Egg-sharing in assisted conception: ethical and practical considerations


1 Cromwell IVF and Fertility Centre, Cromwell Hospital, London SW5 0TU and 2 Washington Hospital, Washington, Tyne and Wear NE38 9JZ, UK

The present acute shortage of eggs for donation cannot be overcome unless adequate guidelines are set to alleviate the anxieties regarding payments, in cash or kind, to donors. The current Human Fertilisation and Embryology Authority (HFEA) guidelines do not allow direct payment to donors but accept the provision of lower cost or free in-vitro fertilisation (IVF) treatment to women in recognition of oocyte donation to anonymous recipients. Egg-sharing achieved in this way enables two infertile couples to benefit from a single surgical procedure. However, the practical guidelines related to this approach are ill-defined at the present time leading to some justifiable uncertainty. A pilot study was therefore undertaken in order to establish the place of egg-sharing in an assisted conception programme. The current HFEA guidelines on medical screening of patients, counselling, age and rigid anonymity between the donor and recipient were followed. The study involved 55 women (25 donors and 30 recipients) in 73 treatment cycles involving fresh and frozen-thawed embryos. Donors were previous IVF patients who, regardless of their ability to pay, shared their eggs equally with matched anonymous recipients. They paid only for their consultations and tests right up to the point of being matched with a recipient. The sole recipient paid the cost applicable in egg donation of a single egg collection, although both received embryo transfers. The results indicate that although the recipients were older than the donors (41.4 ± 0.9 versus 31.6 ± 0.5 years), and there was no difference in the mean number of eggs allocated, the percentage fertilisation rates, or the mean number of embryos transferred, there were more births per patient amongst recipients than amongst donors (30 versus 20%). We conclude that providing the donors are selected carefully, this scheme whereby IVF patients themselves become anonymous egg donors helps a sub-fertile recipient is a very constructive way of solving the problem of the shortage of eggs for donation. There are also the advantages of including a group of women who would otherwise be denied treatment. Problems related to ‘patient coercion’ can, in our view, be fully overcome by the application of strict common-sense safeguards. The ideal of pure altruism is not without its medical and moral risk. The success of egg-sharing depends on shared interests and a degree of altruism between the donor, the recipient and the centre. The current HFEA guidelines should be applauded for enabling a highly effective concept of mutual help to develop.

Key words: altruism/egg donation/egg sharing/payment to donors

Introduction

An increasing demand for egg donors remains unfulfilled in the UK [Human Fertilisation and Embryology Authority (HFEA), 1994]. In-vitro fertilization (IVF) using donor eggs is the only form of therapy for many women who suffer early ovarian failure (Edwards, 1993). The number of women who seek egg donation is also rising as more women continue to defer child-bearing to later years when their natural fecundity has declined. During the last two decades the number of women giving birth in their 30s and 40s as opposed to their 20s has increased significantly (Central Statistical Office, 1995).

The acute egg shortage is compounded by limited opportunities for the provision of assisted conception facilities in the National Health Service (NHS) in the UK (Redmayne and Klein, 1993; Wiles and Patel, 1995), which reduces the number of potential egg providers. Since eggs from aborted fetuses and cadavers are neither acceptable (Kazem et al., 1995) nor may they be used for treatment, there is a considerable need for increased egg donation from live donors, selected within the guidelines of the HFEA (Human Fertilisation and Embryology Act, 1990). These include medical screening, independent counselling, an upper age limit on donors and the concept that egg donation should be anonymous. There must also be no coercion and, although expenses may be reimbursed, no cash payments are permitted.

Previously both known and unknown donors have been used, but these do not currently meet the needs of all those who require eggs for their treatment. In many countries, egg shortages have led to the provision of self-help egg-sharing schemes whereby IVF patients themselves become anonymous egg donors either voluntarily or in return for less expensive treatment for themselves (Sauer and Paulson, 1992; Remohi et al., 1993; Check et al., 1994; Yaron et al., 1995a, b). In the USA in 1992, at least 45% of the clinics offered egg-sharing (Braverman, 1993) within the context of the guidelines of the American Fertility Society Ethics Committee which recommends reasonable compensation for egg donors (Guidelines for Gamete Donation, 1993). This form of service is now believed to be available much more widely in the USA (Seibel and Kiessling, 1993). In Israel, egg-sharing is the only
acceptable form of donation permitted by law (Ben-Nunn et al., 1992; Yaron et al. 1993, 1995a, b).

