

# Technical Note: Vertebral Compression Fractures— Treatment with a Composite Thoraco-Lumbar Orthosis

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## INTRODUCTION

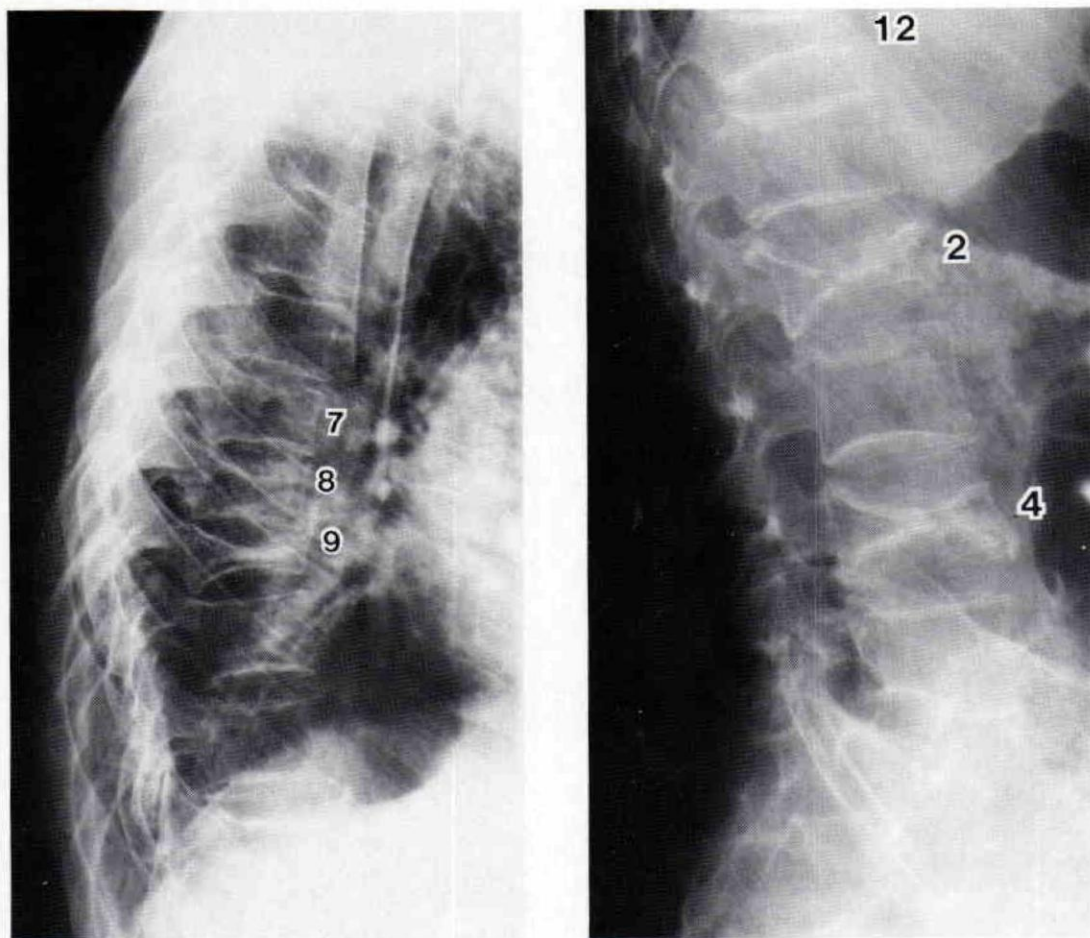
Stable compression fractures of the thoraco-lumbar spine are a problem in long-term pain management. Traumatic compression fractures may remain symptomatic for over a year, while pathologic compression fractures may remain symptomatic for the remainder of the patient's lifespan. External support, either in the form of a cast or an orthosis, remains the mainstay of non-operative treatment. Although total immobilization of the spine is not possible with external devices only, significant relief of axial skeletal pain can be achieved with firm truncal support.

It has been well documented that mechanical load on the spine is lessened when intra-abdominal pressure is increased (Figure 1). It is by this mechanism that abdominal binders provide spinal support and hence relieve back pain. It has been further shown that an abdominal support combined with a rigid spinal support relieves back pain better than an abdominal support alone (Figure 2). Currently available orthoses which combine both abdominal and rigid spinal supports include the Dorsal-Lumbo-Sacral orthosis and the thoraco-lumbar corset. These orthoses are often poorly accepted by the pa-

tient because they are difficult to don, uncomfortable when the patient is in any but the erect position, and are bulky under clothing. The Veteran's Administration Medical Center in Nashville would like to report their experience with an orthosis which combines the comfort of an abdominal binder, with the firm support of a thoraco-lumbar corset.

