O-077 Does telling children that they are donor conceived affect family functioning? A comparison of donor insemination and egg donation families

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Introduction: More gamete donation parents than ever before are deciding to tell their child/children that they were conceived using donated gametes. Parents typically start this process by the time their children are four years old. As yet, we know little about how disclosure in early childhood affects family functioning. This study addressed the following question: does family functioning differ in disclosing, or non-disclosing families, and does this differ depending upon whether parents conceived via donor insemination (DI) or egg donation (ED)? Parent psychological well-being, the quality of parent-child relationships and child adjustment was explored in families in which children were seven years old.
Material and Methods: Of the 36 DI and 32 ED families who participated in the study, 28% of DI (n = 10) and 41% of ED (n = 13) parents had started the process of disclosure. Data were collected via standardised interviews with mothers, observational data of mother-child interaction, and questionnaires completed by mothers and the child's teacher.
Results: All families were found to be functioning well. Few differences emerged in the quality of parent-child relationships. In an observational task of mother-child interaction, the interaction effect of family type and disclosure status was significant: F (1, 54) = 4.26, $p < 0.05$. In the DI group, disclosing families had the highest levels of mutuality (interaction characterised by warmth, mutual responsiveness and cooperation), yet for ED families it was mothers and children in non-disclosing families who had the highest levels of mutuality.

In terms of child psychological adjustment, the interaction effect of family type and disclosure status was significant for mothers' ratings on the Strengths and Difficulties questionnaire: (F (1, 45) = 5.76, $p < 0.05$), and was marginally significant for teachers' ratings on the same questionnaire (F (1, 45) = 3.20, $p < 0.08$). The same pattern emerged in data collected from mothers and teachers. For donor insemination children, those in non-disclosing families were rated as having the greatest problems, whereas for egg donation children, those in disclosing families were rated as having the most problems.
Conclusions: Few differences emerged between family types in this analysis. Where differences did emerge, outcomes differed between disclosing and non-disclosing families depending upon whether parents had conceived by donor insemination or egg donation. In donor insemination families, outcomes favoured disclosing families, whereas in egg donation families, outcomes favoured non-disclosing families. All effect sizes were small and all families (whether disclosing, non-disclosing, donor insemination or egg donation) were functioning well.

O-078 The donor's future role in the child's life: views of parents and donors

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Introduction: In the Netherlands, identity registered gamete donors became compulsive in 2004. Since then no studies have been conducted investigating changing attitudes among donors and recipients. This study aims to question parents and donor's views on telling the child, the right to know one's genetic origins, the potential contact between donor and child.
Materials and Methods: Data were collected in one of the major Dutch fertility centers with a sperm bank. The respondents were recipients (224) and sperm donors (40), both unknown to each other. A self developed written questionnaire was filled in during their visit at the clinic. Data were analyzed using non parametric statistics.
Results: Among the 78 heterosexual couples, 105 lesbian couples and 41 single mothers, the mean ages were respectively 32y., 33y. and 38,5y. In all groups more than 50% received a form of higher education with single women being the most educated. Donors had a mean age of 37 and 73% received a form of higher education.

To the question whether a child has the right to know the donor's identity, the percentage of respondents who agreed were divided as follows: 54% of the heterosexual couples, 81% of lesbian couples and single mothers, 100% of the donors.

The majority of recipients in all groups "did not mind" if their child would want to meet the donor (70-88%). However differences between groups were significant in that 18% of the heterosexual parents "would rather not" opt for a meeting between child and donor and 27% of the single mothers "would want" their child to meet the donor.

Attitudes of donors themselves varied between "would not mind" (62%) to "would want to" (35%).

Recipients could indicate which future role they expected the donor to play in their child's life: Heterosexual couples responded as follows:, 49% "none", 38% "provider of information of certain characteristics, 9% "a person with whom the child might develop a relationship". Lesbian couples responded as follows: 35% "none", 54% "provider of information of certain characteristics", 10% "a person with whom the child might develop a relationship". Single mothers responded as follows: 13% "none", 43% "provider of information of certain characteristics, 28% " " person with whom the child might develop a relationship".

Donors responded as follows:, 15% "none", 50% "provider of information of certain characteristics, 35% "a person with whom the child might develop a relationship".

