Comparative ultrasonographic examination and measurements of the urethra and penis of castrated and intact male lambs

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Abstract

Early castration of male small ruminants is regarded as a risk factor for urolithiasis, although the underlying correlations are still unclear. One possible reason is a deferred development of the penis and the urethra after castration. Therefore, we examined the penis and urethra of castrated and intact lambs by ultrasonography to determine the correlation between urethral area and penile cross-sectional area. Ultrasonography was performed in 6-month-old Lacaune crossbred lambs (early castrated, late castrated, and intact; each group, n = 11). Sectional images at 5 locations (gland penis, penile urethra, distal and proximal sigmoid flexure, and ischial arch) were obtained to determine the urethral and penile diameters. Urethral and penile cross-sectional areas were calculated. Grey-scale analysis of ultrasound images was performed to evaluate possible differences in the penile texture between the groups. Correlation analyses between both cross-sectional areas showed a significant general correlation for location 2 in all lambs (R = 0.52; P = 0.003), for location 3 in late-castrated lambs, and for location 5 in early-castrated lambs. Statistically significant correlations between the penile and the urethral area of castrated and intact lambs were not evident. Therefore, measurement of the penile cross-sectional area alone does not allow for accurate estimation of urethral size. Statistically significant differences concerning the grey-scale analysis between the groups were also not detectable.

Thus, simplification of the formerly presented ultrasonographic examination of the urethra is not recommended. In animals at a risk of obstructive urolithiasis, complete urethral examination is essential.

Key words: lamb, morphometry, lower urogenital tract, ultrasonography, urethra