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Sex Matters in Hamstring-Based ACL Reconstruction

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Although not specifically stated, Dr. Everhart's commentary statement that "using the knee as an example, women at the time of anterior cruciate ligament (ACL) reconstruction are at a higher risk for an excessively small gracilis and semitendinosus combined autograft diameter" suggests that smaller graft size is related to adverse outcome in hamstring-based ACL reconstruction in women.

However, although the paper Dr. Everhart references (1) found that length of the gracilis and semitendinosus tendons was related to patient height and smaller graft diameter was related to female gender, the authors of that retrospective observational study did not correlate the size of graft with clinical outcomes, particularly when adjusted for gender.

Although there are reviews addressing the issue of hamstring autograft size in ACL reconstruction failures (2), many fail to address the appropriateness of the graft size to ACL footprint or gender. Specifically, I am not aware of any robust studies linking higher ACL failure rates in women to hamstring autograft size <8 mm; many studies looking at this issue fail to consider the issue of gender (and its related anthropometric characteristics) in their analyses.

Depending on the sports involved, many women are shorter in height and lighter in weight compared to men participating at the same competitive level. Although women athletes have higher risks of primary ACL rupture compared to men, no statistical significance was found between sexes for the rates of graft rupture or failure in a recent analysis (3). Certainly, just like the tire of a Toyota Prius is more likely to fail if fitted on a Hummer H3, a small graft when used in a knee of a larger, heavier body is more likely to rupture compared to one that is more appropriately sized.

Both Drs. Jessica Bryant in her scientific article (4) and Joshua Everhart in his commentary are right in their call for more consideration of gender in basic as well as clinical science research. We need to recognise that there are fundamental differences in certain physical and physiological process between genders that cannot be ignored. We should no longer make assumptions and apply extrapolations of

research results to physical, physiological, and pharmacological processes of both genders, based on studies using subjects of (or material from) one gender alone.

References

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Conflict of Interest: None Declared