

EVALUATION OF HETEROLOGOUS ARTIFICIAL INSEMINATION

by

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As Charny (1968) has pointed out, there is very little that can be done to significantly improve a consistently poor seminal cytology. With the exception of varicocele and treatment of rare hypogonadotropic eunuchoidism, effective therapy in the infertile male is not yet available. As male infertility secondary to severe oligospermia and azoospermia remains refractory to treatment, heterologous artificial insemination (AID) has gained greater acceptance. Because of the imagined problems generated by AID, many couples have turned to adoption. However, since the Abortion Law has been liberalised, there will be a dramatic change in the adoption picture of our country. With fewer adoptable babies available, infertile couples with refractory male factor must consider AID if they are to have children.

AID can be attempted either prior to female investigations or after completely evaluating the female fertility. In the earlier study insemination was done without investigating the wife (Rajan, 1976), and the results were not attractive (37.5% of patients becoming pregnant in 6 to 8 months of exposure). The purpose of this report is to establish that careful consideration of the female partner prior to donor insemination ensures greater success.

Material and Methods

Eleven couples who volunteered for AID for reasons of irreversible male infertility were selected for this study. The procedure was detailed to the couple and their consent (written) was obtained. The age of the male partners ranged from 27 to 41 years with a mean of 33.4 years. The female partners ranged in age from 21 to 36 years with a mean of 27.8 years. The duration of sterility varied from 2 years to 14 years with an average of 7.5 years. After a preliminary evaluation of the male, the irreversible nature of his problem was confirmed by seminal cytology and bilateral testicular biopsy. The female investigations included an endometrial biopsy in the premenstrual phase and basal body temperature curve for evidence of ovulation and tubal insufflation test for proving patency of the tubes. Two patients who had uterine myomas were subjected to myomectomy before AID, and in one of them a hysterosalpingogram was taken and the uterine cavity was found to be normal and the tubes patent. Those patients with problems of anovulation were recognised and corrected during the treatment cycles.

The semen was collected from young and healthy donors and insemination was done with fresh samples. The seminal fluid was placed in the upper vagina and sprayed over the cervical os, and the patient was placed in the dorsal position for about 30 minutes. Insemination was done

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TABLE I
Results of Artificial Insemination (Donor)

Case No.	Male Factor	Female Factor	No. of cycles	Result
	2	3	4	
I	Varicocele, Functional Azoospermia	Anovulatory cycles clomiphene treated	4 cycles	Successful pregnancy by 4th cycle Duration 24 weeks
II	Primary testicular failure, Azoospermia	Normal fertility	1 cycle	Successful pregnancy by 1st cycle delivered normally a male baby
III	Functional azoospermia	Normal fertility	4 cycles	Successful pregnancy by 4th cycle Duration—26 weeks.
IV	? Klinefelter, Azoospermia	Normal fertility	7 cycles	Successful pregnancy by 7th cycle Duration—10 weeks
V	Obstructive Azoospermia Epididymo-vasostomy failed	Fibroid uterus Myomectomy done	2 cycles	Successful pregnancy by 2nd cycle
VI	Bilateral cryptorchidism (Developmental)	Normal fertility	1 cycle	Successful pregnancy by 1st cycle Duration—10 weeks
VII	Primary testicular failure, Azoospermia	Normal fertility	2 cycles	Successful pregnancy by 2nd cycle Duration—14 weeks
VIII	Primary testicular failure, Azoospermia	Normal fertility	1 cycle	Successful pregnancy by 1st cycle Duration—20 weeks
IX	Varicocele functional azoospermia	Normal fertility	2 cycles	Failed in 2 cycles treatment continued
X	Varicocele, functional azoospermia	Fibroid uterus Myomectomy done	1 cycle	Failed in 1st cycle treatment continued
XI	Secondary testicular failure, severe Oligospermia	Anovulatory cycles Clomiphene treated	5 cycles	Failed in 5 cycles treatment continued

twice or thrice in a particular cycle, in the first half, nearer to the midcycle. Cervical pattern and temperature curve were useful adjuncts for timing ovulation.

Tables I, II and III provide the details of investigations and the results of treatment of the 11 couples. The tables are prepared in such a manner that the same case number is given for a particular couple in all the 3 tables.

