The Ethics of In-Vitro Fertilization (IVF)

DEFINING IN-VITRO FERTILIZATION (IVF)

IVF comes under a strand of research termed in the 1970s as ‘new reproductive technology’ (NRT). This research used technology to arbitrate and influence the course of human reproduction. Broadly, NRT can be categorized into four groups:

- Firstly, a research on that which applied to controlling conception. This involved preventing fertility either by disabling an embryo from becoming fertilized or aborting a pregnancy.
- Secondly, a research that looked into improving the process of a woman’s labor and delivery.
- Thirdly, a research into the ante-natal or pre-birth procedure that included pregnancy check-ups, diagnostic monitoring of the health of mother and child, and other advice that made preparation for birth.
- Fourthly, a research into the facilitation of pregnancy through technology to overcome infertility for one reason or another.

IVF sits in the last category. ¹

THE PROCEDURE OF IVF

Before we talk about the ethical issues pertaining to IVF, it is helpful for us to know what it is.

IVF begins with the coming together of the female eggs and the male sperms outside the body of a woman. The female eggs are put into a flat shallow Petri dish or cell culture container. The male sperms are then placed into the dish and fertilization takes place.

Upon fertilization, a few of the embryos are then implanted back into the woman’s uterus (womb), where it is hoped that pregnancy will occur.

The complexity of issue comes when doctors make a distinction between “embryo replacement” which takes place when the fertilized embryo is placed back into the female who supplied the egg, with “embryo transfer,” whereby the embryo is transferred to a receiver who is not the woman who supplied the egg. This gives rise to the possibility of surrogate mothers and the ethical debates that come alongside this.

At times IVF can be deemed to be the whole process that begins with the preparation of the woman for the extraction of the eggs. It finishes when the child is delivered or the patient gives up the procedure. The procedure of IVF can also be seen to denote the complete process of fertilizing the embryo taken with laboratory equipments and under laboratory settings. This will be a more technical description of the subject. ²

¹ Anthony Dyson, The Ethics of IVF, (Great Britain: Mowbray, 1995), x.
² Ibid.,xi.
In the Beginning...

It was just before midnight on 25 July, 1978 when Louise Brown was born in Oldham General Hospital, near Manchester. Louise caused a media frenzy and made medical history as the first baby born via IVF. To use a more popular term, the child was the first ‘test-tube’ baby. This breakthrough owes itself to the research and collaborative work of Oldham Hospital’s gynecologist, Dr Patrick Steptoe and Cambridge University’s physiologist, Dr Robert Edwards.

Lesley and John Brown, a young British couple, were not able to have a child despite nine years of trying. Lesley’s fallopian tubes were blocked. Having gone around to different physicians, she was finally referred to Steptoe in 1976. On November 10, 1977, Lesley Brown underwent the in-vitro ("in glass") fertilization process.

Using a long, thin, self-lit probe called a "laparoscope," Steptoe took an egg from one of Lesley's ovaries and handed it to Edwards. Edwards then mixed Lesley's egg with John's sperm. After the egg was fertilized, Edwards placed it into a special solution that had been created to nurture the egg as it began to divide. The fertilized egg was placed back into Lesley's uterus after two and a half days.

Close observation of Lesley showed that the fertilized egg was successfully implanted onto her uterus wall. Then, unlike all the other experimental in-vitro fertilization pregnancies, Lesley passed month after month with no apparent problems. The world began to talk about this procedure. And on 25 July 1978, the 2.6kg baby girl was born. The baby, named Louise Joy Brown, had blue eyes and blond hair and was deemed healthy.

This marked the first success of IVF and a significant advancement in medical technology. The breakthrough brought hope to many couples who struggled to conceive. Today the procedure is used all over the world. But as when it was first used, ethical questions remain.

