

**PP-070****In vitro study of resistance forces torsional defects in cortical femur pigs fixed with nail cephalomedullary intramedullary, plate and endoprosthesis, associated or not to polymethylmethacrylate**F.A. Moura Marcio, **D. Sanches Pereira**, A. Andrade Martins*Clinical Hospital UFPR, Curitiba, Brazil*

Introduction: Bone is the third most common site of metastatic disease. Metastatic tumors are common in the femur. Various types of fixations are available for prophylactic fixation of metastatic lesions. Among them nails, plates, endoprosthesis. Long bones are often subjected to torsional forces.

Objective: The aim of this in vitro study is to determine the strength of femurs pigs with cortical lesion in the diaphyseal region to torsional forces, comparing the fixation with plate, interlocking nail, cephalomedullary rod, and stent segment, associated or not with polymethylmethacrylate (PMMA).

Methodology: The study of 150 femurs pre-selected pigs under morphometric criteria. As experimental model, femurs were selected 15 divided into 10 groups and allocated femurs in each group prepared from the parameters set as follows: intact femurs; femurs with diaphyseal cortical defect without fixing and femurs with diaphyseal cortical defect fixed with plate, cephalomedullary rod, intramedullary nail and stent segment, associated or not with PMMA. After preparation, underwent torsional torque. Statistical analysis was performed using ANOVA p value.

Results: The analysis showed that the intra-group attachment of PMMA plate with DCP showed the highest resistance to fatigue. When it was used the cephalomedullary and intramedullary nails, when combined with PMMA showed increased resistance to fatigue. Segmental stents had lower fatigue resistance. When compared and related to resistance intact bone (100%), fixation methods presented: DCP with PMMA (152%), cephalomedullary rod with PMMA (107%) and HIM with PMMA (102%) until fatigue.

Discussion: In setting the specimens with or without PMMA increased resistance when subjected to torsional forces. Fixation with cephalomedullary and HIM locking nail with PMMA increased the average force to cause system failure when compared to healthy bone. The fixation with plate and PMMA can increase. The use of interlocking nail showed increased resistance with the use of PMMA, showing a resistance of 7% above the healthy bone. The prophylactic fixation of femoral neck increased the stability of the lap. Segmental stents showed low resistance to torsional loading.

Conclusion: The fixation plate DCP with PMMA showed the greatest resistance to torsional forces, greater than bone strength integrate without fixation. Cephalomedullary and intramedullary fixations also associated with PMMA showed greater resistance compared to healthy bone without fixation. These attachment methods proved to be reliable to stabilization in the system in general.