Focus: Current issues in medical ethics

Our future inheritance¹

Two of the most important topics in the field of medical ethics today are insemination by donor (AID) and in-vitro fertilization. The conclusions of a working party set up by the British Association for the Advancement of Science are embodied in a small book reviewed on page 108 of this issue, but we feel that more discussion than can be set out in the space allocated to book reviews is justified. Also, this journal in its first number has already devoted a group of papers to the issue of abortion, so the conclusions of the working party and our own comments overlap and we hope illuminate further the problems enunciated.

The development of AID

The demand for AID is created by the increasing shortage of children for adoption, coupled with our almost total inability to treat male infertility. The availability of facilities for deep freezing human semen is certainly a great advantage for AID, since it allows the donor to be separated in space and time from the recipient, and this helps to preserve confidentiality. Since public apprehension is often expressed about possible genetic damage to spermatozoa during the course of the freezing process, it would have been helpful if the working party had reviewed the outcome of pregnancies obtained with deep-frozen semen and set people's minds at rest on that score. The group is misinformed if it imagines that the main use of frozen semen banks in the United States has been as an 'insurance policy' for men who are subsequently being vasectomized; nor can one agree with their optimism over the use of AIH (artificial insemination with the husband's semen) as a promising treatment for men with low numbers of sperm in their ejaculate. In practice, the concentration by frozen storage of the semen from such men has done little to improve their fertility.

Although the working party are quick to suggest that some official scheme should be established for the registration of practitioners of AID, so that the procedure is not abused, they themselves hold

unusual views about the need, or rather the lack of need, to screen donors: 'Just what a questionnaire of curriculum vitae can tell about the genetic potential of the sperm donor is hard to see'. Notwithstanding the Race Relations Act, the British population continues to practise intense assortive mating with respect to skin colour; women are also apt to take into account such factors as height, intelligence and maybe even eye and hair colour when choosing their husbands. Since all these characters are heritable to a greater or lesser extent, surely they deserve some consideration when selecting a donor. And to state that 'It is hard to see what matching blood groups with the donor would achieve' is to ignore the fact that AID may be the only solution for a Rhesus-negative woman who has become sensitized to her Rhesus-positive husband. In selecting a donor, it would certainly be prudent to enquire about any evidence of genetically transmitted diseases in his family, and to make sure that he himself was free from venereal disease; to fail to carry out these elementary precautions could undoubtedly be construed as negligence in a court of law.

Since the evidence of one's progeny is of more value than one's pedigree in revealing any potential genetic hazard, a case can be made for selecting only married donors who have children of their own. Although this in turn raises the problem of consent by the donor's wife, and experience shows that most wives object to the idea, it might be preferable to trading on the goodwill of the unmarried and long-suffering medical student, who might be persuaded to volunteer as a donor for reasons that he could later regret.

At present, it seems likely that parents would wish to conceal from their children the fact that they had been conceived as a result of AID, but as the practice becomes more frequent, the need for secrecy may diminish, as it has done in the case of adoption. On the one hand, there is a strong legal reason for preserving total confidentiality, since an AID child would be regarded in law as the illegitimate offspring of the semen donor, and hence could have claim on his estate; on the other hand, the child could claim damages from the doctor for withholding the identity of its natural father.

It would have been interesting to have explored further the legal ownership of semen. If a donor sells an ejaculate to a laboratory for a sum of money, can the laboratory then use it for AID without the

¹*Our future inheritance: Choice or chance?* By Alun Jones and Walter F Bodmer (Pp 141, paperback £1.25). Oxford; 1974. See also page 107.

donor's knowledge or consent? This is certainly the practice in some areas of the United States, although one would hope that it would not happen in Britain. Indeed, the whole question of semen donation should probably be disassociated from any financial inducement.

It is easy to let the imagination run riot and conjure up all sorts of Orwellian consequences of AID; the 'stud' male who donates for a living; accidental incest; man-monkey hybrids; the post-humous preservation of semen, comparable to the scheme now operating for valiant bulls killed in the bullrings of Spain. So perhaps there is a need for the registration of AID, as the working party suggest, not so much to prevent abuse, as to allay public anxiety and hasten amendment of the law. At the moment, the husband is faced with the alternatives of committing 'perjury' by falsifying the birth certificate, or leaving the father's name blank so that the child is registered as illegitimate, and can subsequently be adopted by the couple. One needs to experience the tragedy of infertility to begin to understand the sincere motivations of those who indulge in AID, be they doctors, donors, wives or husbands.

In-vitro fertilization

The world is still awaiting the first documented scientific account of a pregnancy achieved by fertilization *in-vitro*. Come it must, since the procedure has been successfully employed in laboratory animals for more than two decades. It is unfortunate that the working party have chosen to call this process 'artificial fertilization'. The process by which the spermatozoon eventually fertilizes the egg is essentially natural, not artificial; the only thing that is unnatural is that it takes place outside the body.

