

83. THE EFFECT OF SEMINAL VESICLE ABLATION ON REPRODUCTIVE OUTCOME IN MICE

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The molecular and cellular events occurring within the uterus preceding embryo implantation are critical for the future development of the embryo and placenta. A key regulator of the pre-implantation uterine environment is hypothesised to be seminal plasma, derived primarily from the seminal vesicle glands. To investigate the importance of seminal plasma in embryo implantation and fetal development, male mice deficient in seminal plasma were prepared by surgical removal of the seminal vesicles. Females mated with seminal vesicle deficient (svx) males exhibited a reduction in pregnancy rate compared to females mated with intact males, with 43% (10/23) compared to 100% (9/9) matings resulting in pregnancy respectively. A 4.6-fold reduction in implantation rates was also seen between females mated with svx and intact males ($P<0.005$). Fetal and placental weights were assessed at day 18 of pregnancy to evaluate the importance of seminal plasma in post implantation development. Fetal weight was not significantly altered at day 18, but placentas derived from svx matings showed a 17% increase in weight compared to placentas taken from females mated with intact males ($P=0.005$). This resulted in a 15% reduction in the ratio of fetal to placental weights ($P<0.005$), a measure of placental transport function. Morphometric analysis was performed on placentas to assess the impact of seminal plasma on placental structure. The mid-sagittal area of placentas obtained from svx-mated females was significantly increased ($P=0.02$), due to a relative increase in both the junctional and labyrinthine areas. These data show that factors in seminal plasma contribute to establishing early pregnancy and facilitating optimal placental development. Exclusion of seminal plasma from the insemination process can reduce the quality of placental function, possibly impacting on the conceptus in adult life. This finding is relevant to assisted reproductive techniques such as IVF where pregnancy may be initiated in the absence of female tract exposure to semen.