

Julio Junior H., Favorito L.A., Costa W.S., Suelen S.F., [Sampaio F.](#)

State University of Rio de Janeiro, Urogenital Research Unit, Rio de Janeiro, Brazil

Introduction & Objectives: The increase in the prostate volume during the fetal period appears to be a determining factor for significant differences in the structure of the bladder neck and internal urethral sphincter in male fetuses. Studies on the structure and development of the prostate during the human fetal period are rare. The aim of this study was to determine the development of prostate thickness, the prostatic urethra and the histological components in the prostate during the human fetal period, by histological and stereological analysis.

Materials & Methods: We studied 16 prostates obtained from 16 human fetuses ranging in age from 12 to 35 weeks postconception. The fetuses were macroscopically well preserved, without anomalies of the urinary and genital system. The prostates were dissected and embedded in paraffin, from which 5- μ m thick sections were obtained and stained with Masson's trichrome to quantify connective and smooth muscle tissue, Weigert's resorcin fuchsin to observe the elastic system fibers. The images were captured with an Olympus BX51 microscope coupled to an Olympus DP70 camera. The stereological analysis was done with the Image Pro and Image J programs, using a grid to determine volumetric densities (Vv) and to determine the prostatic urethra lumen area and prostatic thickness. Means were statistically compared using simple linear regression and the paired t-test ($p < 0.05$).

Results: The fetuses studied weighed between 210 and 2,860g and had a crown-rump length between 9.5 and 34 cm. We did not observe elastic system fibers in any prostate analyzed. Quantitative analysis indicated no differences in Vv of smooth muscle cells (mean=30.66 \pm 3.585%) and connective tissue (mean=42.86 \pm 5.928 %) of prostates during the fetal period studied ($p = 0.0164$). The linear regression analysis indicated that the prostate thickness (mean = 1,196.449 μ m: 989.580 to 1,403.016 μ m) increases significantly and positively with fetal age ($r^2 = 0.27$). The linear regression analysis indicated that the prostatic urethra lumen (mean = 2,746.59 μ m: 77.818 μ m to 691.027 μ m) decreases during the fetal period ($r^2 = 0.10$).

Conclusions: The histological analysis of the smooth muscle cells and connective tissue of the developing prostate reveals that there are no differences during the fetal period studied. Prostate thickness increases with fetal age and prostatic urethra lumen decreases during the human fetal period.

Supported by Grant from CNPq and FAPERJ.