In the UK, unlike the USA, current HFEA directions do not permit financial compensation to egg donors but permit free or subsidized fertility treatment and sterilization in return for egg donation. Egg sharing achieved this way is not restricted to those women who cannot afford to pay for private IVF. This approach could become particularly relevant in this country where, unlike some of our continental neighbours (FIVNAT, 1993), IVF treatments are in short supply in the NHS (Wiles and Patel, 1995) and where private insurers, unlike many states in the USA (Neuman et al., 1994), are not mandated to cover it. The logic of this scheme whereby the two disparate groups, i.e. those who need donated eggs and those who require uncomplicated IVF, are of mutual help is inescapable under our particular circumstances in the UK. Neither party should feel exploited since both benefit from the arrangement; nor should the centre’s motives be doubted provided it is demonstrably fair in its treatment of the patients and it rigidly adheres to declared and approved policies. Prompted by some of our patients and following the approval of our policies by the HFEA, we began a pilot study on egg-sharing (Ahuja et al., 1996; Simons et al., 1995), the first of its kind in the UK, in our assisted conception programme. This paper describes how egg-sharing could become an effective means of providing IVF treatment to many patients who would otherwise be excluded from such treatment.

Materials and methods

Egg sharing

The basis of this arrangement is that a single egg collection operation is performed for the benefit of two patients. Since only one egg collection operation is performed, only one fee is charged which is equivalent to a standard fee for IVF egg donation and it is paid by the recipient. Donors are responsible for their own drugs and initial screening, but they are not required to pay for ovulation induction, surgery or embryo transfer.

At egg collection a participating donor donates half the eggs collected to an anonymous matched recipient. Unless otherwise specified by the donor, if there is an uneven number of eggs, the extra egg is usually offered to the donor.

Due to the financial implications involved in the scheme, and the variable views held on the same issue by different Ethics Committees (Hotopf et al., 1995), we specifically sought approval from both the HFEA and our two independent Ethics Committees at the Cromwell and Washington Hospitals, UK; both are private hospitals. Subsequently the scheme was also submitted for independent examination by two further Ethics Committees in the NHS. These were at St George’s Hospital Medical School, University of London, UK, and Hope Hospital, University of Manchester, Salford, UK.

Patients

IVF treatment with egg-sharing was initially offered to pre-existing patients who had originally been referred by consultants or a general practitioner to our IVF programmes at the Cromwell Hospital in London and Washington Hospital, Tyne and Wear.

Patients from our IVF programme initially suggested this form of egg donation as many were aware of the acute shortage of donors. Women who had, in the past, demonstrated a good response to follicle stimulation and fertilization donated half their oocytes to the recipient after appropriate counselling. The donors, women <35 years, were largely those with tubal infertility, whereas the recipients were menopausal, or perimenopausal women [day 3 follicle stimulating hormone (FSH) of >10 IU/l and oestradiol of <60 pmol/l] and poor responders to ovulation induction in previous IVF attempts, who had been on our waiting list for egg donation for >2 years.

Donor screening included the following tests: human immunodeficiency virus (HIV), hepatitis B and C, syphilis screening (VDRL), cytomegalovirus antibodies, high vaginal swab (HVS) micro-organism culture and a cervical swab for Chlamydia culture. Haemoglobin and blood group were recorded and, more recently, DNA analysis is performed to exclude donors who are carriers of cystic fibrosis and the fragile X syndrome. Sickle cell and haemoglobin electrophoresis is carried out for the appropriate donor groups.

The welfare of the child

The welfare of the child following IVF treatment is of great importance. The patients contemplating egg-sharing were provided with extensive opportunities to consider the effect of their proposed donation on the child to be born, and are periodically informed about the current status of the recipients. An examination of the social history of the donor, recipient and respective partners was undertaken to exclude the undesirable medical (i.e. life-threatening diseases) and social (i.e. drug addiction, psychiatric disorder, personal violence) conditions. During consultation, the patients were informed of the medical problems which might arise following treatment, including ectopic and multiple pregnancies, the possible side-effects of drugs including ovian hyperstimulation and the implications of embryo cryopreservation.

The patients were also informed of the child’s right to know of his/her non-identifying genetic background at 18 years of age. Some cases were submitted to the hospitals’ independent ethical committees for guidance. This had the advantage of obtaining a dispassionate assessment from a learned body regardless of the centre’s interest in a particular case or the personalities of particular patients.

Independent counselling was provided and was taken up by the majority of patients. The patients were also aware that their treatment could not proceed without the support of the general practitioner. In no case was this support refused. A period of 3-6 months was required in most cases to complete all aspects of screening. We regarded this as being adequate time for reflection and advice, without extending the patient’s anxiety needlessly. All couples were required to give informed consent prior to starting their treatment.