Although there may be those who would find moral or ethical objections in the practice of *in-vitro* fertilization, they are probably in a minority. The only tenable biological viewpoint about the commencement of life is that there is no discrete beginning; life is essentially a continuum, passed on from generation to generation. There is a gradually increasing expectation of maturity throughout embryonic and fetal life. Even the unfertilized egg has a chance of development; parthenogenesis is well recognized in mammals and birds. Indeed, if we take literally the Christian doctrine of the Immaculate Conception and the Virgin Birth this must be regarded as yet another example of parthenogenetic development, although one wonders where the Y chromosomes came from. Any decision about the time of commencement of life must therefore be seen for what it is – a value judgment by society. To say that *in-vitro* fertilization is immoral because it is creating life is only splitting man-made hairs.

Although the process of *in-vitro* fertilization itself seems harmless enough, it is beset with considerable doubts and difficulties, on both moral and scientific grounds. These have received scant attention in this particular report. In the first place, it seems essential to use naturally matured eggs for fertilization; these can only be recovered surgically from the ovary just prior to ovulation through an abdominal incision in an anaesthetized patient; a second surgical operation under general anaesthesia is probably necessary a few days later to transfer the egg back to the uterus, since in animals non-surgical transfers via the cervix have been singularly unsuccessful. Can one ethically trade on the motivations of the infertile woman, and persuade her to volunteer for two such operations in the first place? For the present, this can only be regarded as a 'non-therapeutic clinical research procedure', since there is no evidence in women, or even in primates, to show that subsequent transfer of an *in-vitro* fertilized egg will result in the desired pregnancy. It is therefore a little optimistic for the authors to state that 'as a therapeutic practice, *in-vitro* fertilization is restricted to the sperm of the husband and the ova of his wife'!

The second major problem relates to the normality of eggs fertilized *in vitro*. There is good evidence in laboratory animals to show that the viability of such eggs is much reduced, suggesting that some damage has occurred as a result of the artificial environment. The authors make the point that most major genetic defects in man, such as triploidy, are lethal, so that any 'mistakes' would be eliminated naturally long before birth. Whilst this is usually true for triploidy, and even most trisomies, there are of course depressing exceptions like Down's syndrome or mongolism, commonly due to trisomy 21, and Klinefelter's syndrome, due to a sex chromosome trisomy; maybe any such abnormalities that arose could be diagnosed by amniocentesis and aborted. Dr R G Edwards has recently stated his views on the moral and ethical problems associated with *in-vitro* fertilization (*Quarterly Review of Biology* 1974, 49, 3–26), and has concluded that 'in view of the vast numbers of fetuses and offspring arising through embryo transfer in animals, without evidence of any increase in number or type of abnormality, there seems to be no point in delaying the clinical application of work on human infertility'. It is perfectly true that *embryo transfer* has become a safe and successful experimental procedure in domestic and laboratory animals; but the technique has yet to be developed in primates. The very fact that Edwards and Steptoe's painstaking endeavours have failed to achieve a single pregnancy following transfer of *in-vitro* fertilized human eggs surely highlights the fact that there can still be many a slip twixt the cup and the lip. We know nothing of the degree of synchronization needed between donor embryo and

recipient uterus; would it not be better to carry out this basic research on laboratory primates rather than human volunteers, at the same time gaining valuable additional information on the normality of offspring produced by *in-vitro* fertilization? Surely we must proceed with caution; if the primate results are reassuring, clinical trials can proceed.

Finally, one can only express astonishment that the working party should really believe that: 'In western Europe and the United States it is estimated that 10 per cent of marriages are infertile for one reason or another. *Only in the past few years has it been realized that a high percentage of these marriages, possibly as many as half, are infertile because of lesions which affect the pelvic organs of the wife*'. Even if tubal occlusion were this common, it would seem likely that surgical reconstruction would remain the treatment of choice in many cases. At least it already has a reasonably high success rate in skilled hands, and can bring about a more long-lasting cure of the infertility.

Genetic screening and selective abortion

The chapter devoted to genetic screening and selective abortion is perhaps one of the best in the book,

and it contains a most useful inventory of the diseases for which screening procedures are now available, and the disease frequency. Few would question the ethics of terminating a defective pregnancy if it could be diagnosed; the dilemma arises over the costs, and health risks, of mounting an effective screening programme for a comparatively rare disease.

Organ transplantation

The chapter on organ transplantation highlights the dilemma of obtaining sufficient kidney donors to satisfy the demand. Presumably a potential donor is interested in the definition of 'death', and requires some reassurance on the procedures that have to be adopted before organs can be removed from his body; it was therefore disappointing to find only one paragraph devoted to this topic. Although there does seem to be an excellent case for trying to do everything possible to increase the supply of kidneys, the fact that heart transplants now 'suffer from public apathy' is perhaps just as well. One is always a little uneasy about operations performed for public acclaim.

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