Outcomes of Vertebroplasty Versus Conservative Treatment of Acute Osteoporotic Vertebral Fracture

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Introduction

• Osteoporosis and associated fractures are the cause of morbidity in older adults, and osteoporotic vertebral fracture (OVF) is the most common one, which affects more than 200 million individuals worldwide (Johnellet al., 2006).

• Patients with osteoporotic vertebral fractures (OVFs) suffer severe back pain for weeks to months, and spinal deformities, reduced pulmonary function, restriction of the abdominal and thoracic contents, impaired mobility, and clinical depression caused by OVFs produce effects on patient quality of life (Frankel et al., 2007).

- There are two main treatment modalities for painful OVF; conservative management and vertebroplasty.

- But there is still controversy regarding the advantages of vertebroplasty compared to conservative treatment.

Aim

- to compare the outcome of vertebroplasty with conservative treatment in terms of functional and radiological outcomes.

Study design

- Hospital based randomized comparative study.

Methods

- Sixty patients of acute osteoporotic vertebral fracture were collected with balance allocation of 30 participants in vertebroplasty group (Group A) and conservative group (Group B) according to block randomization.

- Both groups were treated at Yangon General Hospital and Yangon Orthopedic Hospital from January 2024 to June 2025. VAS score, ODI score, kyphotic angle and vertebral height were compared between two groups before treatment, post treatment 1week, 4weeks, 12weeks and 24 weeks.

Results

- The mean VAS score, ODI score before treatment were not statistically significant between two groups.

- At the 1st week, the mean (SD) VAS score decreased to 2.80 (0.48) in the PVP group and 4.83 (0.79) in the CT group, with a statistically significant difference ($p < 0.001$). At the 4th, 12th, and 24th weeks, the mean (SD) VAS scores remained lower in the PVP group compared to the CT group, and these differences were also statistically significant ($p < 0.001$).

- At the 1st week, the mean (SD) ODI score decreased to 39.53 (7.51) in the PVP group and 57.2 (4.85) in the CT group, with a statistically significant difference ($p < 0.001$).

- At the 4th, 12th, and 24th weeks, the mean (SD) ODI scores continued to be lower in the PVP group compared to the CT group, and these differences were statistically significant ($p < 0.001$).

- At the 4th, 12th, and 24th weeks, the mean (SD) AVH in the PVP group remained stable at 39.9 (1.40) mm, whereas in the CT group, it decreased to 27.27 (3.18) mm. The differences at all follow-up points were statistically significant ($p < 0.001$).

- Mean kyphotic angle of PVP group and CT group post treatment 24 weeks was 9.67 (2.61) versus 17.43 (3.41). There was statistically significant difference between two groups ($p < 0.001$).

Conclusion

• The functional and radiological outcomes of vertebroplasty were superior to conservative treatment of acute osteoporotic vertebral fracture.