The prevention and management of osteoporotic vertebral fractures is an increasingly important clinical problem for practicing neurosurgeons, especially in light of our aging population and the popularity of vertebroplasty. Postmenopausal women are usually treated with a medical therapy combination of estrogens, selective estrogen-receptor modulators, calcitonin, vitamin D, calcitriol, and bisphosphonates. These agents reduce bone resorption and increase bone density. Some of these agents reduce the risk of bone fracture, but most fail to restore normal strength to the bone. Daily injections of parathyroid hormone (PTH) cause transient increases in serum PTH and may stimulate bone formation. Parathyroid hormone (1–34) comprises the first 34 amino acids of the hormone and produces its major biological effects. As demonstrated in this study, daily injections of PTH (1-34) increase bone mineral density of the spine by up to 13% more than did placebo and reduced the risk of new vertebral fractures by 69%, in a high-risk group of postmenopausal women with a history of at least one moderate or two mild atraumatic thoracic or lumbar vertebral fractures. These benefits exceed those reported for all other treatments to date. The authors also noted a reduction in nonvertebral fractures in the same group, albeit to a lesser extent. One theoretical concern with the use of this agent is its potential for the development of bone tumors (osteosarcomas) in rats given this agent in a carcinogenicity assay. The authors of previous studies involving the treatment of patients for up to 3 years with the agent, however, showed that incidence of bone tumors was not increased. Furthermore, chronic hyperparathyroidism is not associated with an increased risk of osteosarcoma. Taken together, the present study demonstrates a substantial benefit to this therapy in cohort at high risk for development of subsequent vertebral fractures, and it will likely be rapidly adopted as standard of care for the medical management of these patients.

References