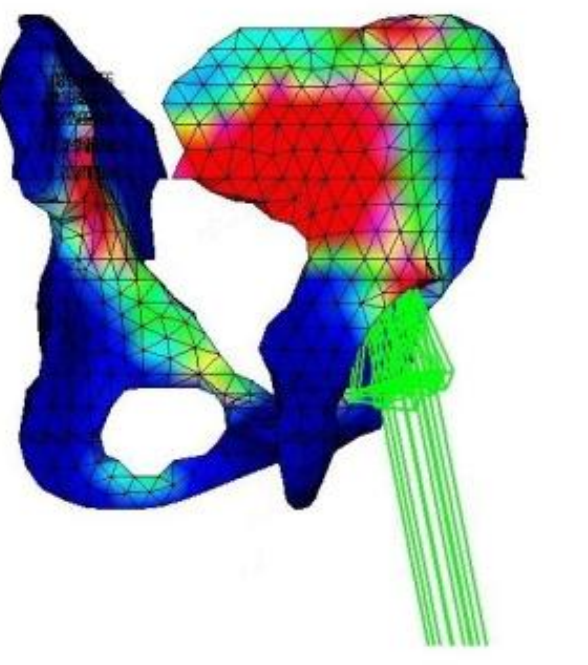




USE OF BIOREABSORBABLE POLY (L-LACTIC ACID)/POLY (ETHYLENE OXIDE) MICROSPHERES CONTAINING VANCOMYCIN CHLORHYDRATE FOR BONE REPAIR



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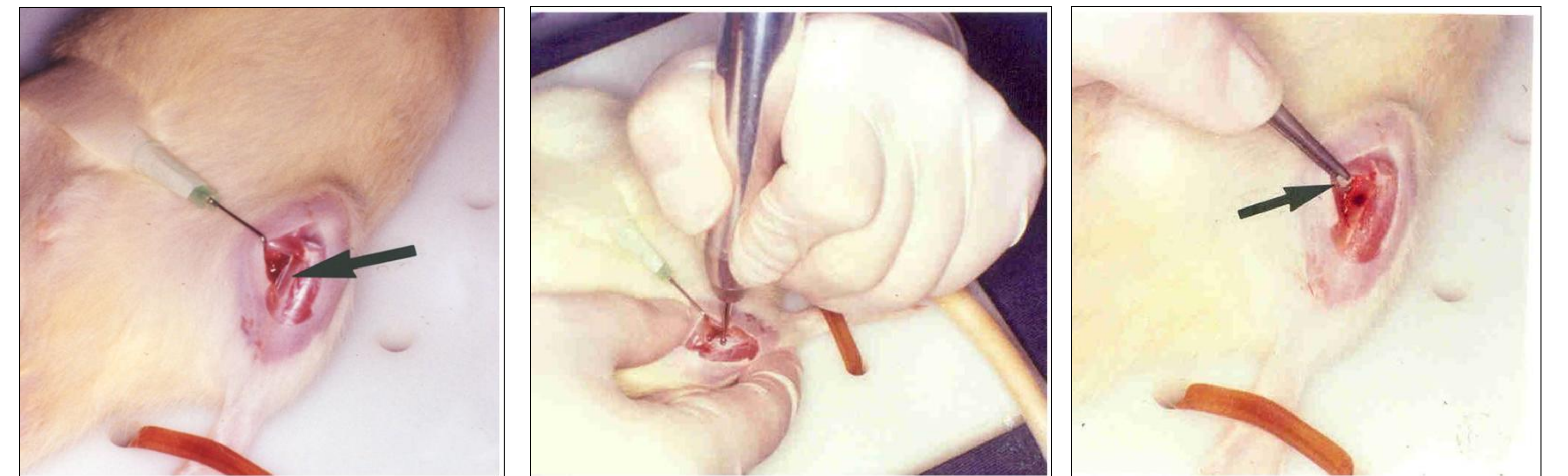
INTRODUCTION

The limited use of natural bone grafts has induced new studies with synthetic materials for orthopedic use. Polymethylmethacrylate (PMMA) is one of the most common polymers used as bone cement. Bioreabsorbable polymeric materials are potential candidates for replacing metallic, ceramic and polymeric non-bioreabsorbable materials. Poly (L-lactic acid) PLLA is a bioreabsorbable polymer widely used for drug delivery systems, surgical sutures and bone fracture fixations [1]. PEO is a widely used biomaterial known for its biocompatibility and low toxicity [2].