This paper examines some of these ethical questions. It is by no means a comprehensive dealing on the subject as there are a lot more scholarly reflections done by theologians, bio-medical professionals and ethicists readily available. This piece firstly hopes to provide a preamble to stimulate further readings on the subject. Secondly, it aims to become a rudimentary introduction on the issues that Christian couples thinking of IVF may need to ponder on, or seek counsel regarding the theological and ethical implications of the procedure. Thirdly, this reflection also enables us to identify the reductionism that often grips a pragmatic society like ours and highlights paradigms of commercial interest and larger questions that go beyond mere conception or bio-medical solutions.

We now look into the voices that speak against IVF.

OBJECTIONS TO IVF

James Thobaben, Professor of Bioethics and Social Ethics at Ashbury Theological Seminary, mentions that “secular arguments for alternative birth technologies should address possibilities of significant problems. These may not be insurmountable, but they should not be denied.”
He rightly shares the view that while technological advancement in the field of reproduction may present new solutions, they also put forward new problems that we should not ignore. But he goes on to add that an inquiry into these issues may not mean we totally deny the good present in these advancement. He adds that techniques like IVF amongst others are ultimately ‘pro-family.’ Nevertheless, Thobaben goes on to list some of these problems:  

- High degree of embryo waste.
- Disproportionate number of abnormalities.
- Premature death.
- Sex bias following pre-implantation genetic diagnosis.
- Possible ethnic bias, given the ethnicity distribution of children up for adoption.
- The technology is only available to specific socioeconomic classes.
- Altering family structure, especially concept of parenthood (genetic, gestational, rearing, socio-legal parenting are separated).
- Eugenic selection (increase the production of people with positive traits through genetic research, the opposite reduction also holds true).
- Use of preborn as research medium or pharmaceutical resource.

The questions Christians must answer are (1) When do we believe life begins? If it is at conception, does it therefore make IVF unethical? (2) With the possibility of abnormalities will we accept all births or is abortion an option? Choosing abortion opens a whole new realm for ethical discourse. The Christian viewpoint has always been against abortion because we uphold the sacredness of life, even those defined by the world as handicapped or deformed. (3) The use of the preborn for scientific research is highly questionable. Does it not devalue the sanctity of life if we acknowledge that life begins at fertilization?

Similarly, Anthony Dyson highlights the following objections although he qualifies that these are not necessarily his own position on the matter. For the sake of clarity let me state these and then move on in the later part of this paper to describe some of the counter arguments.

- IVF disrupts the connection between the emotional-union meaning and the procreative meaning of the sexual act and so diminishes the divinely given dignity of the human.
- IVF often introduces third parties into the process.

---

4 Anthony Dyson, 35-36.
• IVF requires, for the development and continued improvement of the technique, the use and destruction of many embryos.

• IVF can result in genealogical confusion, especially in children. For example in the case of a surrogate mother who carries a child for nine months and thereafter hands over the child to the donor parents.

• IVF can lead to deception within the family as the price to pay for the preservation of anonymity.

• IVF involves the commodification, commercialization and exploitations of persons and processes.

• IVF involves women in serious physical and/or psychological risks, again taking the example of the surrogate.

• IVF may cause psychological and emotional disturbance for donors.

• IVF dehumanizes, by medicalizing the reproductive process, especially for women.

• IVF opens the way for genetic therapy and for eugenic practices, intensifying an already abortionist culture.

• IVF’s low success-rate is incommensurate with the risks to mother and embryo, and with the use of expensive resources.

• IVF fosters the fallacious expectation that perfect “consumer-designed” children can be brought to being.

• IVF taken to its logical subversive end, will change the balance of power from the traditional, dominant authorities of patriarchy to a new dominating authority, the ‘technocrats’.

