Vertebroplasty and Kyphoplasty for Fragility Fractures of the Spine

Mun-Keong Kwan

Department of Orthopedic Surgery, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

INTRODUCTION

Fragility fractures of the spine, resulting from osteoporosis, are becoming an important public health issue. There occurred an estimated 1.4 million new fractures worldwide in the year 2000.¹ The incidence of osteoporotic fragility fracture has been rising due to an increase in the elderly population, and in life expectancy in developed as well as developing countries. This problem creates a huge economic burden on the society and the family members because it leads to an earlier transition to functional dependency followed by a deterioration in health. In the United States of America, the direct medical costs associated with these fractures have been estimated at 13.8 billion dollars annually.² The indirect costs due to loss of productivity, pain, and suffering are incalculable.

In the normal physiology, the body bone mass increases with age, peaks at mid-thirties, and in the case of females, remains stable until the peri-menopausal period, whereas, it declines gradually with age, in the case of males. During the menopause period there is a sudden transient drop of bone mass that results in a 5% to 10% loss of cortical bone, and a 20% to 30% loss of trabecular bone.³ This makes females more prone to fractures at an earlier age than men. In males, the annual vertebrae bone loss is 1% to 2% occurring in a linear fashion. However, in the event where there is a presence of a threat, i.e., a disease condition, the bone mass can deteriorate without following the normal physiological pathway.

Osteoporotic vertebral compression fractures are associated with significant morbidities and mortalities such as chronic back pain, decreased lung capacity, increased fracture risk, and increased mortality.⁴ Loss of vertebral height will lead to a significant sagittal imbalance and cause chronic strain to the paravertebral muscular system resulting in chronic lower back pain. Osteoporotic vertebral fracture is associated with substantial increase in back pain and functional limitation.⁵ With regard to the function of lungs,