is a rare congenital anomaly characterized by an accessory or enlarged transverse process at the lumbosacral junction, leading to chronic low back pain and radicular symptoms. Unilateral cases are less common but still significant. We present the case of a 19-year-old female who presented with persistent low back pain on the right side. Physical examination revealed tenderness over the right lumbar paraspinal muscles, with no neurological deficits. Imaging studies confirmed the presence of an enlarged and elongated right transverse process at the L5 vertebra, consistent with Bertolotti syndrome. A conservative treatment approach was adopted, including physiotherapy interventions such as core stabilization exercises, lumbar flexibility exercises, and postural education. Manual therapy techniques and pain management strategies were also employed. After eight weeks of conservative management, the patient experienced significant pain relief and functional improvement. This case report highlights the successful management of unilateral Bertolotti syndrome in a 9-year-old female using conservative treatment strategies. Further research is needed to explore long-term outcomes and compare different treatment approaches.

**Index Terms:** Bertolotti Syndrome, Chronic Low Back Pain, Conservative Treatment, Physiotherapy -

## I. INTRODUCTION

Bertolotti syndrome, a rare condition characterized by an anomalous lumbosacral transitional vertebra, is defined by the presence of an enlarged or elongated transverse process at the lumbosacral junction. This congenital anomaly can lead to chronic low back pain and radicular symptoms, significantly impacting an individual's quality of life (Quinian J. et al. 2006). Unilateral Bertolotti syndrome, although less common, poses unique diagnostic and management challenges.

The etiology of Bertolotti syndrome is not fully understood but is believed to result from a developmental anomaly during embryogenesis (Jancuska J M et. al. 2015). The presence of an enlarged transverse process alters the biomechanics of the lumbosacral region, leading to increased stress on adjacent structures and subsequent symptomatology. Diagnostic imaging modalities such as radiographs, computed tomography (CT) scans, and magnetic resonance imaging (MRI) play a crucial role in confirming the presence of Bertolotti syndrome and differentiating it from other pathologies.

The management of Bertolotti syndrome varies depending on symptom severity and functional impairment. Treatment approaches range from conservative measures, including physiotherapy and pain management, to surgical interventions such as transverse process resection or spinal fusion. While case reports provide valuable insights, further research is needed to establish diagnostic criteria, standardize treatment protocols, and evaluate long-term outcomes (Jain A et al. 2013).

The aim of this paper is to present a case report of unilateral Bertolotti syndrome in a 19-year-old female and discuss the employed conservative treatment strategies. By examining the clinical presentation, diagnostic findings, and therapeutic interventions, this report contributes to the existing literature on the management of Bertolotti syndrome.

## CASE PRESENTATION:

A 19-year-old female presented in the OPD with a complaint of persistent low back pain on the right side for the past six months. The pain was described as a dull ache that radiated into the right buttock and occasionally extended down to the posterior aspect of the right thigh. The patient reported no history of trauma or significant physical activity preceding the onset of symptoms. The pain intensity was rated as 6 out of 10 on the Numeric Rating Scale (NRS).

Upon further inquiry, the patient reported aggravation of pain with prolonged sitting and activities requiring lumbar spine extension, such as bending backwards. The pain was relieved to some extent with rest and application of hot packs. She had previously sought medical advice, which included analgesic medications and a short course of physical therapy. However, the pain persisted, prompting her to seek further evaluation.

On physical examination, the patient exhibited tenderness over the right lumbar paraspinal muscles, with no signs of inflammation or swelling. Range of motion of the lumbar spine was within normal limits, although extension provoked pain. Neurological examination revealed no motor weakness or sensory deficits, with intact deep tendon reflexes and negative straight leg raise test bilaterally.

To further investigate the underlying cause of her symptoms, imaging studies were ordered. An X-ray of the lumbar spine revealed an enlarged and elongated right transverse process at the L5 vertebra, consistent with a diagnosis of unilateral Bertolotti syndrome (figure 1). Magnetic resonance imaging (MRI) confirmed the presence of the accessory transverse process and ruled out any other significant pathology.