METHODOLOGY

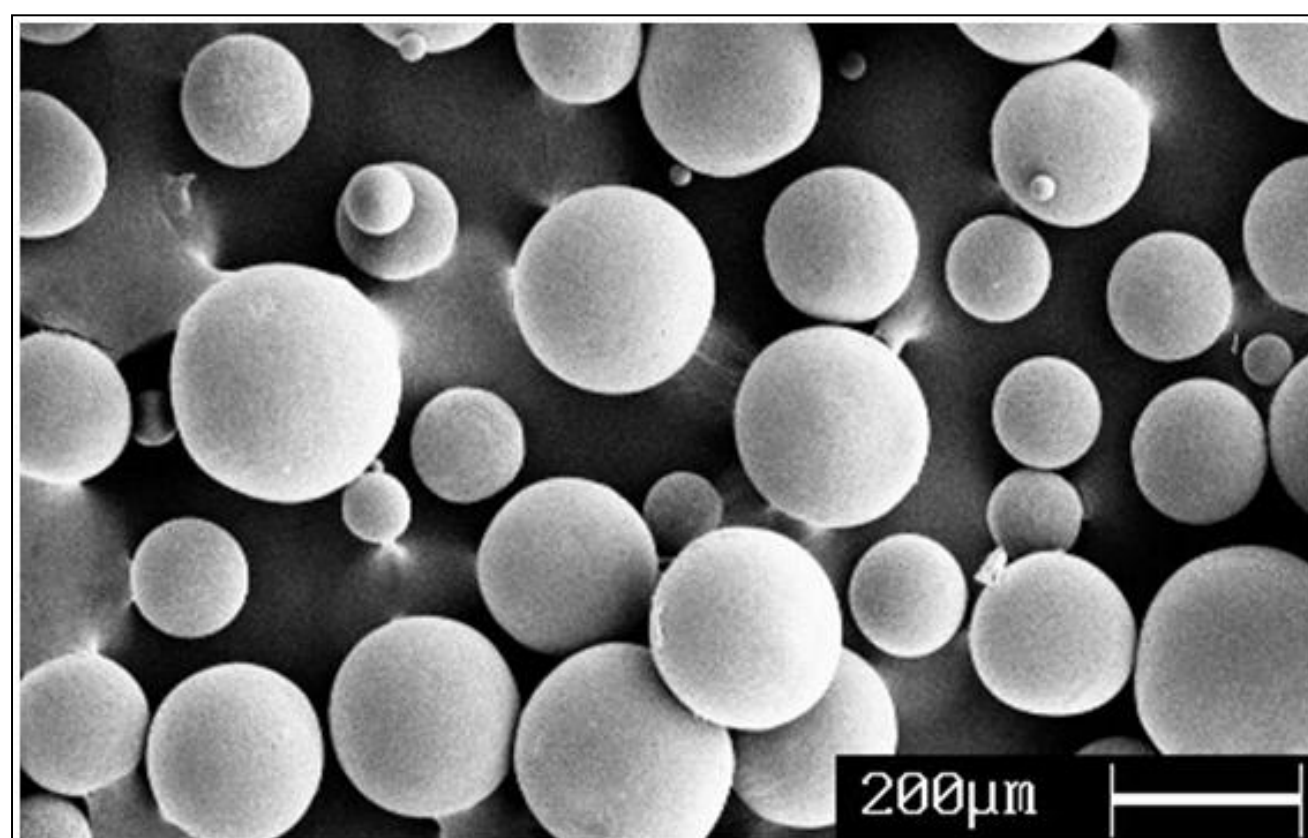
MICROSPHERES

PLLA/PEO 80:20 solution (0.75 ml) was added to 6.65% of vancomycin chlorhydrate, under agitation, forming an emulsion. For microsphere gathering, the emulsion was placed in 2% isopropanol solution. The solution was agitated until total solvent evaporation and microspheres were collected by permeation and dried by vacuum. The microspheres with the size around 100-200 μ m (figure 1) were compressed facilitating their use during surgical procedures.