The meaning of all issues described above depends greatly on future parents' intention to inform the child about its donor conception. Parents who intended to tell were divided as follows: 85% of the heterosexuals, 92% of the lesbians and 100% of the single mothers. Did parents expect some difficulties in telling? 80% of the heterosexual couples' responses varied from "a little to rather difficult", whereas this was the case in 57% of the single mothers and 36% of the lesbian couples.
Conclusion: Important differences in attitudes exist within the 3 types of recipients and between recipients and donors. Heterosexual couples in particular express their doubts with regard to a future contact between donor and child. Furthermore, although the majority intends to tell, most of them find the information process a difficult task. Of all groups the single mothers are most open to contact between donor and child. The donors themselves under scribe the new law and 85% is willing to play a certain role in the child's life.

SELECTED ORAL COMMUNICATION SESSION

SESSION 21: FEMALE FERTILITY AND ART

Monday 4 July 2011 **15:15 - 16:30**

O-079 Reproductive outcomes in couples affected by human papillomavirus infection undergoing in vitro fertilization procedures

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Introduction: Genital human papillomavirus (HPV) infection is the most common sexually transmitted viral infection worldwide, and has been associated with precancer and cancer of the male and female anogenital mucosa. Although it is well known that sexually transmitted infections are the primary cause of infertility few studies have investigated the effect of HPV infection on human reproduction. It has been designed a prospective study to investigate the role of HPV infection in infertile couples undergoing assisted reproductive technology (ART) cycles. The objectives of this study were to assess the prevalence of HPV infection in infertile couples, and to evaluate the correlation between HPV infection and ART outcome.
Material and Methods: A total of 199 couples were enrolled from May 2008 to May 2009. The mean age of women and men were 34.7 ± 5.01 and 38.0 ± 6.36 years, respectively. Types of infertility were female (tubal occlusion, chronic anovulation, 24.1%), male (severe oligoasthenoteratozoospermia, 58.6%), couple (6.8%), and idiopathic (10.5%). The exclusion criteria were: cases of azoospermia, couples with repeated implantation failures and cases of endometriosis. All women had undergone cervical cytologic screening within the previous 12

months, with no cytologic abnormality reported. No patients tested were positive for microbiological and viral infections. Patients were treated with standard ovulation induction protocols and underwent cycles of ART. Cervical cells were obtained with the combined use of an Ayre's spatula and an endocervical cytobrush before oocyte recovery by transvaginal ultrasound-guided follicular puncture, and were placed in 20 mL of PreservCyt Solution (Cytyc Corp,). Total DNAwas extractedwith the QIAampMiniKit (Qiagen,Germany).

All investigations, both for IVF and ICSI procedures, were carried out on spermatozoa prepared with the swim-up technique. The association between pregnancy and miscarriage for demographic and clinical variables was assessed using the Chi-square test or Fisher's exact test, as appropriate. A P value %.05 was considered statistically significant.

Results: Out of the 199 couples, the male partner was HPV positive in 9.5% of couples (19/199), whereas the female partner had a positive HPV DNA test in 17.5% of couples (35/199). Both partners were HPV positive in 4.5% (9/199) of couples.

Statistical analysis showed no differences in the rate of pregnancy in terms of HPV status. When considering the HPV infection of couples, the PR was 33.3% and 31.6%, respectively, in HPV negative and HPV positive men, and 31.1% and 42.9%, respectively, in HPV negative and HPV positive women. Conversely, miscarriage rates showed statistically significant differences. Couples who underwent ART cycles experienced an increased risk of pregnancy loss when HPV DNA testing was positive in the male partner, compared with non infected patients (66.7%–15%, $P < 0.01$. It is worth noting that all pregnanciesin HPV-positive couples resulted in miscarriage, whereas there was a 15.9% overall miscarriage rate in HPV-negative couples ($P < 0.001$).

Discussion: Several studies have shown that infected spermatozoa may play a role as carriers of HPV DNA both in the reproductive tract and within the oocyte, with the possibility of detrimental effects during embryo development.

The results of our study showed, for the first time, a significant increase in the risk of pregnancy loss when HPV infection was diagnosed in sperm cells of the male partner. Noteworthy was the fact that all pregnancies achieved when both partners were HPV infected resulted in miscarriages.