Treatment

All donor patients had routine pituitary down-regulation using either buserelin (Suprecur; Hoescht UK Ltd., Hounslow, Middlesex, UK), 300 µg three times daily, or nafarelin nasal spray (Synarel; Syntex Pharmaceuticals Ltd., Maidenhead, Berks, UK) in a dose of 400 µg twice daily for 21 days. In order to synchronize the cycle with that of the recipient, the combined oral contraceptive pill (Marvelon; Organon Laboratories Ltd., Cambridge, UK) was prescribed from day 2 of the pre-treatment cycle and, after an overlap with nafarelin of 1 week, was stopped on the same day as the recipient who was menstruating or was on hormone replacement therapy (HRT).

Menopausal recipients were prescribed the combined oral contraceptive without the subsequent need for pituitary down-regulation. The combined oral contraceptive was stopped on the same day as the donor and routine HRT with 2 µg oral oestradiol valerate (Progynova; Schering Health Care Ltd., Burgess Hill, West Sussex, UK), was commenced twice or thrice daily and the patients were...
scanned by transvaginal ultrasound until the endometrial growth matched that of the donor (Smith et al., 1984).

Follicular growth was stimulated with human menopausal gonadotrophin (HMG, Humegon; Organon) in a dose of 150–225 IU daily until serial ultrasound scans showed the growth of a satisfactory number of follicles with the dominant follicle of 18–20 mm diameter and the endometrium of optimum thickness and texture (Smith et al., 1994). Human chorionic gonadotrophin (HCG, 10 000 IU) was then given i.m. to achieve egg maturation. At 36 h after HCG (Pregnyl; Organon), vaginal egg collection was performed under local or general anaesthesia as chosen by the patient.

Eggs were divided equally between the donor and the recipient. In the event of an uneven number of eggs, unless indicated otherwise, the extra egg was usually allocated to the donor. The eggs were inseminated with prepared spermatozoa in the routine manner. All stages of gamete manipulation and embryo culture were carried out using Medicult (Imperial Laboratories, Andover, Hants, UK) in an environment of 5% CO2 in air (Ahuja et al., 1985).

After 20 h, the eggs were examined for pronuclei formation and an agreed number of 2–4-cell embryos (a maximum of 3) were replaced into the uterus the following day. The luteal phase was supported by progesterone pessaries (Cyclogest; Hoechst) 400 mg twice daily and continued until the β-HCG results became known 2 weeks later. Pronucleate embryos surplus to the immediate requirements of the patients were cryopreserved using a slow cooling propanediol method.

In the treatment cycles involving the transfer of frozen-thawed embryos, the recipients were prepared by HRT as described above. The pronucleate embryos were thawed in a medium containing albumin and sucrose, washed and cultured overnight for cleavage to occur before being transferred to the patient. The luteal phase was covered by progesterone as above.

Results

There were 55 patients, including 25 donors and 30 anonymous matched recipients in our present series. Two patients donated twice, one three times and one recipient received oocytes on two occasions. These patients were treated consecutively in our IVF programme at the Cromwell and Washington Hospitals during December 1992–April 1994. Most of the frozen embryos have now been used for treatments and live births have been recorded. Limited patient numbers are a reflection of the strict acceptance criteria in our programme and our desire to discourage a high intake until the practice of egg-sharing is fully understood and the views of the patients and their general practitioners are known. Patients were free to withdraw, after initial acceptance, for whatever reason, and some exercised their right to do so.

The recipients were, as expected, older than the donors (Table I). Eggs were divided equally between the donors and recipients and the mean number of embryos transferred was also similar in the two groups. There was no major difference in the fertilization rates between the two groups.

Nearly twice as many pregnancies were established in the recipients (n = 12) as compared with the donors (n = 5) (Table I) but the number of patients is small for a serious statistical evaluation. When all the births from the transfer of fresh and frozen-thawed embryos were considered, the birth rate in recipients was higher than in donors (30 versus 20.0%). This is consistent with many published reports on egg donation including studies on egg-sharing (Flamigni, 1993; Fantos et al., 1993; Mori, 1994; Check et al., 1994; Pados et al., 1994; Yaron et al., 1995a, b).

The age-related decline in fertility is associated with eggs rather than the uterus because the eggs transferred from younger to older patients result in very high pregnancy rates (Navot et al., 1991, 1994; Bopp et al., 1995; Faddy and Gosden, 1995; Sauer et al., 1995; Ahuja et al., 1996). This is also confirmed by the present study (Table I).

