THE ESTABLISHMENT OF AN AID CLINIC IN NORTHERN IRELAND

by

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INTRODUCTION

ALTHOUGH major advances have been made in the management of female infertility during the last 15 years, particularly with regard to ovulation induction, tubal microsurgery and embryo transfer, the treatment available for the infertile male remains very limited.

In the past, childless couples could be certain of obtaining a child by adoption within two years of being placed on the waiting list. However, over the last 12 years despite the increasing numbers of illegitimate births the numbers of babies available for adoption has decreased—this is a result of the increasing number of abortions being carried out since the 1967 Abortion Act and, the larger number of unmarried mothers who now prefer to keep their child. The number of placements by adoption agencies in Northern Ireland has fallen from 415 in 1966 to 358 in 1977, and this can partly be accounted for by the rise in the number of Ulster women having their pregnancies terminated in England to over 1200 per year. For many couples the waiting list is unacceptably long, and, provided there is no female barrier to conception, donor insemination may provide an alternative solution to their problem.

In 1973 the "Report of Panel on Human Insemination" recommended that recognised centres for artificial insemination by donor (AID) should be set up within the NHS, and, three years later, in an atmosphere of changing social outlook, widespread publicity and increasing demand, facilities for donor insemination were made available at the Royal Victoria Hospital, Belfast. The system operating at present was finally established during 1977 and in the following 12 months over 60 patients were treated.

HISTORY OF AID

John Hunter in the late eighteenth century was the original practitioner of artificial insemination in humans as far as we know only with the husband's semen (Shields, 1950). Dickenson in 1890 in the USA was the first to use donor semen doing so only with the utmost secrecy (Kleegman, 1966), but not until 1945 were pregnancies recorded in Great Britain using donor semen (Barton). By 1960 the Feversham Committee estimated that artificial insemination was being carried out

in this country by some 20 practitioners and during the previous 20 years had resulted in approximately 1100 live births.

A major factor in establishing AID has been the development of techniques for the freezing and storing of donor semen. Mantegazza (1866) originally suggested a bank for frozen semen but the poor quality of the semen after thawing remained an insurmountable problem for many years. The introduction by Parkes in 1945, of ampoules rather than capillary tubes for freezing the semen, and the development by Polge (1949) of glycerol as a cryo-protective medium, greatly improved post-thaw semen quality. These developments immediately preceded the first recorded pregnancies using stored frozen semen (Bunge, 1953).

METHODS

Patients:

More than 50 per cent of our referrals for AID come from consultant gynaecologists and in general, all of these couples have been fully investigated and judged to be suitable for this treatment. The remaining couples, mostly from general practitioners, usually require further assessment particularly to confirm regular ovulation and patency of the Fallopian tubes: all patients need counselling.

At the first visit the couple are interviewed together and separately and the legal and moral aspects of AID are discussed. They are then advised to consider their decision over the next two months, and if at the end of that time a firm commitment is made to proceed with AID, consent forms are signed by both husband and wife.

Donors:

Donors are obtained by verbal canvassing and are interviewed and examined before being accepted. The family history is investigated for hereditary disorder or congenital abnormality and the legal implications of AID explained. Unusual features of physique or colouring are noted, and a fresh semen sample is obtained for analysis and bacteriological examination.

Semen bank:

Donor semen is obtained by masturbation and is examined for sperm count and motility before being frozen. The complex cryo-protective medium, which has been prepared using sodium nitrate, fructose, glucose, glycerol and egg yolk is diluted by an equal volume of semen at 37°C. After equilibration, 0.6 ml aliquots of the mixture are sealed in sterile ampoules, marked with code numbers, frozen and stored in a tank of liquid nitrogen at -196°C.

Insemination:

Once a couple is finally accepted the further necessary investigations are carried out. An attempt is made to ascertain the day of ovulation from a chart of the daily basal body temperature. When this is established the patient is instructed to attend the hospital on the appropriate day; the temperature chart is assessed and the cervical mucus examined. If these are suitable the insemination is carried out, if not, it is deferred for one or 2 days or until the next cycle.

The majority of inseminations are now carried out using a cervical cap (Semm, 1966) which has the advantage of ensuring close contact between the cervical mucus and the semen for the period of 4 hours until the patient removes it at home. A further insemination is carried out within 48 hours and an appointment is made for the following cycle.

RESULTS

During the period under review 62 patients with an average age of 31 years, received donor insemination. Thirteen of these patients had had a previous pregnancy, six of which had been the result of AID in other centres. The indications for donor insemination are shown in Table I. Twenty-one pregnancies have been recorded, the result of 407 inseminations carried out in 285 menstrual cycles. On average, conception occurred during the fifth treatment cycle and required 9 inseminations. The outcome of the pregnancies are shown in Table II. Of the patients who became pregnant eleven required ovulation induction therapy to assist in the synchronization of ovulation and three were treated with bromocryptine for mild hyperprolactinaemia.

TABLE 1

Indications for AID

Indication	*Number*	*Per Cent*
Azoospermia	37	60
Severe Oligospermia	20	32
Paraplegia	4	6
Rhesus Disease	1	2
TOTAL	62	

TABLE 2

Outcome of Pregnancy

Live Births	8
Spontaneous Abortion	4
Ectopic Pregnancy	1
Continuing Pregnancy	8
Number of Pregnancies	21

DISCUSSION

The demand for donor insemination in Northern Ireland has been steadily rising since the Clinic was established in 1977. This may be attributed to the increasing social acceptance of such treatment and also to the difficulty which couples experience in trying to obtain a child from the adoption agencies.