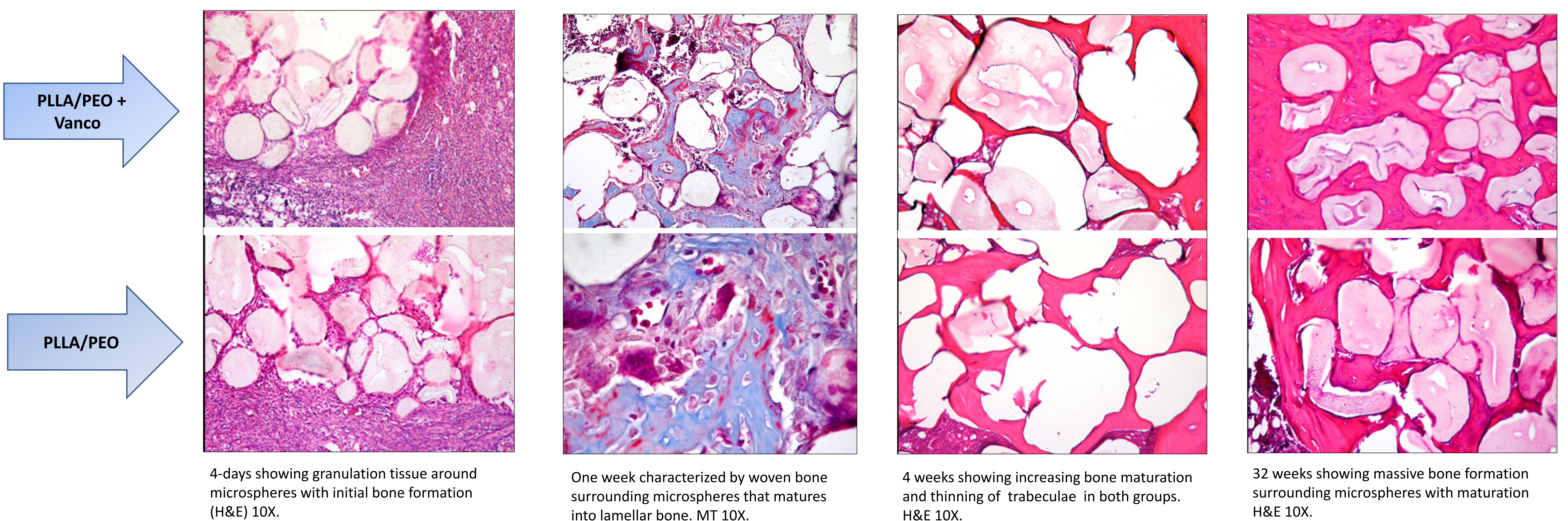


SURGICAL PROCEDURES

- 40 animals - PLLA/PEO + vancomycin chlorhydrate.
- 40 animals - PLLA/PEO.
- The experimental period lasted for 2 and 4 days, 1, 2, 4, 8, 16 and 32 weeks ;
- The tibia was removed, fixed, decalcified and submitted to histological processing (HE and MT);
- The results were submitted to statistical tests (co-variant analysis and Mann-Whitney test).



RESULTS



CONCLUSION

Our results showed efficient bone regeneration by using PLLA/PEO blends mixed with vancomycin. In this case, the vancomycin chlorhydrate did not interfere with bone healing and can be useful in bone repair. In addition, its association with antibiotic drugs could be useful to prevent infections during bone healing.

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