**BACKGROUND**

Surface-attached biofilms

Bacteria can form adherent biofilms under both static and shear-flow conditions. These types of biofilms are one of the most relevant in most chronic infectious disease states [1, 2]. It is estimated that up to 80% of microbial infections in the human body involve biofilm formation, greatly contributing to morbidity and mortality, especially in hospital settings [3-4]. Biofilms can also develop on abiotic surfaces, including medical devices such as orthopedic prostheses, artificial cardiac valves, coronary stents, intravascular and urinary catheters, neurosurgical, cochlear, and breast implants, dentures, and ocular devices [5].

**Culturing Biofilms under Flow Conditions**

Continuous-flow cultures enable the formation of mature biofilms in chambers covered with coverslips or on silicone or latex tubes fitted to a peristaltic or syringe pump. The peristaltic pump facilitates flow of fresh growth medium, whereas planktonic cells and waste are removed. These flow systems create optimal conditions for the generation of mature biofilms.

Culture preparation, surface conditioning, and adjusted methods provide lab substrates mimicking clinical conditions. A characteristic example involves the evaluation of four CVC Staphylococcus epidermidis biofilm infection models that differ in material type (glass versus polymer) and nutrient presentation (static versus continuous flow) [6].

**RESULTS**

Results of dynamic model showed a better capacity of *S. epidermidis* to grow with a rotation between 120-60 rpm on each tested materials (Mann-Whitney test, p-value < 0.05) than *P. aeruginosa*. Titanium was the material on which the bacterial strains adhered less, whereas carbon and polycarbonate allowed greatest adherence of *S. epidermidis* 

**CONCLUSIONS**

The static model was not able to evaluate the different adhesion capacity of the strains to the materials, confirming the dynamic model is the most suitable tool for the study of orthopedic materials on the prevention of device-related infections.

**BIBLIOGRAPHY**