THE EFFECT OF BONE MINERAL DENSITY ON FUNCTIONAL OUTCOMES AND FUSION STATUS IN PATIENTS UNDERWENT INSTRUMENTED

ANTERIOR CERVICAL DISCECTOMY AND FUSION

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BACKGROUND

- The number of complex spinal surgeries has increased significantly in the elderly population
- Spine surgeons often treat osteoporotic patients who are associated with higher rates of instrumentation failure
- Establishing a successful fusion requires an appropriate substrate for bone formation and local bone remodeling
- Differerence of the cage subsidence rate was reported between the moderate and severe osteoporotic patients.

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OBJECTIVE

- To investigate the influence of bone mineral density (BMD) on functional outcomes and on fusion status in patients who underwent instrumented anterior cervical discectomy and fusion (ACDF).

MATERIALS AND METHODS

- 32 patients (20 females, 12 males; mean age 52±8)
- Single or two-level instrumented ACDF
- The mean follow-up period 25±6 months
- BMD was measured by the dual energy x-ray absorptiometry (DEXA) method.
- Coronal and sagittal computerized tomography with 1 mm thickness

MATERIALS AND METHODS

- Functional outcomes were analyzed by using Neck Disability Index (NDI), Short-Form 36 (SF-36) and Visual Analogue Scale (VAS).
- The relationship between BMD, functional outcome and fusion status was evaluated statistically

RESULTS

- The mean BMD 0.926±0.257 g/cm2
- Fusion in 25 patients (78.1%)
- Nonunion in 7 patients (21.9%)
- The mean BMD of the patients with fusion 0.973±0.168 g/cm2 and with nonunion 0.665±0.134 g/cm2, respectively (p=0.038)

RESULTS

- The mean preoperative NDI, SF-36, and VAS score of the patients was 44.1±2.8, 46.3±10.8, and 8.4±2.5, respectively. The mean postoperative NDI, SF-36, and VAS score of the patients was 12.7±4.1, 74.5±12.5, and 1.2±0.6, respectively in the fusion group and 17.9±2.1, 63.6±3.7, and 2.3±1.1, respectively in the nonunion group
- All patients significantly improved functionally($p<0.05$), however, the mean functional improvement was significantly higher in the fusion group ($p=0.027$).
- No significant relation was found between the BMD and functional improvement in both groups ($p=0.182$ and $p=0.217$).

CONCLUSION

- BMD affects fusion status in patients undergoing instrumented anterior cervical discectomy and fusion.
- In the presence of low BMD values, surgeons should make preoperative planning meticulously when performing instrumented ACDF.

DİSCLOSURE INFORMATION

- None of the authors in this study have any conflict of interest