NICE National Institute for Health and Care Excellence

NICE guidance

Vertebral body tethering for idiopathic scoliosis in children and young people

HealthTech guidance

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www.nice.org.uk/guidance/htg628

Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guidance replaces IPG728.

1 Recommendations

1.1 Evidence on the safety of vertebral body tethering for idiopathic scoliosis in children and young people is limited but raises concerns of serious complications. Evidence on its efficacy is inadequate in quality and quantity. Therefore, this procedure should only be used in the context of research. Find out only in research means on the NICE guidance page.

1.2 Further research should include randomised controlled trials or analysis of registry data.

1.3 This procedure should only be done in specialist centres by spinal surgeons with specific training in anterior spinal surgery.

2 The condition, current treatments and procedure

The condition

2.1 Scoliosis is a 3-dimensional spinal deformity. It causes the bones of the spine to twist or rotate so that the spine curves sideways. Scoliosis curves most commonly happen in the upper and middle back (thoracic spine). It can also develop in the lower back and, occasionally, happens in both the upper and lower parts of the spine.

2.2 Idiopathic scoliosis is the most common type of scoliosis. It is a progressive condition, and its exact cause is unknown. There are 3 types of idiopathic scoliosis: infantile idiopathic scoliosis, juvenile idiopathic scoliosis and adolescent idiopathic scoliosis.

Current treatments

2.3 Treatment of idiopathic scoliosis depends on a number of factors, including age, severity and location of the spinal curve, and the pattern and progression of the curve. In many cases, idiopathic scoliosis is mild and does not need treatment other than close monitoring and physical therapy. For moderate and severe scoliosis, treatment may progress through casting and bracing to spinal surgery.

The procedure

2.4 Vertebral body tethering is a nonfusion spinal treatment for idiopathic scoliosis. The aim is to preserve the flexibility of the spine and modulate its growth on the concave and convex sides, so slowly correcting the scoliosis.

2.5 In this procedure, under general anaesthesia, screws are placed into each

vertebra on the convex side of the spine. The screws are connected by a flexible cord. Tension is then applied to the cord to partially correct and tether the convex side of the spine and so restrict its growth. Thoracic tethers are usually done through a thoracoscopic or open approach and lumbar tethers need a mini-open approach. After surgery, the cord continues to restrict growth on the convex side while allowing faster growth on the concave side, so potentially producing further correction of the scoliosis.

2.6 The technique exploits a known reaction of bone to being stretched or being compressed. This response is known as the Hueter–Volkmann law and notes that bone growth increases when stretched and decreases when compressed. In scoliosis this response can be used on a curved spine if the bones still have significant growth potential.

3 Committee considerations

The evidence

3.1 NICE did a rapid review of the published literature on the efficacy and safety of this procedure. This comprised a comprehensive literature search and detailed review of the evidence from 12 sources, which was discussed by the committee. The evidence included 1 meta-analysis, 3 non-randomised comparative studies, 7 case series and 1 case report. It is presented in the summary of key evidence section in the overview.

3.2 The professional experts and the committee considered the key efficacy outcomes to be: improvement in quality of life and lung function, reduction in scoliotic curve and maintenance of spinal mobility.

3.3 The professional experts and the committee considered the key safety outcomes to be: pain, bleeding, infection, tether rupture and need for further surgery.

3.4 Patient commentary was sought but none was received. Patient organisation feedback was received during consultation.

Committee comments

3.5 The committee was informed that:

- This procedure is indicated for patients with progressive scoliosis who still have significant growth potential.
- This procedure does not preclude a subsequent posterior spinal surgery if indicated.
- This procedure may be done when more conservative treatment such as bracing has failed.
- There is more than 1 device available for this procedure.

Update information

Minor changes since publication

January 2026: Interventional procedures guidance 728 has been migrated to HealthTech guidance 628. The recommendations and accompanying content remain unchanged.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.