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AbstractBook

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### COMPARATIVE ASSESSMENT OF THE CLINICAL AND COST-EFFECTIVENESS OF TWO APPROACHES TO IDENTIFY PATIENTS AT HIGH RISK OF FRACTURES

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We conducted a multicenter, cross-sectional study of postmenopausal women who did not receive anti-osteoporosis therapy. The sample included 4042 postmenopausal women aged 40 years and older, residents of 6 cities of the Russian Federation. Two approaches to identifying patients at high risk of fractures were analyzed: referral of patients to densitometry based on the 2019 ISCD recommendations, and identification of patients at high risk of fractures based on the calculation of the 10-y risk of fractures using the FRAX algorithm. Indicators of diagnostic value of the methods were evaluated: sensitivity, specificity and accuracy of the test, and the cost of diagnosing one case of high risk of fractures.

The analysis showed that the use of a strategy based on the recommendations of the ISCD leads to an unreasonably high number of densitometric studies and an increase in the cost of diagnosing high risk fractures. The use of the FRAX algorithm made it possible to identify a larger number of patients with optimal use of the DXA resource. The proportion of individuals who needed densitometry was 71.4 and 54.0% for ISCD and FRAX, respectively ( $p=0.0001$ ). The sensitivity index of the method using the FRAX score was 86.3% and did not differ from that (85.1%) when detecting osteoporosis based on the ISCD recommendations ( $p=0.07$ ). The FRAX method demonstrated higher specificity when

compared with the ISCD recommendations approach (43.4% and 31.9%, respectively;  $p=0.002$ ) and accuracy (55.4% for FRAX and 42.2% for ISCD recommendations;  $p=0.001$ ). The use of FRAX reduced the cost of diagnosing 1 case of high-risk fractures by 1.9 times compared to the use of the ISCD recommendations.

So, with sensitivity indicators comparable to the ISCD recommendations, FRAX is characterized by higher specificity and accuracy, which minimizes the cost of diagnosing a high risk of fractures.

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### MORPHOLOGICAL AND MORPHOMETRIC CHARACTERISTICS OF THE FEMORAL HEAD IN AVASCULAR NECROSIS

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**Objective:** To describe and compare the features of the adjacent viable tissue in the upper and lower parts of the femoral head (FH) and to observe the reaction of morphological components to the osteonectin and CD-34 antibodies in patients with avascular necrosis of the femoral head (ANFH).

**Methods:** For the morphological study, we used sections of the FH and neck obtained from 20 patients with ANFH (13 with ARCO 3 stage and 7 with ARCO 4 stage) during total hip arthroplasty. The histological samples were stained using hematoxylin and eosin. For the immunohistochemical study, the samples were stained with antibodies to osteonectin and CD-34. The image processing was performed with Aperio Image Scope. The statistical data was managed with Microsoft Excel and Statistica 10.0.

**Results:** The morphometric study showed an increased intertrabecular space, which was noted predominantly in the upper part of the FH. Morphometric study showed that the rate of the osteoporotic area (Fig. 1) was significantly higher in the upper part of the FH, than in the lower part (75.29 (68.27-80.55)% vs. 46.73 (38.52-53.58) %,  $p<0.05$ ). The rate of the osteosclerotic area (Fig.2) was significantly lower in the upper part of the FH (16.79 (11.83-23.36)% vs. 29.60 (23.59-39.78) %,  $p<0.05$ ). An immunohistochemical study showed the pronounced expression of osteonectin in the paranecrotic area, as well as the decreased number of mature osteocytes. In the distant areas of the bone tissue, the number of osteoblasts was significantly less. Immunohistochemical study of CD-34 positive cells showed a reactive zone in the paranecrotic area with multiple small newly formed vessels.