Further studies are needed to confirm the correlation between HPV male infection and increased risk of pregnancy loss after ART. In this case the extension of anti-HPV vaccination to adolescent males, along with anogenital and oral cancer prevention, could be recommended.

O-080 Factors associated with dizygotic twinning after IVF treatment with double embryo transfer

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Introduction: Dizygotic pregnancies after IVF treatment are the result of double embryo transfer (DET) followed by successful multiple implantation. It has been demonstrated that increased height and Body Mass Index (BMI) correlate with natural dizygotic twinning. So far, factors that increase the risk of multiple implantation after IVF remain relatively unknown. As the emphasis of the today's IVF-practice is on the prevention of multiple pregnancies without compromising the current pregnancies rates, there is a need for identification of women with an increased risk of multiple implantation after double embryo transfer (DET). Therefore, the present study aimed to investigate the association between routinely registered variables and dizygotic twin pregnancy after DET using data from a large Dutch nationwide cohort of women who underwent IVF treatment (OMEGA database).

Material and Methods: Between 1983 and 1995 19,840 women in the Netherlands underwent IVF treatment (OMEGA-study group). The OMEGA study was originally designed to investigate the late effects of hormone stimulation for IVF treated women. For the present study we selected all first ‚fresh' IVF and ICSI cycles with DET, resulting in the delivery of a singleton or twin (both living and stillborn). Exclusion criteria were: insufficient data from medical files, oocyte donation cycles, participation in another treatment besides IVF or ICSI, abortion, ectopic pregnancy and miscarriage. A multivariate logistic regression analysis was performed, in which the dependent variable was type of pregnancy (singleton/multiple) and independent variables were: BMI, weight, height, maternal age, number of oocytes retrieved, use of alcohol, level of education and parity.

Results: Of the 6,589 patients who completed their first IVF cycle, 2,375 women had DET in their first cycle. These cycles resulted in 496 pregnancies, of which 371 singleton pregnancies and 125 twin pregnancies. Multivariate regression analysis revealed that a high maternal height (>1.74cm) and a high number of retrieved oocytes at oocyte retrieval (>11 oocytes) were independently significantly positively associated with multiple pregnancies (Odds Ratios (OR) 2.8 (95%CI 1.3-5.8) and 2.3 (95%CI 1.3-2.4), respectively).

Conclusion: Our data demonstrate that increased height and number of retrieved oocytes are associated with an increased risk of multiple implantation after DET. Future studies should look into their predictive value to develop predictive models for women at risk for multiple pregnancy after DET.

O-081 Evaluation of four years experience of an ovum donation (OD) program using cryo-banked oocytes

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Introduction: An efficient oocyte-banking program could solve the existing limitations linked to the current practice of fresh OD, specially those related to the long waiting lists increasing the available stock of phenotypical variety resulting very helpful for the recipients-donors matching. Additionally, oocyte cryo-banking provides a valuable advantage permitting a quarantine period. A controlled randomized clinical trial conducted in our institution has confirmed the efficiency of oocyte cryostorage, yielding comparable results to those obtained with fresh eggs.

The aim of the current study was to illustrate the clinical outcome after 4 years of oocyte-banking practice for OD and to determine the cumulative likelihood to achieve an ongoing pregnancy (OP) depending on the number of vitrified oocytes donated.

Materials and Methods: Descriptive cohorts study conducted in a private university-affiliated IVF centre. Data from ovum donation cycles conducted with vitrified oocytes stored for a minimum of six moths, from January 2007 to November 2010 have been analysed. Written informed consents were obtained in all cases. Donor stimulation and endometrial preparation for recipients were performed as described elsewhere. Oocyte vitrification was performed by the Cryotop method. Main outcome measurements were OP rate (OPR) and cumulative OP rates (COPR) per vitrified/thawed oocyte employed. Survival, fertilization and implantation rates as well as key cycle and embryo development parameters were also recorded.

Data are expressed as means or proportions with 95% confidence interval within brackets. Kaplan-Meier survival curves were drawn to calculate the COPR per used oocyte, considering both fresh and frozen/thawed embryo transfers, being "used" defined as all donated oocytes not surviving vitrification, yielding embryos blocked during its development or being transferred from all consecutive OD cycles until reaching an ongoing pregnancy or abandon. Vitrified embryos not warmed yet were not computed as used oocytes.

