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Effect of stability exercise in comparison with routine physiotherapy exercises on the pain, disability and transverse abdominis muscle thickness during voluntary and functional tasks in patients after lumbar decompression surgery

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Introduction & Aim: There is evidence that changes in the function of deep trunk muscles remain in patients with low back pain after lumbar decompression surgery. The purpose of this study was to investigate the effectiveness of Stability Exercise (SE) on the pain, disability and Transverse Abdominal (TrA) muscle thickness during voluntary and functional tasks in patients with low back pain after lumbar decompression surgery.

Materials & Methods: This randomized clinical trial study was conducted on 40 patients who underwent lumbar decompression surgery over the past two to three months. The intervention group underwent 8 weeks of treatment consisting of SE and the control group received only General Exercise (GE) in the same period. The TrA muscle thickness was measured using the HS-2100V ultrasonography apparatus with a 7.5 MHz B-type linear probe. A Roland-Maurice questionnaire was used to assess the patients' disability due to Low Back Pain (LBP) and the Visual Analog Scale (VAS) questionnaire was used to measure the severity of the pain.

Results: The results showed that the percentage of changes in the TrA muscle thickness during the Abdominal Hollowing (AH) maneuver and standing, significantly increased in the SE group and also the pain and disability decreased significantly ($P < 0.05$). In addition, the results demonstrated that pain and disability decreased significantly in the GE group ($P < 0.05$); however, the percentage changes in the muscle thickness in the AH maneuvers and standing were not significant ($P > 0.05$). The independent T-test indicated that changes in the level of the TrA muscle function during standing (muscle functionality status) as well as the changes in the level of disability were significantly higher in the SE group than the GE group ($P < 0.05$).

Conclusion: SE is more effective than GE in increasing the performance of deep abdominal muscle during functional tasks and contributes in reducing the level of disability. Therefore, this intervention can help to improve the functional activity of deep abdominal muscle, especially in standing tasks in people who have undergone lumbar decompression surgery.

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