Regression of an extruded lumbar disc herniation after thermomechanical massage bed therapy

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Abstract
Introduction
Many patients with extruded lumbar disc herniation require surgical intervention but some neurological symptoms of intervertebral disc herniation may often improve with conservative treatment. Although the spontaneous regression in size of a herniated disc is well known, a large extruded disc has been rarely reported. This case report discusses a regression of an extruded lumbar disc herniation after thermomechanical massage bed therapy.

Case Report
A 42-year-old man with a 1-month history of lower back and left leg pain was admitted to our Department. A large extruded disc fragment was found on the left side of the spinal canal at the L4–5 level on T2-weighted MRI.

Conclusion
The case reported here is the regression of a large lumbar disc extrusion after 1 year of thermomechanical massage bed treatment. The disc regressed with clinical improvement and was documented as a follow-up MRI study 9 months later.

Figure 1: (a) The sagittal T2-weighted image of the initial MRI study reveals a large herniated disc at the L4–5 level with caudal migration (January 2010). (b) Axial T2-weighted image of the initial MRI shows a left side posterolateral extruded disc fragment (January 2010).

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operative treatment than physical and medical therapy, the patient preferred to have thermomechanical massage bed treatment voluntarily. Nine months later, the patient’s complaints were resolved and normal reflexes were determined. After visiting our outpatient clinic for follow up, a second MRI of the lumbar spine was taken and total regression of the extruded disc fragment was found on T2-weighted MRI (Figures 2a and b).

Discussion
In the literature, there are several reports of the spontaneous regression or disappearance of herniated intervertebral discs without surgical management7-9. The spontaneous regression of intervertebral disc herniation is well documented, but the exact mechanism of this process remains unresolved. Three popular mechanisms have been reported in the literature. The first hypothesis is that the herniated disc retracts back into the intervertebral space and protrudes through the annulus fibrosus. The second hypothesis is that the disc regression is due to gradual dehydration and shrinkage of the disc. The third hypothesis is that enzymatic degradation and phagocytosis of cartilaginous tissue is due to inflammatory reaction and neovascularisation of disc herniation10,11.

According to the manufacturers, the thermomechanical massage devices have been designed based on acupuncture theory originating in China more than 2500 years ago. Energy circulates throughout the body along well-defined pathways or meridians. Points on the skin along these pathways connect specific organs and body structures. Through acupuncture or acupressure along the spine, practitioners of oriental medicine hope to stimulate the energy balance of organs to restore health. The thermomechanical massage probes provide pressure and heat to the paraspinous region. This region of the body generally corresponds to the acupuncture meridians of oriental medicine, the treatment of which produces local changes and effects on the deep organs3. Using functional MRI, Hui et al.11 determined that acupuncture stimulation producing pain relief also decreased activity in limbic nuclei. Developers of the device argue that the heating probes act upon the accupoints, in a similar manner to moxibustion, to influence health but there are no research studies to support these claims. Modulation of these structures may be one mechanism by which thermomechanical massage alters pain thresholds.

Warmth is associated with pain relief and relaxation. In physical therapy, locally applied heating agents are used to promote relaxation, provide pain relief, increase blood flow, facilitate tissue healing and prepare stiff joints and tight muscles for exercise12. Studies have shown that the massage effects are most likely mediated by improving immunity and increasing the activity levels of the natural killer cells, promoting general stress relief, improving circulation, decreasing blood pressure, promoting lymph drainage and a number of favourable psychological changes13,14. Awad et al.15 demonstrated that a thermal massage rehabilitation program was more successful in reducing back pain and self-experienced disability and in improving lumbar muscle endurance.

As financial barriers limit access to medical services for some patients, people have become interested in the innovative promotional strategy used to market the Korean thermomechanical devices. There are three demonstration centres in our city. Access to the centres is unlimited. Patients are allowed access to the devices at the demonstration centres free of charge, and for as long as they like, without undue pressure to purchase the device for home or office use. Patients use the devices three to four times per week. The promotion strategy has also promoted support groups for users. Around 20-40 devices are utilised by patients at one time for synchronised sessions lasting 25 minutes each. This group atmosphere is also relaxing and friendly for patients, where they can also share their health problems and outcomes with others at the demonstration centres. So this positive atmosphere may affect patients’ quality of life and satisfaction.

Conclusion
Although there have been several cases of spontaneous regression of

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Case report

Disc herniation, thermomechanical devices might be considered to have positive effects on clinical findings and radiological changes, as seen in the case presented here. Carefully designed controlled studies will be required to evaluate the therapeutic advantage of the thermomechanical devices and whether there are any additional benefits to regular use in a relaxed social setting such as in the demonstration centres.

Consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

References