Additional Remarks on some of these Objections

The Roman Catholic Position

It is at this point worth noting that on the onset of the IVF phenomenal, the Vatican had condemned the procedure and had not changed its position since. It deemed IVF as “domination” and “manipulation of nature.” In 2008, its document Dignity of the Person reiterated that children should be created only through sexual intercourse by a married couple. The paper barred IVF, freezing embryos, and genetic screening. 5

The Commercialization of IVF

Also it is interesting to note that only 5 percent of babies in the last few years were conceived through IVF amidst the array of other Assisted Reproduction Technology (ARF) like egg simulation, and injection of concentrated sperm. In the last three decade, about 75 percent of couples in America who pay to go through IVF spend from US$13000 to $100000 and never successfully bring home a baby. The cost in Singapore can range from SGP$10000 to $20000 for one cycle. The chances of couples conceiving successfully via IVF in Singapore sit between 16-28% according to a study done by MOH in 2004. Unfortunately we do not have an updated study.

The Singapore Government has recently agreed to provide some subsidy for couples willing to undergo IVF.

**GOVERNMENT CO-FUNDING SCHEME FOR ASSISTED REPRODUCTION TECHNOLOGY TREATMENTS AT PUBLIC HOSPITALS**

Couples seeking Assisted Reproduction Technology (ART) treatments in public hospitals can receive co-funding for the cost of their ART treatment cycle, for a maximum of 3 fresh and 3 frozen ART cycles. The amount of co-funding will vary, depending on the citizenship of the couple, as shown in the table below.

**ART co-funding parameters per treatment cycle (with effect from 1 Jan 2013)**

<table>
<thead>
<tr>
<th></th>
<th>SC-SC Couple</th>
<th>SC-PR Couple</th>
<th>SC-Foreigner Couple</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh</td>
<td>75%; up to $6,300</td>
<td>55%; up to $4,600</td>
<td>35%; up to $3,000</td>
</tr>
<tr>
<td>Frozen</td>
<td>75%; up to $1,200</td>
<td>55%; up to $900</td>
<td>35%; up to $600</td>
</tr>
</tbody>
</table>

The co-funding scheme covers ART procedures such IVF with or without intracytoplasmic sperm injection (ICSI), and gamete intra-fallopian transfer (GIFT).

In places like America, Fertility Clinics have commercialized to such extent that payment will actually be made to “egg donors.” In 1999, an infamous advertisement was placed at Princeton and Yale Universities by an anonymous couple who would pay $50000 for the eggs of a “woman over six feet tall and with SAT scores over 1450.”

At some clinics, with consent, extra eggs and embryos are stored for later use and sale to infertile couples. Interested couples can also screen for the traits of their prospective children in two ways: by researching on the background of the donors and by testing the embryos for genetic conditions like Down Syndrome. When couples are permitted to screen for genetic diseases or

---

6 Gregory E. Pence, 99.
8 The Ethics Committee of the American Society for Reproductive Medicine, American Society for Reproductive Medicine, *Financial Compensation of Oocyte Donors*, 2006.
gain knowledge of their donors, will this inevitably lead to only perceived “perfect babies” surviving, to a new eugenics, and at worst designer babies? 9

*The Confusion of Parenthood*

Should the idea of women donating their eggs to prospective infertile couples be a serious ethical red flag? O.M.T. O’Donovan postulates during the advent years of the test tube baby frenzy that IVF comes with the cost of confusing the lines of parenthood and lineage:

For the first time in the history of humanity, a woman is pregnant with a child which she did not engender. For the first time in the history of humanity children are born with three biological parents… What *in vitro* techniques have apparently done is to divide the female role in procreation into two: the contribution of the ovum and the pregnancy…in the natural order we were given to know what a parent was…from now on there is no knowing what a parent is. 10

*The Feminist Perspective and Objections*

Importantly, because IVF is invasive to women it is right for us to consider some input with feminist leanings. It must be registered though that the feminist voices on this issue are varied and the following two quotes are not indicative of all women. Some women would view IVF and the success of conception as redeeming rather than demeaning.