Whilst all the clinical pregnancies in the donor group resulted in term deliveries, only nine out of 12 pregnancies produced babies in the recipient group. This is also consistent
with the reported increase in miscarriage rates, possibly due to increased uterine senescence, in older recipients (Cano et al., 1995).

Five donors and four recipients still have some surplus embryos stored frozen for future use, if necessary, consistent with the HFEA guidelines on the storage of frozen embryos.

The importance of careful patient selection was demonstrated in a parallel study of 12 women, six donors and six recipients, where the donors had suffered from varying degrees of endometriosis. Unlike previous reports (Simon et al., 1994), in this study no pregnancies were recorded in this group (data not shown), although the number of oocytes available was largely similar to the data presented in Table I. Women suffering from endometriosis are currently not accepted as donors in our programme.

The study demonstrates that the birth-rate in recipients did not suffer because the eggs were provided by infertile patients, as the success rates appear to be similar to the results obtained in other forms of egg donation (Sauer and Paulson, 1992; Remohi et al., 1993; Check et al., 1994). The donors also were not disadvantaged in having only half the number of eggs for their own use because the overall success rates obtained from this study were similar to the overall birth-rates obtained for a comparable period in our programme. During 1993–1994, in our programme a total of 1302 treatment cycles with fresh and frozen embryos were attempted, 1108 embryo transfers were carried out resulting in 181 clinical pregnancies (16.3%) and a total of 145 births (13.1%). A more detailed analysis of the clinical pregnancy rate per embryo transfer, involving a greater number of patients, is currently in progress. However, two recently published studies on egg-sharing have clearly established that the success rates of donors are not compromised when the oocyte pool is shared equally between the donors and their matched anonymous recipients (Check et al., 1995; Rosenwaks et al., 1995). In the larger of these two perspective studies, a direct comparison of the use of fresh embryos in donor cycles (n = 135) and standard IVF cycles (n = 474) also confirmed identical pregnancy (17.5 and 18.7% respectively) and implantation (7.5 and 7.2% respectively) rates in the two groups (Check et al., 1995).

Discussion

The results obtained from this pilot egg-sharing study clearly demonstrate that certain infertile women are suitable to act as egg donors. The concurrent treatment of donors and recipients from a single cohort of oocytes did not compromise the success of the treatment nor, to our knowledge, did it result in undue stress for either party. Most patients, donors and recipients alike, had little or no prospect of treatment until offered this egg-sharing solution. Finally, and not ignoring the generosity of many volunteer donors attending our programme, the egg donors participating in this study were not obliged to undergo demanding invasive procedures solely for the benefit of others. Both parties benefited. We believe this to be important because anxieties exist about the long-term effects of the stimulatory hormones on the female reproductive system (Fishel and Jackson, 1989; Gammon and Thompson, 1990).

In our programme, egg-sharing is practised in conjunction with other forms of egg donation. Couples who are suitable for egg-sharing in this form of egg donation normally participate in it because of the mutual-help nature of the scheme. Many who are prepared to donate some of their eggs in return for less expensive fertility treatment regard it as recompense and an acceptable compromise: much more acceptable than being content with no treatment at all. The rules governing such ‘payment in kind’ schemes require clearer understanding before the merits of the scheme can be fully assessed. We believe that the results reported here clarify certain key issues.

Firstly, there is a fear that the recipients who pay receive ‘better’ eggs or, conversely, there could be a bias towards the donor. These fears are not substantiated by the present data (Table I) which demonstrate success rates which are comparable to those obtained with other forms of donation. Egg selection is a random process as, at egg collection, the egg quality cannot be determined very accurately. In egg-sharing, eggs are allocated randomly to donor and recipient which maximizes the benefit to both parties. If donors are not selected with care a less equitable situation is sure to occur. In the current study the only donors selected were those who had already demonstrated a normal ovarian response to stimulation and, in many cases, fertilization had been proved in previous treatment cycles.

Secondly, it is argued that the donors with unsuccessful outcomes might suffer psychologically if they feel that the recipients might have been successful. An unsuccessful IVF treatment cycle will always cause the patient distress. There is no previous evidence to indicate that it is more upsetting for the patient who has also been the donor. Indeed, many donors participating in egg-sharing have either donated more than once or are waiting to do so again even though they have no knowledge of the outcome of the recipient’s treatment. For some donors the distress of an unsuccessful treatment is eased with the thought that their recipient may have been successful. Furthermore, in the comparative data on IVF patients who voluntarily donate a proportion of their oocytes, there is no reported evidence of adverse psychological effects on donors, even though this form of donation has been available in many countries for many years (Power et al., 1990; Flamigni et al., 1993; Check et al., 1994; Yaron et al., 1995a, b).

