Research has shown that AMH closely corresponds with ovarian reserve (La Marca et al., 2010). It is unclear if AMH could be useful for predicting a woman's likelihood of a successful pregnancy.

To further examine the above information, Kelton Tremellen and Michelle Kolo performed a study in which they sought to determine if serum AMH corresponds with the likelihood of live birth following intrauterine insemination (IUI) treatment ("Serum Anti-Mullerian Hormone is a Useful Measure of Quantitative Ovarian Reserve but does not Predict the Chances of Live-Birth Pregnancy," *Australian and New Zealand Journal of Obstetrics and Gynecology*, 2010;50:568-572). "Serum AMH is a useful marker of quantitative but not qualitative ovarian reserve as it correlates well with AFC, yet bears no relation to chances of live-birth or miscarriage," reported Tremellen and Kolo.

This retrospective study included 1.032 women who were undergoing routine infertility examination. The researchers developed serum AMH percentile charts using AMH measurements. Women undergoing IUI treatments (n=244) were categorized according to low (first quartile), normal (second and third quartiles) or high (fourth quartile) serum AMH levels in relation to their age; resulting pregnancies outcomes were evaluated.

Serum AMH levels decreased with advancing maternal age and were closely associated with quantitative ovarian reserve (antral follicle counts). The live birth and miscarriage rates were similar in all four AMH quartiles.

"The results of this study suggest that while serum AMH is an effective measure of quantitative ovarian reserve, it does not predict live birth or miscarriage rates independent of age," stated Tremellen and Kolo. "Therefore, serum AMH does not appear to be a useful marker for oocyte quality."

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Reproductive Genetics

Embryo Banking for PGS among Women with Advanced Maternal Age

For women with advanced maternal age (AMA), embryo banking with preimplantation genetic screening (PGS) increases the chances of proceeding to embryo transfer compared with use of PGS alone, state researchers in the United States.

The risk of chromosomal aneuploidy after PGS is high for women diagnosed with AMA (Verlinsky et al., 1995; Magli et al., 1998; Munne et al., 2002) at ≈ 60 - 80% (Munne et al., 2007; Mastenbroek et al., 2007; Staessen et al., 2004). Older women who choose to have PGS when they have a low number of embryos may not be able to transfer any embryos; conversely, AMA patients who choose not to have PGS will be able to transfer embryos but will not know the chromosome status of those embryos (Practice Committee of Society for Assisted Reproductive Technology, Practice Committee of American Society for Reproductive Medicine, 2008).

The goal of this study by J.J. Orris and colleagues was to examine whether use of embryo banking with PGS is superior to that of PGS alone for older women. "Our data suggests that banking will increase the odds of going to transfer but there was no increase in pregnancy rates," wrote Orris et al. ("The utility of embryo banking in order to increase the number of embryos available for preimplantation genetic screening in advanced maternal age patients," *JARG*, 2010;27:729-733).

The study included 38 AMA women who underwent IVF with PGS between December 2006 and April 2010; 19 women banked their embryos (group 1) and 19 did not (group 2). Group 2 was further divided into those patients with > 10 embryos (group 2A; n = 8) and those with < 10 embryos (group 2B; n = 11). Patients in group 2A were not included in calculations with the control group because they had enough embryos and stimulated well enough to have PGD without banking. Ovarian stimulation utilized uFSH with GnRH agonist pituitary down-regulation or GnRH antagonist and hCG. Once one follicle reached ≥ 18 mm in diameter, hCG

was administered, and eggs were retrieved 38 h later. Egg retrieval, sperm preparation, conventional insemination, and intracytoplasmic sperm injection (ICSI) were performed as previously described (Taylor et al., 2008). Fertilization was assessed 16 - 20 h after insemination, and fertilized oocytes were transferred to cleavage media. Embryos were assessed 2 and 3 days after insemination. All patients were given the option of banking their zygotes and proceeding with another IVF cycle; zygote freezing and thawing utilized the one-step cryopreservation method (Leibo, 1984). Embryos were biopsied on day 3. A cell containing a visible nucleus was removed and isolated from the embryo; embryos were then rinsed and placed into blastocyst media. Isolated cells then underwent either 9 probe or 12 probe fluorescence in-situ hybridization (FISH). Blastocysts were assessed on day 5 and day 6 post-insemination.

Statistical analysis utilized unpaired t-tests, Fisher's exact test, and {{chi]}^{2} test. $P < 0.05$ was considered significant.

Groups 1 and 2 did not differ significantly in age, number of embryos biopsied, number of normal embryos, and number of embryos transferred. The number of patients who did not have an embryo transferred was 15.8% in group 1 (banked cycles) versus 42.1% in group 2 (not banked cycles) ($P = 0.1510$). Pregnancy rates were also similar between groups 1 and 2 at 37.5% and 63.6%, respectively ($P = 0.2519$).

When banked cycles (group 1) were compared with controls (group 2B), significant differences were found in the average number of embryos biopsied (10.6 ± 4.1 for group 1 and 6.1 ± 2.3 in group 2B; $P = 0.0024$), average number transferred (ET) (1.5 ± 1.2 vs. 0.6 ± 0.8; $P = 0.0354$), and number of cycles with no embryo transfer [3 (15.8%) vs. 6 (54.5%); $P = 0.0419$]. Neither hCG nor clinical pregnancy rate differed significantly between group 1 and group 2B.

"In summary, banking increased the odds of having a transfer in poor responding patients diagnosed with AMA; however, the pregnancy rate per egg retrieval or transfer was not influenced," stated Orris et al.

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Reproductive Biology

Use of HA Binding Assay to Select Motile Spermatozoa with Normal Morphology

The hyaluronic acid (HA) binding assay is not particularly effective in selecting healthy, motile sperm with normal morphology at high magnification, according to research from Brazil.

The use of HA to select healthy sperm for intracytoplasmic sperm injection (ICSI) was first reported by Jakab et al. in 2005, who suggested that immature spermatozoa have low levels of the protein HspA2 and fail to undergo cytoplasmic membrane remodeling, which leaves the spermatozoa unable to bind to HA. HA-bound sperm, on the other hand, are mature, lack apoptotic markers and DNA fragmentation (Jakab et al., 2005; Huszar et al., 2003; Cayli et al., 2004; Ye et al., 2006), have a normal frequency of chromosomal aneuploidies (Jakab et al., 2005), and meet normal Tygerberg strict (Ye et al., 2006; Nasr-Esfahani et al., 2008; Prinosilova et al., 2009; Tarozzi et al., 2009) and normal nucleus morphology (Parmegiani et al., 2010). Bartoov et al. (2002), however, presented another method for selecting healthy sperm. Their method utilized an inverted microscope equipped with high power Nomarski optics, enhanced by digital imaging to achieve a magnification ≥ 6300x, to select spermatozoa according to their nuclear fine morphological integrity. High magnification motile sperm organellar morphology examination (MSOME) showed that selection of a morphologically-normal sperm nucleus prior to ICSI improves fertilization, development, and pregnancy rates (Bartoov et al., 2003; Berkovitz et al., 2006, 2006, 2005; Hazout et al., 2006; Wittemer et al., 2006) and also increases the chance of having a healthy, normal child (Berkovitz et al., 2007).

Researchers C.G. Petersen and colleagues sought to evaluate the efficacy of the HA binding assay in selecting motile spermatozoa with normal morphology at high magnification in the