

Pregnancy rate and outcome of embryo transfer: Dorsal lithotomy vs knee-chest position: A randomized prospective study

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abstract

We have examined the effect of the patient position during embryo transfer ie knee-chest vs dorsal lithotomy on pregnancy rate and outcome using a prospective randomized mode of design. In the former 6/29 patients conceived (21%), while in the latter 18/62 conceived (29%). The dorsal lithotomy patients rate of pregnancy was slightly higher than the knee-chest position but it did not reach statistical significance. The viable pregnancy in the first group was 4/6 (66.7%), while in the latter was 12/18 (66%) (not significant). Thus, the use of the knee-chest position does not have any advantage over dorsal lithotomy for achieving pregnancy after embryo transfer. Since the knee-chest position is more uncomfortable for the patient the dorsal lithotomy position is recommended.

Introduction

Since the introduction of IVF numerous aspects related to the procedure and the related steps were investigated (Vargyas et al, 1984; Liu et al, 1988; Tur-Kaspa et al, 1990; Wood et al, 1985). Among them include the position of the patient at the time of embryo transfer. Though initially the knee-chest position was used in many centers, this position was abandoned and the less cumbersome and comfortable position which is the dorsal lithotomy was adopted. Some authors, however, favor this position since they believe that this position is associated with a higher pregnancy rate than the dorsal lithotomy position. This aspect was not examined in a randomized fashion. Some believe that the type of catheter used for transfer can lead to a different rate of pregnancy success as well (Gonen et al, 1991; Wisanto et al, 1989; Jones et al, 1983; Kenin et al, 1981). Their efficacy thus far has not been established in a randomized manner.

The aim of the present study was to compare pregnancy rates following the use of the dorsal lithotomy and knee-chest positions for embryo transfer, using a prospective randomized design. In addition, the results with the type of catheters used for the knee-chest transfer (FET) or Norfolk were compared.

Materials / Methods

The patients involved in the Cooper Institute for IVF constituted the study group. Patients who were enrolled for IVF-ET procedures underwent standard ovulation induction

procedures followed by egg retrieval 33 h after the hCG injection. Following egg recovery they were fertilized with sperm and when fertilization was established embryos were transferred using either dorsal lithotomy or knee-chest. Every third IVF retrieval was designated for knee-chest transfer; on some rare occasion there was no transfer due to failure to fertilize. Patient characteristics are described in Table 1. In addition, the group using knee-chest position had the transfer instrument randomized between FET set or Norfolk catheter. Following transfer, the patients were left to rest for a couple of hours in the same position of transfer. Subsequently, patients were followed and when pregnancy was achieved it was monitored by hCG measurements and ultrasound. Statistical analysis of data was performed using the chi-square analysis or Fisher exact test as appropriate.

Results

There were no significant differences in the pregnancy rates or outcome when comparing transfer of the embryos in the two positions. (6/29 vs 18/62), knee-chest and dorsal lithotomy respectively, ($p=NS$ by chi-square analysis) (Table 2). In general there were no differences in the pregnancy rates or outcome when the two types of catheters for embryo transfer in knee-chest position were compared combining the patients where the two positions of embryo transfer were utilized (4/17 vs 20/74), Norfolk vs FET catheter respectively (Table 3). The pregnancy rate and outcome within the same position of transfer ie knee-chest using the two types of catheter (Table 4), the pregnancy rate was 4/17 and 2/12, Norfolk and FET respectively.

Discussion

The present study was designed to evaluate whether different positions used for embryo transfer modify the pregnancy rate in women following in vitro fertilization. There are no differences in the pregnancy rates or outcome in the two positions of transfer - knee-chest or dorsal lithotomy position. From the initiation of IVF/ET procedures there were some programs in the USA which used one position or the other for doing an embryo transfer, but thus far no scientific controlled evaluation was carried out to examine this point. This is especially important since the knee-chest position is cumbersome and patients frequently experience discomfort with it. It would appear that this position is not advantageous to establish a higher pregnancy rate and therefore the more simple dorsal lithotomy, which does not require special gynecological set up should be used. We normally use the FET set for embryo transfers; however, since some of the IVF centers using knee-chest also use Norfolk catheter it was decided to use this catheter for many of the knee-chest procedures. However knee-chest with Norfolk catheter still did not show superior results to dorsal lithotomy transfers. The Tomcat catheter leads to a higher pregnancy rate compared to the Frydman catheter. Thus, the search for optional transfer catheter is useful, since it can significantly increase the implantation / pregnancy rates (Gonen et al, 1991).

Only one previous study has examined the role of patient position during embryo transfer with pregnancy rate and outcome: when the uterus was retroverted then position of transfer was dorsal lithotomy, while with the anteverted uterus the knee-chest position was used (Diedrich et al, 1989). The authors did not find any significant differences between the two groups. That study however, differs from ours in that respect: the present study was carried out in a

Table 1 Patient characteristics in the dorsal lithotomy / knee-chest position group (mean \pm SE)

Parameters	Knee chest (n=29)	Dorsal lithotomy (n=62)
No. patient age (years)	36 \pm 1.02	36 \pm 0.53
No. eggs retrieved	12 \pm 1.44	12 \pm 1.0
No. fertilized eggs	83 \pm 3.46	71 \pm 3.5
No. embryos transferred	4 \pm 0.24	4 \pm 0.16

Table 2 Pregnancy rate and outcome following embryo transfer using the knee chest or dorsal lithotomy positions

Total	Knee chest n=29 (100%)	Dorsal lithotomy n=62 (100%)
Pregnancies	6 (21%)	18 (29%) NS
Viable	4 (14%)	12 (19.3%) NS
Non-viable	1 (3.4%)	4 (4.2%) NS
Ectopic	1 (3.4%)	2 (2.1%) NS

Table 3 Pregnancy rates and outcome following embryo transfer using the FET or Norfolk catheter

Total	Norfolk n=17 (100%)	FET n=74 (100%)
Pregnancies	4 (23.5%)	20 (27%) NS
Viable	4 (23.5%)	12 (18%) NS
Non-viable	Nil	5 (7.4%)
Ectopic	Nil	3 (4.5%)

Table 4 Pregnancy rate and outcome following embryo transfer in the knee-chest position comparing the two catheters Norfolk and FET

Total	Norfolk n=17 (100%)	FET n=12 (100%)
Pregnancies	4 (23.5%)	2 (16.6%) NS
Viable	4 (23.5%)	0 (0%) NS
Non-viable	Nil	1 (8.4%)
Ectopic	Nil	1 (8.4%)

randomized prospective manner, where irrespective of the uterine position, the patients were randomly assigned to dorsal lithotomy or knee-chest position.

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