## MEASUREMENT AND FABRICATION

The composite orthosis is made in the following manner: A circumference measurement is taken of the hips, waist, and just below the nipple line on the chest. The hip measurement usually dictates the size of the thoraco-lumbar corset selected. Draw laces are removed and the front panels are cut off approximately one inch anterior to the back panel eyelets. An elastic abdominal binder is then cut and sewn to the posterior thoraco-lumbar corset panels just anterior to the eyelets. The total circumference of the finished orthosis should be about two inches more than the patient actually measures. Two heavy steel stays are added, one on each side of the spinal column. Slide buckles and hooks are



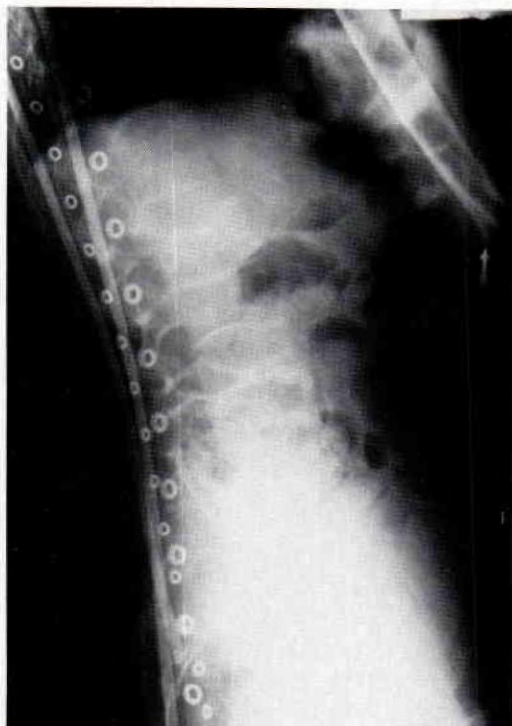
Figures 1A & 1B. Lateral thoracic (A) and lumbar (B) x-rays of a patient with multiple compression fractures due to osteomalacia. Bracing with the combined orthosis provides him with good pain relief.

added to the shoulder straps so they will fasten in front of the chest rather than in the less convenient posterior position.

During a period of six months, the VA Medical Center in Nashville applied eleven thoraco-lumbar corsets combined with elastic abdominal binders to treat vertebral compression fractures. Seven of these fractures were traumatic and four were pathologic (two osteoporosis, one amyloidosis and one metastatic tumor).

Even patients with compression fractures as numerous and as severe as those shown in Figure 1 obtained relief with this orthotic variant. All patients have re-

mained satisfied with the pain relief the orthosis affords. Five patients who had been previously treated with other orthoses (i.e., lumbo-sacral corset, Dorso-lumbar orthosis, and an elastic abdominal binder) found the composite orthosis more effective than their previous support in relieving their back pain. It was also considered comfortable even when they were reclining, easy to don, and cosmetically acceptable. One patient who could not tolerate a Taylor style spinal orthosis, because it rubbed his iliac crest graft donor site, found relief with the soft elastic support of the combined orthosis.



Figures 2 and 3. Same patient as shown in Figures 1A & 1B. Lateral flexion-extension x-rays show good immobilization in the combined corset.

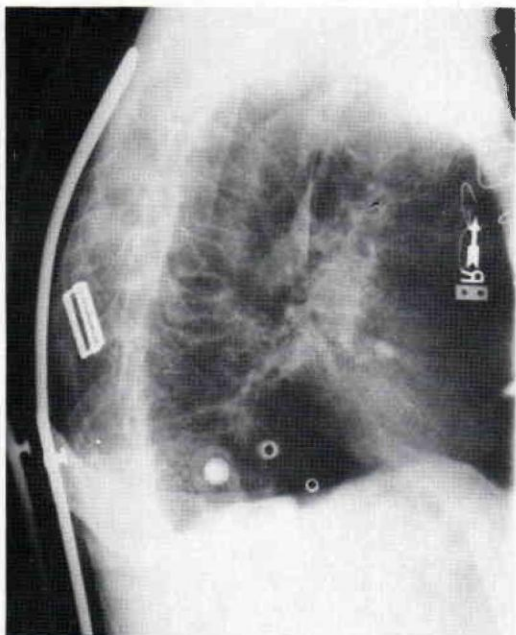


Figure 4. Support obtained with well-fitted High Taylor Spinal Orthosis is shown.

## CONCLUSION

The thoraco-lumbar corset with an elastic apron provides maximum abdominal and spinal support without sacrificing comfort.

The composite orthosis provides as much support as does a Taylor style spinal orthosis (Figure 4). Good immobilization is achieved both in flexion and extension (Figures 2 & 3). Because the garment is comfortable, orthotic treatment of thoraco-lumbar compression fractures is not thwarted by patient non-compliance. The Nashville VA Medical Center recommends the use of this orthosis on patients with spinal pain secondary to thoraco-lumbar compression fractures, when operative intervention is not indicated.

## ACKNOWLEDGMENTS

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**REFERENCES**

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