

## Rapid Fire Papers 2

### [O42] INFLUENCE OF DELAY AND TEMPORARY PRESERVATION CONDITIONS OF BACTERIOLOGICAL TISSUE SAMPLES ON THE DIAGNOSIS OF BONE INFECTION: AN EXPERIMENTAL MODEL

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**Aim:** Bacterial identification in musculoskeletal infection is sometimes difficult and treatment strategy difficult facing unknown pathogen agent. We wonder if the delay of incubation and the preservation conditions of the samples between surgical procurement and subculture on plates have an influence.

**Method:** 25 cm<sup>3</sup> bone fragments were obtained from femoral heads retrieved during hip arthroplasty and excluded for bone transplant donation. Informed consent was obtained from the donor for research purpose. The study was approved by the Ethic Committee (N°B403201317725). Bone fragments were immersed for 30 minutes under gently agitation (140 RPM) at 35°C in a physiologic solution (negative control) or two solutions with two concentrations of staphylococcus epidermidis (0.5 Mc Farland or 1.5x 10<sup>8</sup> bacteria and 7.5x10<sup>2</sup> bacteria). Bone samples were separated and preserved at room temperature or at 4°C until seeded on Petri Plates to observe the influence of preservation conditions. Samples were plated after different delays (T0, T30min, T1H, T2H, T4H, T6H, T8H, T12H, T16H, T24H et T48H) to observe the influence of delay of culture. Experiments were repeated 5 times. When culture was positive, results were expressed with the number of colony.

**Results:** We observed a regular diminution of number of colonies with the delay of culture. The number of colony goes to zero after 40 hours when the samples have been preserved at room temperature. Differences were not significant between preservation at room temperature and at 4°C for delay inferior to 04 hours but become significant for higher delay of culture in favor of low temperature preservation. With a low bacterial bioburden, no colony was recovered after a delay of 06 hours. False positive results were observed in 4% of the negative control.

**Conclusions:** This experimental model demonstrates the negative influence of delay of culture and preservation at room temperature if the culture is delayed for more than 04 hours. The negative influence is more critical when facing low bacterial bioburden as it is generally the case in musculoskeletal infections. Our model do not included biofilm embedded bacteria and is limited to a staphylococcus epidermidis strain. The results could be worse with anaerobic bacteria. Some inhibition due to antibioprophyllaxis given to patient just before hip arthroplasty could have negatively influence the results. This study stresses the importance of a rapid seeding of bacterial samples to improve bacterial identification. Procedures should be in place to transfer rapidly samples to the lab and process them immediately.