It is essential that each couple requesting AID is carefully assessed both physically and psychologically before embarking on treatment. Our policy is to arrange several interviews spread over two to three months to discuss with them the full implications of the undertaking and ensure that the marriage is stable. Whilst there may occasionally be some advantage in obtaining the assistance of a psychiatrist and a social worker to assess the suitability of the couple, in practice we have found this unnecessary and rely on the recommendations of the referring general practitioner who can provide details of the social and domestic background. The disadvantage of involving a large number of personnel in the initial assessment is the risk of a breakdown of confidentiality, and this is particularly relevant in a small community such as Northern Ireland. Similarly correspondence, even between professionals, is kept to a minimum, as this is often read by ancillary staff. The advice given to the couple is not to disclose to relatives or friends the nature of the treatment as this may lead to difficulties in acceptance of the child within the family circle.

At present there is inadequate legislation on AID particularly relating to the legal status of the child born following this treatment. By law such a child should be registered as 'father unknown' and legitimacy ensured by adoption some three and a half months later. Most couples, however, refuse to do this because the matter will then no longer be secret and they usually register the child in their own names. Law reform in this area is urgently needed to provide either a new status for the AID child or a single status to encompass legitimate, illegitimate and legitimated children (Dunstan, 1973; Cusine, 1976).

Other workers have reported higher pregnancy rates than that obtained in our series (Steinberger and Smith, 1973; Chang and Taymour, 1975). This can undoubtedly be attributed to our initial difficulty in obtaining an adequate number of donors and hence the use of semen samples of less than optimal quality in terms of sperm count and motility. Furthermore it is generally accepted that pregnancy rates are lower when banked frozen semen is used (Annsbacher, 1978) but this has several advantages. It allows maximum utilization of each ejaculate, which on average will yield 10 frozen samples for insemination; it provides a large number of samples to choose from for closer matching of the physical characteristics of the husband; and in the long term it will allow a couple to have a further pregnancy from the same donor.

A significant problem in clinical practice is the high incidence of menstrual irregularity which develops after the start of treatment and results in difficulty in establishing the day of ovulation. This phenomonen is also encountered among patients having AIH and has been attributed to the stress of attending for insemination. The use of an ovulation induction agent such as Clomid will usually regulate the cycle and in this series over 50 per cent of patients required such therapy.

SUMMARY

The demand for AID in Northern Ireland has steadily increased since a clinic was established for this purpose in 1976. During 1978 62 patients were treated resulting in 21 pregnancies.

On average the patients conceived during the fifth menstrual cycle and required nine inseminations. The overall pregnancy rate was 32 per cent and it is anticipated

that this will improve markedly with a larger selection of donors and the development of improved freezing techniques.

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REFERENCES

ANNSBACHER, R. (1978). Artificial Insemination with frozen spermatoza. *Fertil. Steril.*, **29**, 4, 375.

BARTON, M., WALKER, K. and WIESNER, B. P. (1945). Artificial Insemination. *Brit. Med. J.*, **1**, 40.

BUNGE, R. G. and SHERMAN, J. K. (1953). Fertilizing capacity of frozen human spermatoza. *Nature,* **172**, 767.

CHANG, A. P. and TAYMOUR, M. L. (1975). Sixteen years experience with therapeutic Donor insemination. *Fertil. Steril.*, **26**, 791.

CUSINE, D. J. (1976). *Legal issues relating to AID in Proceedings of 4th Study Group of RCOG 1976.* Edited by M. Brudenell, A. McClaren, R. Short, M. Symonds. London: Royal College of Obstetricians and Gynaecologists.

DUNSTAN, G. R. (1973). Law and Ethics of AID and Embryo Transfer. CIBA Foundation Symposium 17. Associated Scientific Publishers, Amsterdam.

FEVERSHAM COMMITTEE. (1960). Report on Human Artificial Insemination, *Brit. med. J.*, **2**, 379.

KLEEGMAN, S. J. and KAUFMAN, S. A. (1966). *Infertility in Women,* F. A. Davis Company, Philadelphia.

MANTEGAZZA, J. (1976). Artificial Insemination, *Proceedings of 4th Study Group of RCOG, 1976,* Edited by M. Brudenell, A. Mclarnon, R. Short, M. Symonds. London: Royal College of Obstetricians and Gynaecologists.

PARKES, A. S. (1945). Preservation of human spermatoza at low temperatures. *Brit. med. J.*, **2**, 212.

POLGE, C., SMITH, A. U. and PARKES, A. S. (1949). Survival of spermatoza after vitrification and dehydration at low temperatures. *Nature,* **164**, 666.

REPORT ON PANEL ON HUMAN ARTIFICIAL INSEMINATION. (1973). *Brit. med. J.*, **2**, 3. (supp. 7th April, 1973).

SEMM, K. (1966). A new instrument for artificial insemination. *Excerpta Medica Int. Cong. Ser.*, **6**, 16.

SHIELDS, F. E. (1950). Artificial Insemination as related to the female. *Fertil. Steril.*, **1**, 271.

STEINBERGER, E. and SMITH, K. D. (1973). Artificial insemination with fresh or frozen semen—A comparative Study. *J. Amer. med. Assoc.*, **223**, 778.