Figure 1: Anteroposterior pelvic radiograph showing sacralization of the lumbar vertebrae

According to patient's age and absence of neurological deficits, a conservative treatment approach was chosen. The treatment plan consisted of a combination of physiotherapy and pain management strategies. Physiotherapy interventions focused on core stabilization exercises, lumbar flexibility exercises, and postural education. Manual therapy techniques, including soft tissue mobilization and spinal joint mobilization, were employed to alleviate pain and improve mobility.

The patient was provided with home exercise instructions and advised to continue the exercises regularly. In addition, she was educated about proper body mechanics, postural awareness, and the importance of maintaining an active lifestyle while avoiding excessive strain on the lumbar spine.

During the course of treatment, the patient demonstrated gradual improvement in pain intensity and functional limitations. After eight weeks of conservative management, her pain intensity decreased to 2 out of 10 on the NRS, and she reported being able to engage in her daily activities without significant discomfort.

Follow-up evaluations were scheduled to monitor her progress and ensure the maintenance of functional gains achieved through therapy. The patient was also encouraged to contact if any further concerns or worsening of symptoms occurred.

## DISCUSSION:

Bertolotti syndrome, characterized by the presence of an accessory or enlarged transverse process at the lumbosacral junction, is a rare congenital anomaly that can lead to chronic low back pain and radicular symptoms. In this case report, we presented a 19-year-old female with unilateral Bertolotti syndrome who experienced persistent low back pain on the right side. The diagnosis was confirmed through imaging studies, which revealed an enlarged and elongated right transverse process at the L5 vertebra.

The management of Bertolotti syndrome typically involves a multidisciplinary approach, focusing on conservative treatment strategies before considering surgical intervention. In our case, a conservative approach was chosen due to the patient's age and absence of neurological deficits. The treatment plan included physiotherapy interventions and pain management strategies.

Physiotherapy interventions play a crucial role in the conservative management of Bertolotti syndrome. The goals of physiotherapy include pain reduction, improvement in functional outcomes, and restoration of normal movement patterns. Core stabilization exercises, lumbar flexibility exercises, and postural education are commonly employed in the treatment of Bertolotti syndrome. These exercises aim to improve muscle strength, stability, and flexibility, thereby reducing stress on the affected area (Brenner A. K et al. 2005).

Manual therapy techniques, such as soft tissue mobilization and spinal joint mobilization, were utilized in our case to alleviate pain and improve mobility. These techniques have shown promise in improving spinal range of motion, reducing muscle tension, and promoting tissue healing (Brenner A. K et al. 2005). The combination of physiotherapy interventions in our patient resulted in a significant reduction in pain intensity and improvement in functional limitations.

Conservative management of Bertolotti syndrome has been supported by previous studies and case reports. A literature review by McGrath K. et al. (2021) concluded clinical assessment and management strategies of bertolotti syndrome. They reported a reduction in pain intensity, improved functional outcomes, and increased quality of life in their patients. It is worth noting that the long-term outcomes of conservative management for Bertolotti syndrome should be monitored and evaluated. Regular follow-up

assessments are crucial to ensure the maintenance of functional gains achieved through therapy and to address any potential recurrences or persisting symptoms.

In conclusion, this case report highlights the successful conservative management of unilateral Bertolotti syndrome in a 19-year-old female using a multidisciplinary approach. Physiotherapy interventions, including core stabilization exercises, lumbar flexibility exercises, and manual therapy techniques, played a vital role in reducing pain and improving functional outcomes. The findings from this case support the existing literature on the effectiveness of conservative treatment strategies in managing Bertolotti syndrome.

Further research and larger studies are warranted to explore the long-term efficacy of conservative interventions and to compare different treatment approaches for Bertolotti syndrome. Additionally, studies investigating the impact of early intervention and tailored exercise programs on patient outcomes would contribute to a better understanding of the optimal management strategies for this rare condition.

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