We believe that access to counselling and informed consent are pivotal and, provided these are available, it cannot be argued that women of a reproductive age and their partners are incapable of making rational and informed decisions about donation. Fears of perceived unsubstantiated risks can easily become paternalistic and simplistic (Price, 1995; Shenfield and Steele, 1995) which may prevent a practical solution to complex problems. The main motivation for donation is acknowledged to be the desire to help others start a family; a feeling greatly accentuated in volunteers, including IVF patients, who are knowledgeable about infertility (Schover et al., 1991; Raoul-Duval et al., 1992; Sauer et al., 1995; Yaron et al., 1995a, b). The fact that some IVF patients donate eggs whilst receiving a lower cost of treatment themselves does not, in our experience, diminish that feeling. A detailed survey of the attitudes of our patients is currently in progress.
Thirdly, women who are desperate for IVF treatment may give consent which is not really a true reflection of their feelings. This argument is not sustainable on many grounds and we believe that the practice of egg-sharing as described here overcomes such underlying fears. Such a view is largely speculative as it questions the couple’s ability to understand and be motivated to participate in egg-sharing in a mutually beneficial way. It also assumes that a clinic would disregard the current HFEA guidelines within which the clinics are required to operate. From our experience, many couples will find this paternalism a cynical justification of the status quo. They have complete freedom to approach the scheme with an open mind: indeed a minority who originally approached us for egg-sharing, after considering all aspects either postponed their treatment altogether or switched to a self-paying form of treatment. Egg-sharing is not restricted to, nor indeed is it solely accepted by, those donors who are unable to afford treatment. Furthermore, the HFEA’s careful guidelines on donor recruitment and preparation include a strong provision for adequate reflection and independent counselling which should ensure that the patients are not misled. Further protection is provided by the mandatory involvement in our treatment scheme, of the donor’s general practitioner, the pivot of all medical care in the UK. Both the recipients and donors thus see egg-sharing as a positive act of mutual aid rather than as a negative inducement by either party or the centre.

Lastly, since much of the assisted conception in the UK is provided privately, but not necessarily in the private sector, the centre initiating an egg-sharing scheme might be perceived as being motivated solely by financial gains. Egg-sharing might be seen as a usefully packaged device to improve patient volume. However, in the scheme described here it should be clear that such exaggerated financial gains do not exist: only the sole recipient (and not multiple recipients) pays the full fee of a single treatment cycle which is precisely equivalent to the amount of money payable for other forms of donation, i.e. unknown donors or known volunteers. The donor pays for her consultations, drugs and other necessary tests, but since there is only one egg collection involved, only one treatment cycle fee is justified.

In terms of patient volume, this scheme is no different from other recent advances in assisted conception [i.e. intracytoplasmic sperm injection (ICSI), surrogacy, embryo biopsy, embryo donation and cryopreservation], all of which fulfil a specific role in the treatment of the infertile and in the process add to the prestige of the centre where they are initiated. Due to the strict acceptance criteria reported here, egg donation including sharing constitutes 5–10% of the total work of our programme. Indeed, we would argue that egg sharing should only be a limited part of any IVF programme.

In conclusion, a strong case for a carefully controlled shared egg scheme exists since there are two infertile groups of women who can be of mutual help to each other by means of a single egg collection. Since the scheme is not restricted to the disadvantaged, there is no justification not to encourage the development of egg-sharing which offers treatment and hope to many who would otherwise be helpless. Egg-sharing as described here requires that the three parties involved (i.e. donor, recipient and centre) display varying degrees of altruism. Pragmatic shared altruism as opposed to absolute altruism relates more closely to the human condition and therefore is more likely to fulfil the needs of the infertile. Harnessing self-interest in a way that promotes common good is a very acceptable way forward.

Acknowledgements

We are indebted to many members of our team for contributing towards the development of this form of egg donation in our IVF programme. We would particularly like to acknowledge our profound gratitude for many helpful discussions with the following colleagues: Rev Professor Bernard Haring, Professor Norman Morris, Professor David Whittingham, Professor Nick Bosenquet, Professor Geoffrey Chamberlain, Mr Ben Plunlley, Mr Julian Mamiso, Mr Peter Bowen-Simpkins, Mr Grant Mitchell, Mrs Reshmi Varma and Mrs Barbara Mostyn.

References

Egg-sharing in assisted conception


Received on October 25, 1995; accepted on February 20, 1996