

## SUMMARY

This thesis consists of two parts - the clinical and the experimental.

The aim of the clinical part was the evaluation of individual arthroscopic techniques for the shoulder joint which I introduced into the daily routine at the Orthopaedics Dept. of Charles University Teaching Hospital in Hradec Kralove. First I presented the basic principles of arthroscopic operations of the shoulder joint as technical equipment, operation techniques, patient examination, imaging methods and alternatives of anesthesiology. I mentioned arthroscopic operating methods separately at the special part. Etiology of individual diseases, indication for the operation, used operating technique and results of the patient groups are analyzed there. All patients were operated by the author of this thesis, which introduced and verified own modifications of the previously known operation techniques with the aim at the more accurate technique, decreasing of the patient's traumatization and minimization of postoperative complications. These new modifications were confirmed in clinical practice.

At the experimental part of this thesis fixation implant suture anchor type is proposed. This implant designated for stabilization operation on the glenohumeral joint and other medical instruments needed for implantation were designed in cooperation with the company LASAK Ltd. The shape of the implant was optimized for maximal primary stability, optimal force transfer into surrounding tissues and strong fixation of the intraosseal suture for refixation of the labral-capsular complex. The implant has to be precisely inserted into the margin of the glenoid with the help of specially designed medical instruments. The shape and usage of the implant were experimentally tested on swine cadaverine shoulder blade and on the model. The properties of the implants and medical instruments were tested during implantation and the primary stability of implants was established during bursting tests. The titanium implant was covered with special surface with bioactive properties. This special surface results in accelerated production of apatite coat, which is a crucial factor in early osseointegration. The results of the study fulfilled the aims and they enable the usage of the implant together with new medical instruments for arthroscopic operations of the shoulder joint. The developed implant and medical instruments are after preclinical testing and are ready to be used in clinical practice. Up to now there is no reference in the medical literature about any analogous type of the implant with bioactive surface properties designed for intraosseal suture at the shoulder joint. A brand new type of the implant is described in this thesis.