D. Steinberg finds the semantics of IVF alienating and humiliating to women:

Practitioners use misleading language to name and describe IVF tools and procedures such that IVF appears to be a practice unrelated or, at best, inconsequentially related to women. With IVF treatment, they actively dis-integrate women’s bodies and limit women’s agency…Choice for women in this context is, at best, a derivative, consumerist choice. 11

Furthermore, R.P. Petchesky argues that the image of the egg taken out of the uterus and placed into the laboratory dish is incoherent to a woman’s perspective:

The foetus…could not possibly experience itself as if dangling in space, without a woman’s uterus and body and blood stream to support it. In this respect, every fetal image…is an artificial construct, a fetish, representing the standpoint of neither an actual foetus nor a pregnant woman but a male onlooker. 12

In this respect, while some opponents of IVF or embryo research may not necessarily deny the many advantages that come out of that research, they however argue that the moral conundrum outweighs any benefits, and even worse, create new problems.

---

11 D. Steinberg, *The Depersonalisation of Women through the administration of In Vitro Fertilisation* in Anthony Dyson, 50.
Responses to some of these Objections

While the above objections and stories may convince us that Christians should reject IVF, we also have to ask more deeply whether the opposition is justified or whether there is room for Christian couples to go through the procedure while still being guided by their Christian convictions. This means we ask ourselves is there room in the ethics of IVF for us to proverbially “not throw the baby out with the bathwater” if certain conditions are met?

Here is where Janet D. McDowell persuasively takes on the closed position of the Roman Catholic Church and the traditional Christian conservative view. She points out that arguing that IVF takes conception out of its natural framework and therefore is not permissible, is a position filled with flaws and inconsistencies. She questions whether the premise of an artificial environment is a strong enough reason to reject the procedure of IVF. To this end, she postulates that examples like “kidney dialysis, respirators, even blood transfusion are also unnatural medical interventions, yet they are not opposed with the vigor of the Vatican’s response to IVF.”

If IVF is rejected on this premise then other medical advancements ought to face the same fate is her refrain.

Secondly, McDowell takes on the view that IVF separates the act of love between the husband and the wife from procreation. She perceives that while reproduction is the end result of a loving relationship, the decision of a child-less couple to undergo IVF may not necessarily preclude love and the desire for procreation. In fact, she argues that it would be unreasonable to deny a couple their desire for parenthood just on this ground. A couple may be in reality considering ART/IVF primarily because they have a strong desire to seal their love with a child. Inversely, one could also state that there are sexual intercourses that take place totally devoid of love.

Thirdly, McDowell goes on to posit that if reservation comes from the discarding of the unused eggs as being equated to abortion, or the unethical use of the excess eggs to unauthorized research, then she argues that there are also responsible institutions willing to do neither. McDowell cites the IVF procedure used at the Eastern Virginia Medical School in Norfolk. Here, whenever more than one ovum is taken out via laparoscopy, all will be exposed to sperm. When any of these successfully goes through cell division, (and is thus regarded as being alive), they will be inserted back into the woman’s uterus. Each is therefore given every opportunity for implantation and conception. None will end up discarded or left for experimentation.

McDowell does register her disapproval to other procedures that stamps out of IVF like embryo transfer and Ova banking. She is sympathetic towards the surrogate application of IVF and feels it ought to be permitted under certain circumstances (note: this is not the church’s position as surrogacy brings with it even more ethical concerns). Having said this, she argues that IVF per se “is not morally troublesome” under certain conditions.

14 Ibid., 506.
15 Ibid., 507.
16 Ibid., 508.
Could a Christian couple in Singapore therefore go through IVF if the above conditions are met?

MUCH ADO ABOUT THE ZYGOTE

In an insightful paper by Maureen Junker-Kenny, the writer debates on the “moral status of the embryo.” She starts with a provocative statement, “how can one suggest reflection on the moral of something that is smaller than a speck of dust?” She goes on to expand on the philosophical and ethical debates that can hardly be termed simplistic or as minute as a speck.

