216 PRESSURE CHANGES IN RABBIT CONCEPTUS 7 TO 10 DAYS POST COITUM. J.A. Mitchell\*x, G. Driessen, H. Scheidt-Bleichert and H.-W. Denker. Department of Anatomy, Wayne State University, Detroit, MI and Abteilung Physiologie and Abteilung Anatomie, RWTH, Aachen, West Germany.

Blastocyst expansion, while typical to some degree of all mammalian conceptuses is, because of its rapidity and magnitude, particularly conspicuous in the rabbit. The present study established the magnitude of and temporal changes in the pressure within in situ conceptuses during early pregnancy. On 7, 8, 9 or 10 days post coitum (dpc), mixed-breed female rabbits were anesthetized, and the number, spacing and dimensions of implantation sites were recorded. Conceptus pressure was measured by the servo-nulling method employing a calibrated glass micro-pipette (Intaglietta et al., Microvas. Res. 2: 212, 1970). The mean number of sites was 6/cornu, and spacing appeared normal. Implantation site volume increased from 7 through 10 dpc: 0.16 ± 0.03; 0.57 ± 0.14; 1.66 ± 0.37 and 2.32 ± 0.73 cm<sup>3</sup>, respectively (day 7 vs 10 p< 0.01) and sites remained essentially spherical. Conceptus pressure declined between 7 through 10 dpc: 5.87 ± 1.53; 5.29  $\pm$  1.53; 3.77  $\pm$  0.95 and 3.18  $\pm$  0.76 mmHg, respectively (day 7 vs 10 p<0.05). Pressure fluctuated slightly: the frequency of change declined rapidly between 7 and 8 dpc (3.17 ± 1.25 to 1.59 ± 0.50 peaks/min; p < 0.01) to reach 1.08 ± 0.30 peaks/min at 10 dpc. The amplitude of fluctuation also decreased from 7 to 10 dpc (2.64 ± 0.75; 1.97 ± 0.63; 1.29 ± 0.94 and 0.91 ± 0.41 mmHg, respectively (day 7 vs 10 p < 0.01). The fluctuations in pressure were correlated with myometrial contractions. Pressure inside conceptuses is a result of fluid accumulation within and uterine compression from without. The decline in conceptus pressure suggests that the uterine wall becomes progressively more compliant as blastocyst cavity/yolk sac fluid accumulates within the conceptus. Compliance increases primarily in the antimesometrial wall. Conceptus expansion resulting from internal pressure may enhance conceptus-uterine metabolic exchange by increasing the ratio of conceptus surface to cytoplasmic mass and by facilitating apposition of conceptus-uterine surfaces. (\*Alexander-von-Humboldt-Stiftung Forschungsstipendiat.)

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