

## **SUCCESSFUL PREGNANCY FOLLOWING TRANS-MYOMETRIAL EMBRYO TRANSFER USING OOCYTE ASPIRATION NEEDLE**

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### **ABSTRACT**

The climax of the process of in-vitro fertilization (IVF) is the stage of embryo transfer. Difficulty in embryo transfer is recognised as one of the factors militating against successful outcome. The client was a 38 year old business woman who required in-vitro fertilization on account of tubal factor and male factor infertility (poor motility). Routine mock embryo transfer indicated severe cervical stenosis which was confirmed at hysteroscopy. She subsequently had trans-myometrial embryo transfer. Blood pregnancy test at 2 weeks was positive and interval transvaginal ultrasound confirmed 2 viable intrauterine foetal poles.

### **INTRODUCTION**

Progress made in assisted reproductive techniques (ART) has made it possible for many couples who would have been hopeless to achieve pregnancy<sup>1</sup>. Embryo transfer is the last critical step in IVF and it is important for successful implantation of the embryos and must be performed correctly<sup>2,3</sup>. Difficulties such as severe cervical stenosis may make transfer difficult or impossible<sup>4,5,6</sup>. Transcervical transfer is the preferred method; however an alternative method is through the trans-myometrial route<sup>7</sup>. The Towako method using a special catheter has been deployed for this purpose in the past<sup>8</sup>. In the absence of the special catheter, transfer was done successfully in the case being presented using the regular oocytes retrieval needle.

### **CASE REPORT**

The client was a 38 year old business woman who presented at our clinic with her husband on account of secondary infertility of 10 years duration. She had achieved two pregnancies in the past before getting married but had induced abortions on both occasions. Investigations revealed bilateral tubal blockage. Husband's semen analysis revealed a

normal sperm count but asthenozoospermia. The couple needed IVF with Intracytoplasmic Sperm Injection (ICSI). As part of the work up for IVF, the client had a mock embryo transfer which was difficult due to stenosis at the level of the internal cervical os. She was thereafter scheduled for hysteroscopy. Findings at hysteroscopy revealed multiple polypoid masses around the internal os. The client declined hysteroscopic surgery. A decision for transmyometrial embryo transfer was made. She had successful ovarian stimulation, egg retrieval, ICSI and embryo culture as per clinic protocol.

On the day of embryo transfer, one 5AB blastocyst and one morula were available for transfer. Embryo transfer was performed via the trans-myometrial route. With the client in lithotomy position, the transducer was prepared as for ultrasound guided oocytes retrieval. The rubber tubing at the proximal end of an 18 gauge transfer needle ( ) was removed. The needle was filled with culture medium completely. It was then fitted with an empty 2mls syringe and the embryos carefully loaded into the

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first 0.2mls of medium in the transfer needle by gently withdrawing the plunger of the 2ml syringe so that the syringe was filled exactly with 0.2mls of medium. The embryologist then handed over this as a unit to the gynaecologist. Under ultrasound guidance, the myometrium was punctured in a single move aiming for the middle of the uterine cavity. With a gentle pressure on the plunger, the embryos were expelled carefully into the uterine cavity with the 0.2ml of medium in the syringe. With the plunger well applied, the needle was also withdrawn in a single gentle move. The needle was handed over to the embryologist who then flushed out the needle with culture medium to examine for any retained embryo. Both embryos were confirmed expelled. There was no bleeding during and after the embryo transfer. 4mg of oral salbutamol was given to reduce uterine contractions immediate post transfer. Client was rested on the couch for 30 minutes and thereafter allowed home on cyclogest (progesterone) pessaries for luteal phase support and low dose aspirin.

Blood pregnancy test done 2 weeks after the embryo transfer was positive. Interval transvaginal ultrasound confirmed two viable intrauterine foetal poles at 8 weeks and 4 days. She was subsequently referred for antenatal care.

