Abstract

The Biocompatibility, Biodurability and Biofunctionality Study of the Medical Implants – General Principles and Practical Approaches

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Background: Every year more and more new and innovative medical implants in all fields of medicine are commercially available.

Aim: To give attention to the biocompatibility, biofunctionality and biodurability of medical implants.

Material and Methods: The authors present and discuss the results obtained from their many years of scientific collaboration in the different fields of implantology.

Results: The main directions in which researchers must focus their attention are:

- Development of new animal models for validation of medical implants.
- Validation of the new models of medical implants in experimental animals.
- Clinical observations during follow up of implanted prostheses in humans.
- Development of the “Retrieval programs” for explanted medical implants:
  o Failed implants explanted during re-operations.
  o Prostheses explanted at autopsy.

Conclusions: Therefore in order to fulfill the 3B’s rule at autopsy and re-operations, nondestructive and destructive testing are necessary steps to validate any explanted graft in terms of its biocompatibility, biofunctionality, and biodurability.

Key Words: Medical implants, Biocompatibility, Biofunctionality, Biodurability