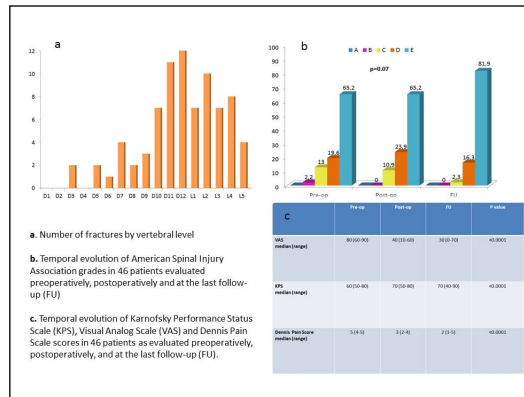


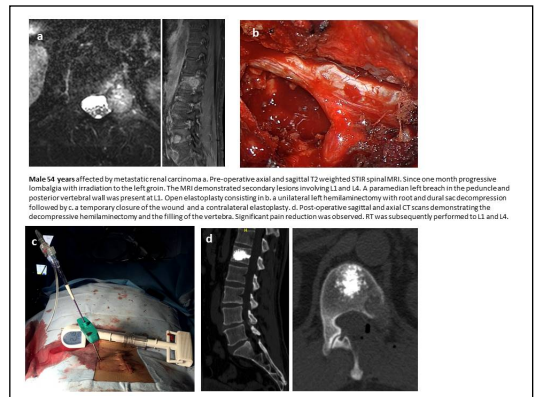
Kyphoplasty with silicone purified VK100 (Elastoplasty) for the treatment of spinal lytic lesions in cancer patients: a retrospective evaluation of 46 cases.

Alfredo Pompili MD; Laura Raus; Francesco Crispo; Maddalena Giovannetti MD; Carmine Carapella; Stefano Telera MD; Isabella Sperduti; Fabrizio Caroli

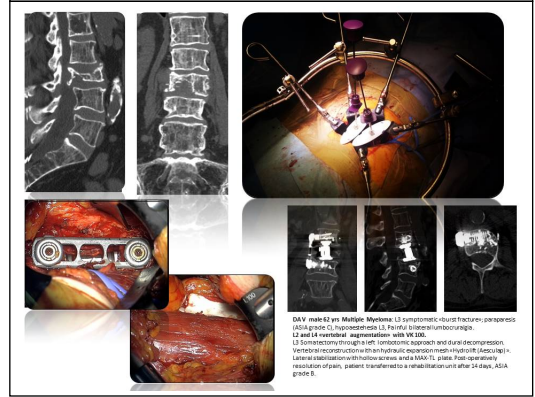
Division of Neurosurgery, Anesthesiology, Biostatistics, Istituto Nazionale Tumori "Regina Elena"



The median LOS was 5 days (range 2-26), for percutaneous elastoplasty it was 3 days (2-15), for open elastoplasty it was 10 days (3-26), for mixed procedure it was 4.5 days (3-13), for "augmentation" techniques it was 15 days (10-20). Median follow-up of was 14 months (1-30 months). 37 patients did not change their ASIA scale following surgery, three patients deteriorated and six patients improved. The majority of patients preserved or improved their ASIA score after surgery till the last neurosurgical follow-up before systemic deterioration occurred ($p = 0.18$). The 1-yr survival rate was 77.5%. and the 2-yr survival rate was 66.7%.



Learning Objectives
Participants should be aware of palliative treatments for pathological VCFs, including BKP and able to evaluate different materials that can be used for this purpose.

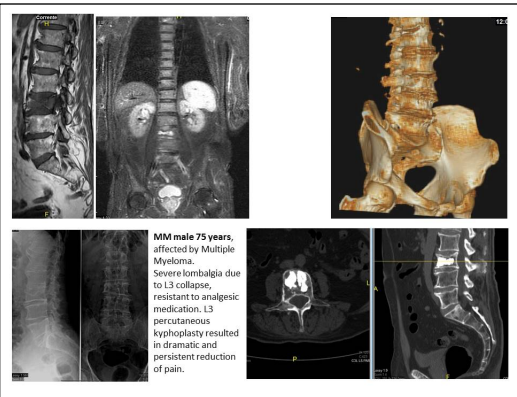


Introduction
Balloon Kyphoplasty (BKP) for vertebral compression fractures (VCFs) in cancer patients is more challenging than for osteoporotic ones. Cord compressions are frequent and the incidence of cement intracanal and vascular leakages is ten-fold greater. PMMA is the gold standard for BKP. However, PMMA has some disadvantages: exothermic reaction, short working time, rapid solidification, absence of osteoconductive properties.

Methods
VK100 (BONWRx Ltd, Lansing Michigan, USA), is a mixture of Dimethyl methylvinyl siloxane, Barium Sulphate and Platinum catalyst. It is adhesive to bone, it has no exothermic reaction leaving up to 30 minutes before solidification and is more elastic. The surgical procedure required is called Elastoplasty. We treated 46 cancer patients (80 vertebral bodies) with VK100, through percutaneous BKP, open BKP and augmentation procedures to implement thoraco-lumbar stabilizations. Leakages and pulmonary embolism (PE) were evaluated with CT scans. 15 patients were affected by hematologic tumors; 25 by solid ones; 3 were Cordomas. Median follow-up was 14 months.

Results
Median Tokuhashi score was 10, median SINS score 12. Median operative time was 125 minutes (range 40-660). For each level it was 40 minutes (20-80) in percutaneous elastoplasty; 170 minutes (90-250) in open elastoplasty. Average working time allowed by VK 100 was 30 minutes (20-45). The mean volume of silicon inserted in each vertebra was 3.8 cc (1.5-6 cc). Complications included seven cases of leakages in 41 patients treated with BKP (17%), In six cases the leakages were asymptomatic (two intradiscal, two intraspedal, one anterior to the vertebral body and one intravascular). There were one transient motor impairment after an open elastoplasty and two permanent motor deficit unrelated to silicon injection, due to post-operative hematomas. Two asymptomatic PE (4.3%) and 3 postoperative adjacent fractures (7.3%) were detected. A significant improvement was observed in KPS, VAS and Dennis Pain Score ($p < 0.0001$).

Conclusions
Elastoplasty with VK100 appears a safe and effective palliative treatment of VCFs 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 reduction of adjacent level fractures requires further investigations.



MM male 75 years, affected by Multiple Myeloma. Severe lumbalgia due to L3 collapse, resistant to analgesic medication. L3 percutaneous kyphoplasty resulted in dramatic and persistent reduction of pain.