Central to her paper is the question when personhood begins? On one front, when one states that personhood only begins when evidential “empirical traits of persons apply,” others counter that this makes human embryos, newborns, the mentally handicap and those in coma not lesser persons, but not persons at all.17

The implications are as such:

“A maximum definition of human life, such as the ability to communicate, or to act independently, offers minimum protection to the stages prior to these competencies and after they have been lost. A minimum definition of the beginning of human life that offers maximum protection would be: once there is an auto-reproductive unit in which the nuclei of the sperm and the egg have fused, this new entity should count as having human dignity and human rights to life and the inviolability of its (his or her) body.” 18

To this end the fundamental debate circles around a little word which seems to have dropped in from some sci-fi movie, the Zygote. Zygote comes from the Greek ζυγωτός, zygōtos. It means "joined" or "yoked". Zygotes are usually produced by a fertilization event between an ovum (female gamete) and a sperm cell (male gamete)—which combine to form the single diploid cell. Such Zygotes contain DNA derived from both contributors, and this provides all the genetic information necessary to form a new individual.

Ethicists and philosophers on one side who claim that personhood begins when a Zygote is formed say that at this point a continuous process of development has initiated. This “small speck of dust” does not develop into a human, it is already human. Sometimes called the “potentiality argument” it posits that the core basis of being is already present here.

“This potential to become a moral subject does not begin at birth or with coming of age, it unfolds on the basis of the whole natural process of development and is part of a continuous context of human life from the earliest embryonic age onwards.” 19

In other words, once something started, it already is.

18 Ibid., 72.
19 Ibid., 73.
Therefore if personhood begins at the Zygote then a minimum definition of the beginning of life ought to accord maximum protection. To this end the Zygote must be respected, preserved and not discarded or experimented on. It is a human being.

Opposition to this claim argues that there are natural limits to the Zygote’s potential. As much as it is true that an embryo will divide itself and possess its unique genetic combination at fertilization, the Zygote advances no further if it is not implanted into the woman’s womb. The ability to develop comes from supporting conditions and eco-systems. Therefore potential cannot be the basis for personhood as embryos have natural limitation for development. Genetically, the Zygote may be distinctly human but can we confidently say this is where human personhood starts? Based on this, some would argue that a maximum definition ought to be put in place where personhood is seen as the possession of certain competencies such as the ability to respond. It is on this basis that a fertilized embryo requires minimum or no protection. One may even add its usefulness therefore lies in enabling medical research and advancement.

**IVF: CAN OR CANNOT?**

The above section regarding the Zygote is placed there to let us see that sometimes we just wouldn’t know. It is impossible for anyone to be sure whether the Zygote contains a person. We can argue about potential and limits and even the most convincing rhetoric will not be watertight. But as much as there are things that we do not know in the debate on IVF, there are some things that we do know and they are within our control. Could we not proceed with IVF if certain conditions are met? Can one find a position based on our Christian conviction that allows for the maximum protection of life and still permit a Christian couple to undergo IVF?

- One may therefore ask can IVF be permitted under the right moral circumstances? If so what are these? Perhaps, the green light can be when we have the assurance that every fertilized embryo or the Zygote will be protected and used.

- Can a Christian couple proceed with IVF if the institution conducting the procedure gives assurance that no embryo will be destroyed or experimented on or sold?

- Is it possible that a couple deciding on IVF be motivated by love and the desire for procreation and therefore not contravene the Roman Catholic and the Christian traditional viewpoint?

- Can the invasiveness of IVF be mitigated by preparation and counsel?

- Can faith in God be the basis for our decision whether to undergo the procedure or not? What about adoption which does not enter into any grey areas or serious ethical debate when proper legal procedures are adhered to?

---

20 Ibid., 73.
PASTORAL RESPONSE TO IVF

Let us begin with what we are clear about.

