

PEDICLE SUBTRACTION OSTEOTOMY IN THE
TREATMENT OF POST TRAUMATIC KYPHOSIS
FOLLOWING AN OSTEOPOROTIC FRACTURE
OF THE THORACOLUMBAR SPINE

Pedro Cacho Rodrigues*, Manuel Ribeiro Silva*, Nuno Neves*, Rui Pinto*

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

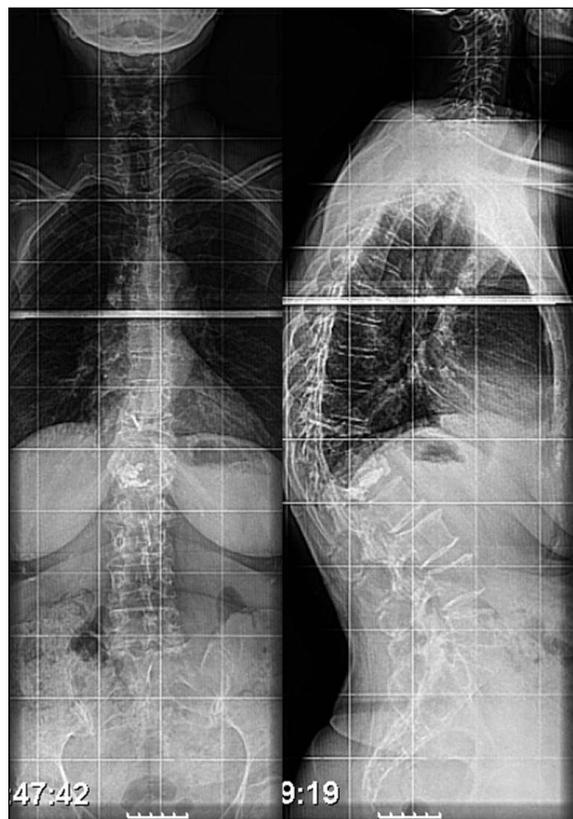


Figure 1. Pre op x-rays showing T11 and L1 fractures conditioning short segment deformity

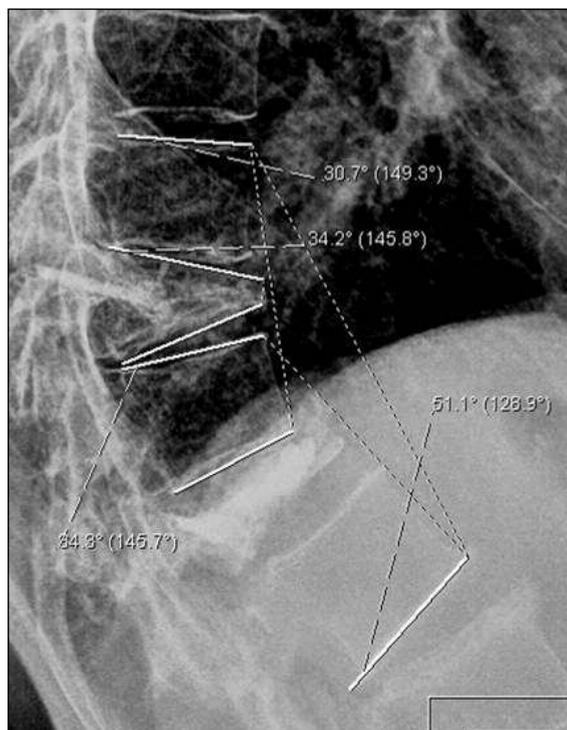


Figure 2. The kyphosis between T10 and L2 was 51°. For T11 the vertebral angulation was 34° and the regional angulation 31°; for L1 17° and 34°, respectively

*Grupo da Coluna, Serviço de Ortopedia, Hospital São João – Faculdade de Medicina da Universidade do Porto

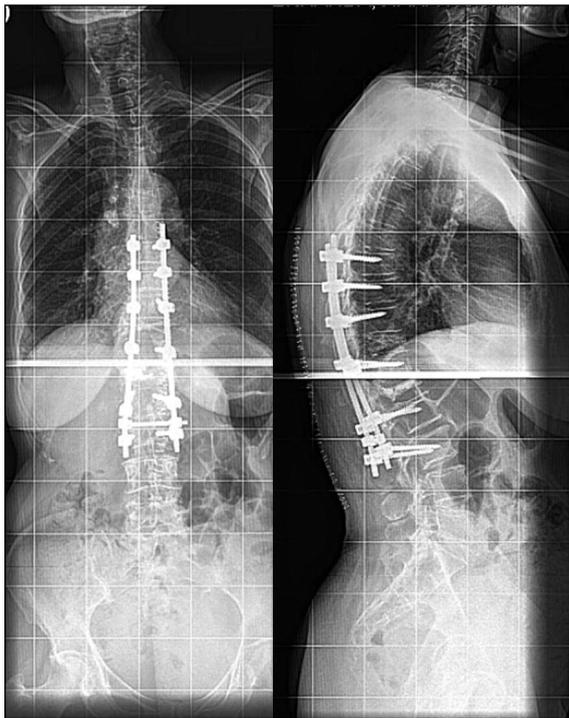


Figure 3. On post-op x-rays a good correction was obtained

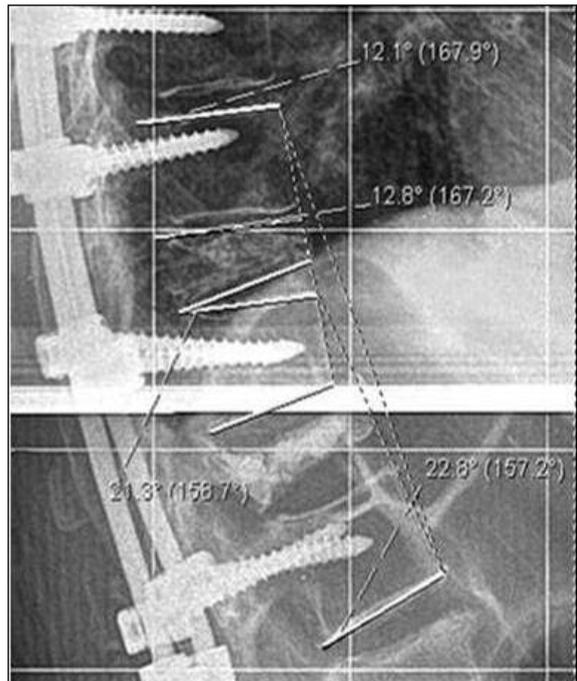


Figure 4. At 6 months follow up, the kyphosis between T10 and L2 was 23° and the vertebral angulation for T11 was corrected by 22°. The regional angulations for T11 and L1 were 12° and 21°, respectively

instrumented posterolateral fusion. There were no pre 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 22° correction of the T11 vertebral angulation, achieving 12° of T11 regional angulation, and 21° of L1 regional angulation. The global kyphosis was corrected in 28°. The pelvic parameters were corrected to 30° of sacral slope and 10° 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 management^{1,2}.

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 correct-

ing 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 column¹. Previous vertebroplasty does not compromise the success of this procedure.

Correspondence to

Pedro Cacho Rodrigues
 Al. Prof. Hernâni Monteiro, 4200 Porto
 Tel: (+351) 225 512 100
 E-mail: pedrocachorodrigues@gmail.com

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