Biomechanical evaluation of the medial stabilizers of the patella: letter to the editor

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MANUSCRIPT

Dear Editor,

We have read with great interest the recent descriptive laboratory study by LaPrade et al. on the biomechanical evaluation of the medial stabilizers of the patella, i.e. quantification of the biomechanical properties of each individual medial patellar ligament.[1] We congratulate the authors for their excellent work performed on twenty-two fresh-frozen cadaveric knees. We are convinced that the results obtained from this study will enhance anatomic reconstruction techniques in knee surgery. Moreover, by specifying biomechanical properties (ultimate failure load and stiffness) for each tested ligament, authors significantly improve the graft tissue selection criteria for future reconstructive procedures, which has been highlighted recently.[2] In their study on material properties of the knee ligaments reconstruction grafts, Smeets et al. reported that material properties of usual grafts used for knee ligament reconstruction procedures often vary considerably compared to the native knee ligament which the graft is supposed to replace.[2] Therefore, due to the previous concern, it is of most interest to properly quantify biomechanical properties of each individual ligament, in this occasion medial patellofemoral ligament (MPFL).

The MPFL mean ultimate failure load value in the study was reported to be 178 N, and it was said to be comparable with the value reported by Burks et al., 1998.[3] However, when analyzing the original study by Burks et al., it could be noted that authors do not specify anywhere in the text the value for MPFL ultimate failure load.[3] By performing biomechanical evaluation of lateral patellar dislocations, Burks et al. mechanically translated laterally the patellae of 10 fresh-frozen cadavers for 135 % of the patella width, recorded the force-displacement curve, and anatomically dissected medial retinaculum following testing. Authors reported the first suggestion of failure to occur with a mean force of 209±55 N at an average of 51±18 % of total displacement, while the maximum load capacity of the specimens had mean force of 666±247 N at an average of 94±8 % of the total displacement. On anatomical dissection performed after patellar dislocation, injury to MPFL was identified in 8 of the 10 specimens.[3] Therefore, we doubt that LaPrade et al. have misinterpreted data reported in the study Burks et al., and have attributed values of first suggestion of failure as mean MPFL ultimate failure load.[1,3]

Secondly, authors state in “Table 2.” that Failure Load, Mean ± SD, N for MPFL was 167.8 ± 80.0.[1] However, when reviewing the publication by Herbort et al. it is evident that 167.8 ±

80.0 N is a yield load, and not maximum load to failure of the original MPFL, as suggested in "Table 2." of the study by LaPrade et al.[1,4]

Although we believe that the results on MPFL ultimate failure load obtained in this study will significantly contribute to the present data paucity on this subject, we still express our concerns with the possible data misinterpretation on MPFL biomechanical properties.
We hope that authors' response to our observation will help us to obtain full knowledge on quantification of the MPFL biomechanical properties, and come to an end to continuous data misinterpretation in the literature.

REFERENCES

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