Results: A total of 1856 OD cycles after oocyte cryo-banking have been performed from 1187 donors, 27.1 years old(26.9-27.3) and BMI 22.5kg/m2(22.3-22.7). A total of 22741 (12.2(12.0-12.4) per donor) MII oocytes were donated to 1602 recipients, (41.1 years old (40.9-41.3) and BMI 23.7kg/m2(23.5-23.9)). Survival rate was 90.1% (89.7-90.5), and 20699 oocytes (11.1(10.9-11.3) per donation cycle) were inseminated by ICSI. Fertilization, cleavage on day-3, blastocyst and implantation rates were 73.4% (72.8-74.0), 83.8% (83.2-84.4), 58.9% (57.8-60) and 41.9% (28.7-32.0), respectively.

As top quality embryos were classified 52.6% (51.7-53.5) of day-3 embryos and 36.5% (31.1-37.9) of the entire blastocysts' cohort.

Surplus embryo vitrification was performed in 1181 cycles (63.6% (61.4-65.8) with 1.9(1.7-2.0) embryos revitrified per cycle.

We performed 1607 embryo transfers (86.6% (85.0-88.0), with 1.6(1.5-1.7) embryos per transfer, from which 46.7% (44.4-45.0) on day-3 and 53.5% (51.2-55.8) on blastocyst stage. OPR per donation cycle was 41.3% (39.1-43.5).

From revitrified embryos, 423 cryotransfers have been done with 2.2(2.1-2.3) embryos replaced, achieving OPR of 42.1% (37.4-46.8) per warming.

Considering both fresh and cryotransfers, COPR was 50.0% (48.8-52.3) when a total number of 13 oocytes were employed, increasing to 58.7% (55.9-61.6) with 15, and 76.1% (73.0-79.2) with 20 oocytes used, raising slower from 25 (85.6%82.4-88.8) onwards, with the maximum COPR in 97.6% (94.8-100).

To date, 520 babies from 395 deliveries have born.

Conclusions: With our results, in the largest series presented from a 4 years experience, we are describing the current performance of vitrified oocytes in an ovum donation program, which offer excellent clinical outcomes, aiming to achieve the advantages of gamete storage without jeopardizing success rates.

O-082 Nomogram for predicting live birth from egg number: an analysis of 400,135 IVF cycles

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Introduction: The primary aim of *in vitro* fertilisation (IVF) treatment is to achieve a term live birth. However, as the number of eggs retrieved is considered to be an important prognostic variable, IVF treatment protocols aim to optimise this outcome. Studies evaluating IVF treatment regimens and ovarian reserve tests such as anti-müllerian hormone (AMH) or antral follicle count (AFC) often use egg number as a surrogate outcome. However, this practice has been criticised as the relationship between egg number and live birth is poorly understood. The aim of this study was to explore the association between egg number and live birth following IVF treatment and identify an egg number that would optimise IVF outcome.

Material and Methods: Anonymised data on all IVF cycles performed in the UK from April 1991 to June 2008 were obtained from the Human Fertilisation and Embryology Authority (HFEA). We analysed data from 400,135 IVF cycles. A logistic model was fitted to predict live birth using fractional polynomials to handle egg number as a continuous independent variable. The prediction model, which was validated on a separate HFEA dataset, allowed the estimation of probability of live birth for a given egg number, stratified by age group. We provided the predicted probability of live birth for a given egg number and age group. We produced a nomogram which provides a graphic depiction for easy interpretation of the results.

Results: The median number of eggs retrieved per cycle was 9 (IQR 6 – 13) and the median number of embryos created was 5 (IQR and 3 – 8). The overall live birth rate (LBR) was 21·3% per fresh IVF cycle (95% CI 21·2 – 21·4%), with a gradual rise over the four time periods in this study (14·9% in 1991 – 1995, 19·8% in 1996 – 2000, 23·2% in 2001 – 2005, and 25·6% in 2006 – 2008). There was a strong association between egg number and LBR; LBR rose with increasing egg number up to about 15, plateaued between 15 and 30 and fell beyond 30 eggs. The same pattern was observed in all four of the time periods. For a given number of eggs LBRs increased over time but decreased with increasing age. During 2006 - 2007, the predicted LBR for women with 15 eggs retrieved in age groups ≤ 34, 35 – 37, 38 – 39 and 40 years and over was 40%, 36%, 27% and 16% respectively.

