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COMBINED DECELULARIZATION OF VASCULARIZED BONE ALLOGRAFT. IN VIVO EXPERIMENTAL STUDY STAGE

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Introduction

- Massive bone defects is an actual real dilemma for reconstructive surgery to the locomotor system.
- The vascularized bone allograft would be a successful alternative, with his osteoplastic properties of the vascularized autograft and the orthotopic characteristics of the allogenic bone.
- Decellularization of organs, including bone, gives an acellular biological graft, which keeps their extracellular 3D structure.

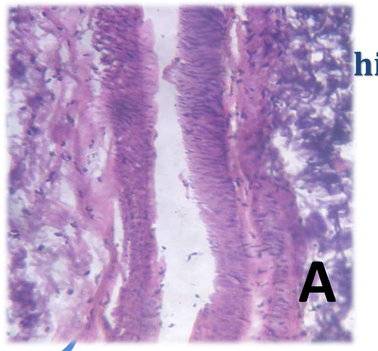
Keywords:
vascularized bone allograft, combined decellularization

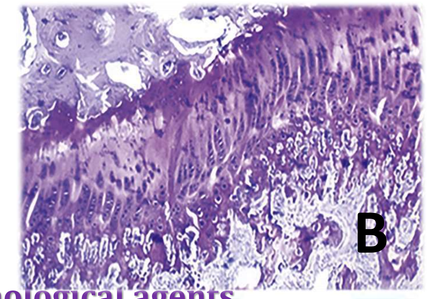
Objective of the study:

To extract the cellular component from the vascularized bone allograft by the combined method, according to the algorithm, without injuring the extracellular structure and matrix.

Material and methods

The study was performing on New Zealand White Rabbit. The femur was taken with the internal iliac artery(I), located between the upper part of the great trochanter and the distal 1/3 of the femoral shaft, respecting the vascular continuity. The grafts were stored at -84.1C for 14 days, subsequently disengaged by the gradual method. The graft was examined histologically (A. internal iliac art. B. proximal femur)





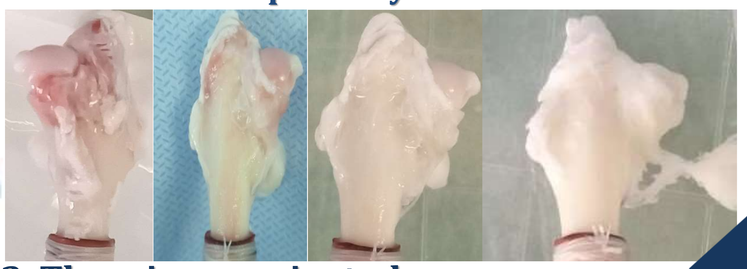
The graft was connected to the closed-circuit peristaltic pump (II).

After that was processed, gradually, with a series of solutions (during 7 days):

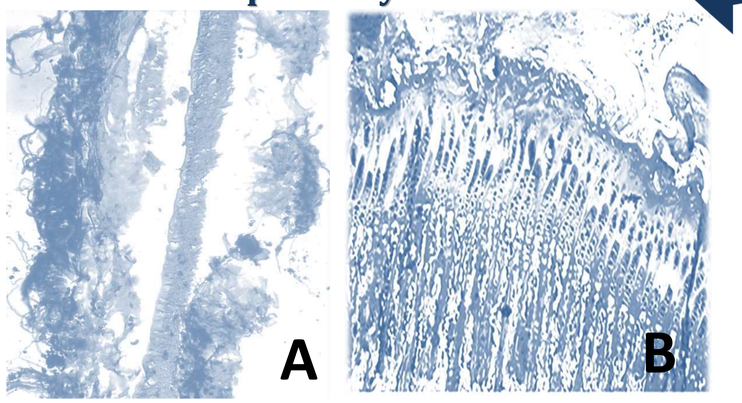
1. sol. NaCl 0,9%-100ml+sol. Heparin 500Me/ml-5 ml
2. 0,1g EDTA + sol. PBS 100ml
3. 0,1g EDTA + 150 ml sol. TRIS tampon 10 millimolar
4. 0,5g SDS + 100ml sol. TRIS tampon 10 millimolar
5. 1ml sol. TRITON-X 100 + 100ml ml sol. TRIS tampon 10 millimolar
1. 1mg ARNaze + 100ml dist. Water
2. 0,153 ml sol. Penicillin-Streptomycin (10,000un.-10 mg/mL) + 100 ml PBS.

Results

1. The macroscopic study



2. The microscopic study



Conclusions: The combined process of decellularizing of vascularized bone tissue can generate bone grafts devoid of immunological agents. The decellularized of vessels need additional studies to evaluate the processes for keep its resistance, an imperative factor in subsequent grafting.