MECHANISMS CONTROLLING RESTING OVARIAN FOLLICLE RECRUITMENT FROM POST-OPERATIVE FOLLOW-UP OF OVARIAN TRANSPLANTS

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Materials and Methods: 14 women underwent thin ovarian tissue transplantation obtaining post-op follicle stimulating hormone (FSH), luteinizing hormone (LH), estradiol, and anti-Mullerian hormone (AMH) levels over a prolonged period of years. Aside from pregnancy rate and live birth rates already reported, our goal was to study the mechanisms of resting follicle recruitment.

Results: The return of ovarian function was robust and predictable for all parameters. Ovulation, menstruation, and Day 3 FSH always returned by 4.5 months. Once the FSH returned to normal, the AMH then began to spike to high levels, almost twice the AMH level of the ovary donor.

The AMH level in the recipient then came down over the rest of the first year to much lower levels, one third that of the donor, whose AMH remained constant. The grafts last for many years despite a relatively low but constant AMH.

Conclusions: The time for resting follicles to reach the menstrual cycle and ovulate is consistently 4.5 months. The recruitment of resting follicles in both adult and fetus is controlled by pressure. The fetal female sex cords (once meiosis is initiated by retinoic acid) must invade the tough stroma of the tunica albuginea, to prevent a massive sudden release of eggs, and must arrest in prophase. Likewise, when a thin ovary transplant begins to function, there is a massive release of eggs from the resting phase.