

## THE SELF-REPAIR BEHAVIOR OF CELL OVERLAY INDUCED BY THE SURFACE TEXTURE ON CO-CR-MO ALLOY

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### KEYWORDS

*Surface texture; Self-repair; cell overlay*

### ABSTRACT

The surface texturing technique has been increasingly applied in various engineering [1]. In the field of biomedical engineering, surface texturing is one of the effective strategies to improve the bioactivity of implantable materials [2]. In the study, the cell overlay was formed in an organized way when the template of the textured surface was used in the vitro culture. The following cellular activities, such as the adhesion, migration, signal transmission and physiological responses were investigated under simulated conditions. Using a micro/nano indentation system, the mechanical properties of the overlay, hardness and elasticity modulus, were investigated. The home-made tribometer was used to evaluate the anti-deformation of the cell overlay. It shows that the adhesion, growth and differentiation of cells were influenced by microstructure of the surface texture. A cell overlay was formed according to distribution of the texture. Compared to the smooth substrate, the cell overlay on the textured surface was more compact and had a better anti-damage ability. After the wound experiment, the recovery ratio of the cell overlay on the textured surface was achieved to 90 %, nearly 1.4 folds compared with that of non-textured surface. The mechanism of the surface texture on the self-repair ability of the cell overlay was discussed. Results indicated the formation of textured structure on the surface can improve the biological performance, suggesting its potential application in orthopedic implants.

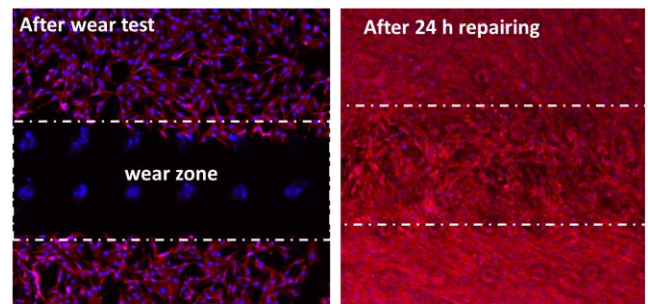


Fig.1 The repair ability of the cell overlay

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