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Kyphoplasty for pathological compression spinal fractures: two years' experience with purified silicone VK100

Stefano Telera, Laura Raus, Alfredo Pompili, Carmine Maria Carapella, Francesco Crispo and Fabrizio Caroli
National Cancer Institute "Regina Elena", Rome, Italy

Background: Due to its minimal invasion and immediate pain relief balloon kyphoplasty has gained an increased popularity for treatment of symptomatic tumor or osteoporotic vertebral fractures. Kyphoplasty in cancer patients is more challenging than for osteoporotic ones. Cord compression is frequent and the incidence of overall complications is ten-fold greater, reaching 10%. Polymethylmethacrylate (PMMA) cement is considered the gold standard material for such procedures. Although success rate is high, PMMA has also limitations and safety concerns: exothermic reaction, short working time (5 minutes), rapid solidification, it is not adhesive to bone, leakages are dangerous. VK100 is a mixture of Dimethyl methylvinyl siloxane, Barium Sulphate, Platinum catalyst, and methylhydrogensiloxane cross linker. Polymerisation occurs after mixture. Surgical procedure is the standard kyphoplasty. VK100 adheres to bone, has no exothermic reaction, leaves up to 15 minutes before definitive solidification, is more elastic. The base material has been used in humans for 30 years.

Methods: Between February 2013 and January 2015 we treated 58 patients (46 with cancer disease and 12 with trauma and osteoporosis) and 96 vertebral bodies (53 thoracic, 43 lumbar): 65 through percutaneous kyphoplasty, 23 "open kyphoplasty" with laminectomy; "augmentation vertebroplasty" in major open surgery was done in 7 to implement stabilization.

Results: Follow-up ranged between 2 and 24 months. Complications included two asymptomatic pulmonary embolism, seven leakages (intradiscal, endosseal, vascular), three motor deficits requiring in one, surgical revision, three adjacent fractures. QOL as measured by VAS, KPS and Dennis Pain Scale scales significantly improved post-operatively ($p \leq 0.0001$). Average working time was more than 30 minutes.

Conclusions: Elastoplasty appears a safe and effective palliative treatment of VCFs especially in oncologic patients. Major advantages over PMMA are the lack of exothermic reaction and the wider working window. The influence of biomechanical properties of silicone on long term reduction of adjacent level fractures require further investigations.

Biography

Stefano Telera has completed his degree of Medicine in 1994 (University "La Sapienza" Rome) and his specialization in Neurosurgery in 2000 (University "Tor Vergata", Rome). He is currently Consultant at "Regina Elena" Department of Neurosurgery, National Cancer Institute, Rome. He has published 27 papers in reputed journals.

telerasm@libero.it

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