

THE BIOLOGICAL DEGRADATION OF LCP PLATES

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[ENGINEERING OF BIOMATERIALS 163 (2021) 66]

Introduction

Nowadays, the most frequently used method of fracture fixation in orthopedics is internal fixation with the use of LCP (Low Contact Plates) plates. They are connected to the bone in multiple points – with the use of screws. That's why they differ from those used previously. The LCP plates have a complex geometry and are used for fractures in places requiring precise reconstruction [1]. The paper presents the biological degradation of LCP plates in vivo. Microorganisms are able to damage the structure and function of implants, especially when they are in contact with a living organism, the most aggressive environment.

Materials and Methods

The material was removed from the body due to infection. Four plates LCP (FIG. 1) with visible changes on the surface were analyzed.



FIG. 1. LCP plates.

A scanning electron microscope JSM-7800F (FIG. 2) was used to estimate the surface of the plates.



FIG. 2. Scanning electron microscope JSM-7800F.

Bacterial studies were carried out on biological microscope ZEISS Observer D1 (FIG. 3).



FIG. 3. Biological microscope ZEISS Observer D1.

Results and Discussion

After removing the plates from the body, the plaques were observed on the surface (FIG. 4).

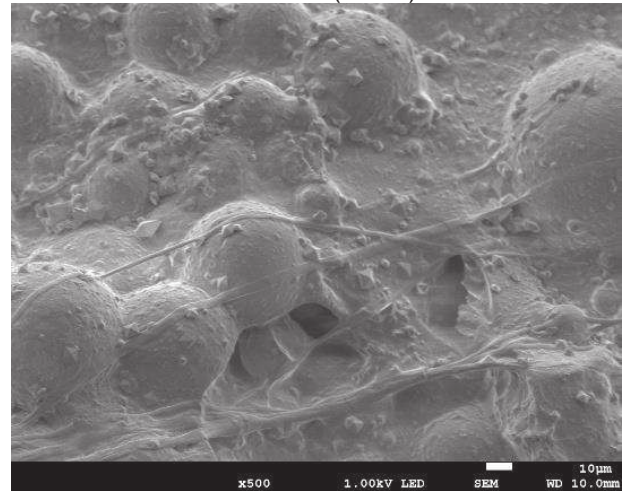


FIG. 4. The plaques on the surface. Scanning electron microscope.

The plaques were observed on the biological microscope. It was a well-developed biofilm (FIG. 5).

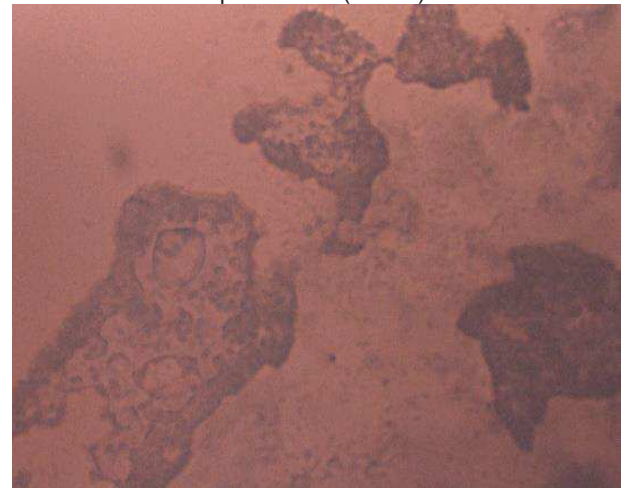


FIG. 5. Biofilm. Biological microscope ZEISS

Conclusions

1. The plates were covered with biofilm.
2. Further studies showed, that the bacteria had penetrated the material causing pitting.

References

[1] Lorkowski J., Juras B., Kozieł M., Hładki W., Kotela I.: The possibility of using analysis to evaluate the undamaged AO and LCP plates. *Emergency* 2012, vol.5, no 3-4, p. 36-40.