## **DISCUSSION**

There is always the continuous need to improve the outcome of ART towards better pregnancy rates. Since the inception of IVF, substantial progress has been made in the various aspects of ART. However clinicians sometimes run into difficulties due to difficult embryo transfer. Embryo transfer is the last procedure in ART and must be performed correctly and timely. Wasting too much time during ET will most likely expose the embryos to both physical and physiological stress which may hinder their ability to implant in the endometrium. Difficult embryo transfers are associated with reduced pregnancy

rate<sup>7,9,10</sup>.

The main route of embryo transfer is the transcervical, as it is the easiest and most convenient for both the client and clinician. However there are some limitations to this route which may result in inability of proper placement of the embryos in the uterine cavity. These include severe cervical stenosis, congenital cervical atresia or dysgenesis, very short cervix, congenital cervical abnormalities and presence of masses (e.g. fibroids) around the internal os<sup>7</sup>. It may also be indicated in cases of three or more repeated failed IVF cycles, repeated implantation failure and difficult mock embryo transfer.<sup>6,11,12,13,14</sup>

Trans-myometrial route is an alternative method to the popular transcervical route. This technique was pioneered by Ricardo Asch in the early nineties using the Towako embryo transfer catheter<sup>8</sup>. Our method was an adaptation from the Towako method. An oocyte aspiration needle was improvised for the Towako embryo transfer catheter. Most of the cases reported in literature made use of 18 gauge needle with the stylet passed through the transvaginal route under ultrasound guidance through the anterior myometrium to the junction with the endometrium without puncturing the later. The Towako embryo transfer catheter is passed through the needle and the embryo injected 15 mm from the fundus of the uterus.<sup>4,5,6,10,11</sup> The Towako embryo catheter is not available in this environment. Intra-endometrial embryo transfer may also be done through hysteroscopy using a modified scope (CO<sub>2</sub> pulsed flexible hysteroscope) in which case the embryo is deposited under direct vision into the endometrial cavity.<sup>12</sup>

In this case report, the endometrium was punctured because we are of the opinion that a single puncture at the site where the embryos will be deposited will not cause significant bleeding or adversely affect implantation. This is a new method in the face of

serious difficulty in a low tech environment.

The envisaged complications to this method of embryo transfer, include ectopic pregnancy, loss of embryo due to uterine contractions which often follows this procedure<sup>13,15,16,17</sup>. However these are not unique and may occur with difficult transcervical embryo transfer and the Towako method.<sup>6,17</sup> Salbutamol tablet was given to the woman in an effort to combat junctional zone contractions. Atosiban which is an oxytocin antagonist has also been used.<sup>6,14</sup>

Chenning et al in May 2009 had reported a case of triplet pregnancy in a patient who had congenial cervical atresia following trans-myometrial embryo transfer. In a randomised trial conducted by Asnat et al in 1997, comparing trans-myometrial to transcervical transfer of embryos in patients with similar characteristics; 3 pregnancies occurred in the transcervical group compared to 1 in the trans-myometrial group<sup>7,10</sup>. We are of the opinion that in well selected cases trans-myometrial embryo transfer is a viable alternative as proven by viable pregnancies that have occurred following this procedure.<sup>10</sup> It is important to state that an atraumatic embryo transfer is the simplest and cheapest way to reduce junctional zone contractions. Other ways of reducing trauma at transfer include use of soft catheters, avoiding the use of a tenaculum, mock embryo transfer and pre cycle cervical dilatation and not touching the fundus during transfer. Some clinicians also delay transfer to allow junctional zone contractions to subside.<sup>18</sup>

## CONCLUSION

There are many limitations experienced in the field of IVF in a developing country such as ours. These difficulties include lack of manpower, equipments, consumables, power supply and other logistics. The average IVF Centre in Nigeria has to deal with most of these problems. The patient discussed could have

benefitted from hysteroscopic surgery as this may have made transcervical approach possible; facility and expertise in this field are also not widely available. Considering the environment we operate in, it is important to innovate and scientifically adapt so as to maximise the little resources we have. This is a new method in the face of serious difficulty in a low tech environment. Our effort is well anchored on this need.

