

Biodegradacja węglowego implantu tchawicy w eksperymencie zwierzęcym

Biodegradation of tracheal carbon implant in animal experiment

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Summary

Introduction. The radical treatment of tracheal stenosis comprises segmental resection and its reconstruction. The most successful type of reconstruction is the "end to end" technique. In cases with large tracheal defects (over 6 cm) this kind of reconstruction is impossible. From many years the adequate biomaterial is searched for the tracheal reconstruction. Most of the implanted biomaterials undergo biodegradation process. **Aim.** The aim of the study was to analyze the biodegradation process in carbon fibers of prosthesis implanted in tracheal defects in animal experiment. **Material and methods:** We studied the prosthesis implanted in tracheal defects in sheep. The prosthesis were built with composite biomaterial composed of carbon fibers and polysulfone. The observation period was 1, 2, 3, 4, 6, 8, 24 and 38 weeks. In the morphometric evaluations the breadth, curve width, fullness factor and mean grey level of carbon fibers were assessed. **Results.** The results showed that carbon fibers undergo progressively degradation in animal environment. The width gradually decreased. The mean grey level in the first three weeks decreased, but in the next period it increased. **Conclusion.** The carbon fibers of segmental tracheal prosthesis undergo gradually degradation process in biological environment expressed by decreasing of their dimensions connected with the lost of irregularities and changes of structure density.