Conclusion: Our data suggest that 15 eggs may be the optimal number to aim for in a fresh IVF cycle in order to maximise treatment success whilst minimising the risk of OHSS which is associated with high egg numbers The relationship between egg number and live birth, across all female age groups, suggests that egg number in IVF is a robust surrogate outcome for clinical success. The nomogram that we have established is the first of its kind that allows prediction of live birth for a given egg number and female age group. This is potentially valuable for patients and clinicians in planning IVF treatment protocols and counselling regarding the prognosis for a live birth occurrence, especially in women with either predicted or a previous poor ovarian response.

O-083 High birth rates for donors and recipients treated in a long term egg sharing programme

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Introduction: Egg sharing is a simple process where a woman undergoing IVF treatment gives some of her eggs to a matched recipient who has exhausted her own supply and in return, the recipient contributes towards the cost of the sharers treatment. We provide data from a long term study to show that the sharer's own chances of a successful outcome are not reduced by sharing her eggs with a matched recipient.

Material and Methods: Between 2005-2009, 246 sharers (n = 211, age 30.5 ± 3.6) were matched with 252 recipient treatments (n = 227, 42.7 ± 5) and their outcome was compared with 680 cycles (n = 582, 31.6 ± 3.0) with virtually similar ovarian stimulation regimens (Gonal F, Merck Serono). Sharers and non sharers produced an average of 12.1 ± and 16.5 ± eggs respectively. Conventional similar methods of IVF/ICSI treatments were used in all groups of patients.

Results: Between 1.7 – 1.9 embryos per patient were transferred in each group, resulting in the following overall per cycle and per patient birth rates: Non sharers 44% and 51.3%; Sharers 43.5% and 50.7%; Recipients 30% and 34%.

Twin births per cycle were recorded as follows: Sharers 35.5%; Non sharers 10%; Recipients 28%. Over a longer period when all the frozen embryos have been used, in sharers and recipients the number of babies born from the sharers eggs will exceed the number of egg collections (n = 246).

Conclusions: An undisputed ethical advantage of egg sharing over egg donation from non-patient volunteers is the elimination of all long-term extra risks from IVF to the health of an egg donor. Our results clearly indicate that in an egg sharing programme, whilst receiving subsidised IVF treatment, an egg sharer is also not disadvantaged in terms of her own results. Commercial egg donation schemes, recently advocated by the HFEA in the UK, if applied, will turn healthy young women who don't need treatment into risk-taking 'patients' who do. Instead of promoting risky compensation proposals to meet the demand for donor eggs, egg sharing should be promoted as an effective policy and as an example of mutual self-help in reproductive medicine.

SELECTED ORAL COMMUNICATION SESSION

SESSION 22: FERTILITY PRESERVATION - BASIC

Monday 4 July 2011 **15:15 - 16:30**

O-084 Can PGS of polar bodies assist in fertility preservation?

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Introduction: Most women considering fertility preservation are not ideally young but in fact over the age of 35, and thus at high risk of producing aneuploid oocytes. Because of the inter-age group variations in chromosome abnormalities, it is difficult to predict how many eggs they need to freeze to preserve their fertility.

The purpose of this study was to determine if 1st polar body chromosome abnormality rates in two consecutive PGS cycles are consistent. If so, 1st polar bodies could be analyzed in the first cycle of fertility preservation, and based on that result the number of further cycles needed could be adjusted.

Material and Methods: Patients underwent two or more PGS cycles of concomitant 1st and 2nd polar body biopsy 12-15 hours post insemination followed by FISH with 8-chromosome probes (X, 13, 15, 16, 17, 18, 21, 22). All patients were treated in the same fertility center.

A total of 39 patients were included in the study, with an average maternal age of 37.7 years, average number of eggs of 10.4, average number of MII eggs of 8.4, and average number of eggs analyzed of 6.4 per cycle.