## REFERENCES

1. Van Steirteghem A. Twenty Years of In-Vitro Fertilisation; Realization and Questions for the Future. Verh K Acad Geneemd Belg. 2001;63(3): 193-240, discussion 240-1
2. Mains L, Van Voorhis BJ. Optimizing the Technique of Embryo Transfer. Fertil Steril. 2010;94:785-90
3. Halraei I, Khalili MA, Razi MH, AGha-Rahimi A, Nottola SA. Impact of Different Embryo Loading Techniques on Pregnancy Rates in In-Vitro Fertilization/Embryo Transfer Cycles. J Hum Reprod Sci. 2013 Jan-Mar;6(1)65-9
4. Pasqualini RS, Quintans CJ. Clinical Practice of Embryo Transfer. Reprod Biomed Online. 2002 Jan-Feb;4(1):83-92
5. Tomas C, Tikkinen K, Tuomivaara L, Tapanainen JS, Martikainen H. The Degree of Difficulty of Embryo Transfer is an Independent Factor for Predicting Pregnancy. Hum Reprod Vol.17, No. 10 pp. 2632-2635, 2002
6. Wood EG, Batzer FR, Go KJ, Gutmann JN, Corson SL. Ultrasound-guided soft catheter embryo transfers will improve pregnancy rates in in-vitro fertilization. Hum Reprod. 2000; 15; 107-112.
7. Groutz A, Lessing JB, Wolf Y, Azem F, Yovel I, AMit A. Comparison of

- Transmyometrial and Transcervical Embryo Transfer in Patients with Previously Failed Cycles and our Cervical Stenosis. *Fertil Steril.* 1997; 67(6):1073-76.
8. Kato O, Takatsuka R, Asch R. Transvaginal-transmyometrial Embryo Transfer: the Towako Method: Experience of 104 Cases. *Fertil Steril.* 1993;59:1-3
  9. Biervliet FP, Lesny P, Maguiness SD, Robinson J, Killick SR. Trans-myometrial Embryo Transfer and Junctional Zone Contractions. *Hum Reprod.* 2002. Feb. 17 (2): 347-50.
  10. Xu C, XU J, Gao H, Huang H. Triplet Pregnancy and Successful Twin Delivery in a Patient with Congenital Cervical Atresia. *Fertil Steril.* 2005; May (91):5:1958e1-e3.
  11. Assad M, Carver-Ward JA. Twin Pregnancy following Trans-myometrial Subendometrial Embryo Transfer for Repeated Implantation Failure. *Hum Reprod.* Vol. 12(12):2824-5.
  12. Itskovitz-Eldor J, Filmar S, Manor D, Stein D, Lightman Kols. Assisted Implantation: Direct Intraendometrial Embryo Transfer. *Gynecol Obstet Invest.* 1997; 43 (2): 73-75
  - AL-Jaroud D, Saleh A, AL-Obaid, Agdi M, Salih A, Khan F. Pregnancy with Cervical Dysgenesis. *Fertil Steril.* 2011; Dec: 96(6): 1355-621982728.
  14. Sharif K, Afnan M, Lenton W, Bilalis D, Hunjan M, Khalaf Y. Trans-myometrial Embryo Transfer after Difficult Mock Transcervical Transfer. *Fertil Steril.* 1996; May: 65(5):1071-4.
  15. , Killick SR, Robinson J, Titterington J, Maguiness SD. Ectopic Pregnancy after Trans-myometrial Transfer: Case Report. *Fertil Steril.* 1999; August: 72(2) 357-9.
  16. Lesny P, , Robinson J, Raven G, Maguiness SD. Embryo Transfer and Uterine Junctional Zone Contractions. *Hum Reprod. Updates* 5 (1) 87-8.
  17. Lesny P, Killick SR, Robinson J, Maguiness SD. Transcervical Embryo Transfer as a Risk Factor for Ectopic Pregnancy. *Fertil Steril.* 1999; August: 72(2) 305-9.
  18. Lesny P, Killick SR. *BJOG: An International Journal of Obstetrics.* Special Issue: The Junctional Zone of the Uterus and its Contraction. *Reprod Med.* 2004; Nov: (III): 11:1182-9.