A 65-year old female patient was referred to our consultation for severe and disabling low back pain (VAS 9), with a feeling of progressive difficulty in standing straight. Two years before she had been submitted to T11 and L1 vertebroplasties for osteoporotic fractures, which provided no relief of her symptoms. On physical examination pain was elicited by pressure on the thoracolumbar junction and there was no neurologic impairment.

Radiographically, a spinal deformity was evident, with a vertebral angulation of 34° in T11 and 17° in L1, and a regional angulation of 31° and 34°, respectively. The kyphotic segment between T10 and L2 had an angulation of 51°. Respecting a pelvic incidence of 40°, we found a sacral slope of 22° and a pelvic tilt of 18°. There was no sagittal imbalance.

Surgical management was achieved with a closing wedge pedicle subtraction osteotomy of T11, a L1 Smith-Petersen osteotomy and T9-L3 pedicle

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**Figure 1.** Pre op x-rays showing T11 and L1 fractures conditioning short segment deformity

**Figure 2.** The kyphosis between T10 and L2 was 51°. For T11 the vertebral angulation was 34° and the regional angulation 31°; for L1 17° and 34°, respectively
instrumented posterolateral fusion. There were no peri or post operative complications and the patient started weight bearing at 48h post-op.

At 6 months follow up, we noticed a sound pain relief (VAS 3), and radiographically, we obtained a 22º correction of the T11 vertebral angulation, achieving 12º of T11 regional angulation, and 21º of L1 regional angulation. The global kyphosis was corrected in 28º. The pelvic parameters were corrected to 30º of sacral slope and 10º of pelvic tilt.

Vertebral fractures are extremely common in the context of osteoporosis. Nevertheless most heal uneventfully without specific treatment within a few weeks. Vertebroplasty may be indicated in selected cases but is not appropriate for unstable fractures and will not correct malalignment which can result in a symptomatic deformity, and induce severe chronic disability albeit appropriate conservative management1,2.

The treatment represents quite a surgical challenge and should address both kyphosis correction and spine stabilization, therefore attempting to improve back pain3. Since the original technique described by Smith-Peterson in 19454 several surgical procedures have been proposed for correcting thoracolumbar kyphosis, mostly in the context of ankylosing spondylitis. However, few reports address the specific problem of local post-traumatic deformity, and the use of a closing wedge osteotomy for this purpose5.

Although it is a technically demanding procedure, it allows excellent results in the treatment of short-angled post-traumatic kyphosis of the thoracolumbar spine6. The benefits of this operation are those of a single-stage surgery, with lower morbidity, lower risk of anterior pseudarthrosis, lower risks of vascular and retroperitoneal structures injury, and lower neurological risks due to forceful opening and sudden elongation of the anterior column7. Previous vertebroplasty does not compromise the success of this procedure.

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