Observations

Results of AID: Both the male and female partners were completely evaluated in the 11 couples who volunteered for artificial insemination. Eight women became pregnant within 1 to 7 months of exposure. The success rate was 72.7%. Three women conceived in the first attempt (37.5%). About 60% of women who became pregnant did so within 2 months of exposure and 88% within 4 months. One woman in this group had delivered a normal male baby (full-term normal delivery), and in the rest pregnancy duration ranged from 10 to 26 weeks at the time of this report. In the 3 patients who have not conceived, the treatment is being continued.

Evaluation of the Male Partners: The male partners were evaluated with their physical findings, seminal cytology and bilateral testicular biopsy. The following observations were made: Ten patients had azoospermia and one had severe oligospermia. Four patients had primary testicular failure with hyalinised atrophic tubules; 3 had varicocele and in them testicular histology revealed germinal layer hypoplasia and premature sloughing of immature cells in the tubular lumen, and all the 3 remained azoospermic (one patient in this series showed spermatogenic-arrest in majority of the tubules); 1 patient had normal seminiferous tubules

with evidence of spermatogenesis, suggesting ductal obstruction (epididymovasostomy was attempted on him elsewhere but without any favourable results); yet another patient with azoospermia had bilateral cryptorchidism and bilateral inguinal hernia. The patient with severe oligospermia revealed, on biopsy, severe degree of germinal layer hypoplasia.

Evaluation of the Female Partners: The female investigations revealed that 7 women (63.6%) had no infertility problems, and of them 6 became pregnant. Two patients had problems of anovulation and were treated with clomiphene, and of them 1 conceived in the 4th cycle. There were 2 patients who had undergone myomectomy, and in them there was no impediment for fertility; 1 became pregnant in the 2nd month of exposure and in the other treatment is being continued.

Discussion

Donor insemination with fresh semen has universally good results, the success rate generally ranging from 75 to 90% (Behrman, 1959; Haman, 1959; and Langer *et al*, 1969). According to Beck (1974), 75% of patients who become pregnant succeed within 3 to 4 months of exposure and 90% within 6 months. Ulstein (1973) has reported a conception rate of 28% in the first insemination, 56% within 3 cycles and 84% within 6.

While female fertility is the decisive factor for a successful donor insemination, there is difference of opinion regarding evaluation of the wife prior to AID. The high incidence of conceptions within the first 3 months of treatment indicates that a trial period over 3 months should be accepted before complete infertility studies are performed on the female (Ulstein, 1973). But according to Beck (1974), neither AID nor AIH should be

attempted until the wife's fertility has been evaluated. She should be free from any obvious cervical, uterine, or tubal factor that might result in infertility. In order to maximize the results, the tubal patency is confirmed by either hysterosalpingography or laparoscopy. Problems of ovulation must be recognised and corrected during the cycles of insemination. Goss (1975) discussing on the current status of artificial insemination, has reported favourable results with female fertility evaluation. In his series, in women without any pelvic pathology, the pregnancy rate was 78% and the mean exposure cycles was 4.2. In those who had endocrinopathy or pelvic pathology, corrective therapy was offered followed by insemination. Even though the results were good, the incidence of abortion and ectopic was high. He believes that careful consideration of the female partner prior to donor insemination ensured greater success and avoided unnecessary procedure when the candidate was not considered as one for corrective therapy.

In the earlier study (Rajan, 1976) AID & AIH were performed without investigating the wife. Twenty-four inseminations were done with 8 women becoming pregnant, total number of pregnancies being 9 (37.5% conception rate). The average exposures required for successful pregnancy ranged from 6 to 8 months and no patient had conceived in the first attempt. But, in the present study greater success rate has been ensured. Out of the 11 women inseminated, 8 became pregnant and the conception rate was 72.7%.

This is because the female infertility problems are recognised and corrected. 36.4% of the patients had some impediment to conception and when corrected 50% of them became pregnant. The average number of cycles required for successful pregnancy was 2.75. About 60% of the patients who became pregnant did so within 2 months, and 88% within 4 cycles. It is concluded that careful consideration of the female partner prior to donor insemination ensures greater success.

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