Multiple studies on knee menisci attract more attention due to their crucial role in maintaining proper knee joint congruence and kinematics. Osteoarthritis is strongly associated with degenerated menisci, but microstructures of the menisci, in the knees with gonarthrosis, has not been fully understood.

The studied group of original papers consisted of patients with the presence of severe unilateral osteoarthritis, which meet certain criteria, were enrolled into the study. People included in the project have undergone a preoperative physical examination, preoperative ROM and preoparative Xrays assessment and total knee arthroplasty. The menisci, obtained during the operation, have been tested using light microscopy (with a standard methods of staining H&E and Alcian blue protocol for determining the presence of ground-substance). Meniscal samples were evaluated using the classic Bonar score and its modification. Impact of smoking on changes in menisci was assessed according to data about smoking: pack-years index, mean number of cigarettes smoked per day, period of cigarette smoking (smoking years).

Macroscopic and microscopic evaluation of the obtained material have revealed vast degeneration in all cases, both in lateral and medial menisci. Both menisci are implicated in the degenerative process, regardless of axial deformity.

There was no statistically significant differences in classical Bonar score assessment between lateral and medial menisci ($p=0.3014$), as well as using modified Bonar score ($p=0.3620$). Among the smokers the mean Bonar score was 8.42 and the mean modified Bonar score was 6.65, while among nonsmokers it was 8.51 and 7.35, respectively. We noted that the number of cigarettes correlated negatively with the collagen composition in the medial menisci ($p=0.0197$). Regarding the collagen variable, there was a statistically significant difference between the smokers and nonsmokers groups ($p=0.04525$).

Both menisci are implicated in the degenerative process, regardless of knee axial deformity. The Bonar score, along with its modifications, can be easily employed in the microscopic assessment of meniscus pathology. The microscopic investigation showed no differences in the menisci of smokers and nonsmokers, except for the collagen in the osteoarthritic knees. The collagen composition was more organized in smokers group. Moreover, the modified

Bonar score was negatively correlated with the number of cigarettes, which supports the role of neovascularizaiton.