Firstly, the issue of surrogacy goes against our Christian beliefs as it introduces a third party into the sanctity of the marriage relationship and the traditional view of family and procreation. There are both physical and emotional attachments that are not Christian.

Secondly, we do not agree with the commercial spin off of IVF that permits the donation or sale of sperms, eggs and embryos for research and experimentation, or for use by other couples.

Thirdly, the invasiveness of the process must be made known on the onset to both the men and women. For men, the process of harvesting sperm entails masturbation, possibly encouraged by the use of pornographic material. For women it will be a physically and emotionally intruding procedure.

Fourthly, this expensive process has a success rate of only 16%-28%. Therefore one must be prepared to deal with the possibility of failure and be focused on God rather than the procedure.

Finally, while undergoing IVF is permissible, our Christian view is that the fertilized embryo or Zygote must be given maximum protection and treated with sanctity and respect. The key point of decision for Christian couples deciding to proceed with IVF is to be prepared and insistent that ethically, once conception takes place, the embryo must be used and placed back into the woman’s womb. This means couples must be ready to have more children than they planned to have if needed. They must not discard the fertilized egg using any means that may come in the guise of research, surrogacy, pragmatism or eugenics.

TESTIMONY OF ANN LIM OF GOD’S SOVEREIGN PROVIDENCE

(Ann is married to Michael. They have two lovely and healthy baby boys, Matthew and Matthias. They worship at Chapel of the Resurrection / SWS)

Good things come to those who wait. How long is our wait to be? Is it the will of the Lord that we even are to be parents? Are we even ready?

Truth be told, we've seldom cooed nor gushed at others' babies. We were never in a hurry to have them and thoroughly enjoyed married life, wanderlust and all the usual trappings of yuppitude we were blessed with. We always figured babies could wait and when we did want them, I thought like everything else in life, if you worked hard enough at it, best efforts will pay off. So after 5 years of marriage, when we thought we'd start trying and see if it happens, it didn't. Thought it would be as easy as stop trying not to have babies.

The long waits at the clinics, the daily injections, bloodtests and medications were stressful but that to us was bearable and the necessary trials of IVF we were prepared for. But after consulting 3 doctors, TCM, several rounds of IUIs, 2 failed IVFs, and spending the equivalent of a new car on a guerilla IVF doctor who was scientific and meticulous to the T, it was really the sense of helplessness and the disappointment that did us in. The inability to achieve something that was meant to be part of God's procreation edict was
baffling to say the least. We felt first ambivalence, then defeated. Could having babies be THAT difficult?

Was I naïve? We always reminded ourselves that IVF chances were low but always hoped we'd be the lucky ones. Why did IVF work for others but not us? What is it we were doing wrong? Was God punishing us for waiting so long? Should we adopt? Are we overly stressed? Should we try and chill out and just trust in the words that we've been given by those who have prayed for us? Are we not praying hard enough? Have we too little faith? Are we taking God's plans into our own hands trying to hurry the process? So many questions and no answers.

Our journey ended thankfully after I underwent a final op to remove endometritis, and doctors would like to attribute it to the remnants of baby hormones in me which helped conceived Matthew. But what we would really like to think was that after all these years, God's had his perfect plan for us and conceiving Matthew (God's gift) was clearly worth the wait. All the more because it was God's timing and not ours at the end of day. Science will tell u your eggs are old, your sperms are of poor form or that stress is the antidote to infertility. Sure. But we've learnt that no one has the right answer. It has nothing to do with you or your chances. Pregnancy is only the beginning. Not all pregnancies, certainly ours, may not result in a take-home baby.

At the end of the day, we are humbled and took a long journey to remember that while we do what we can. But God decides when we can or cannot at his grace.

From the above testimony we can surmise that the ethics of IVF cannot simply be a cognitive discourse. Our guidance also must not be based merely on medical advice, science and reason. For Christians, it must include our trust in God’s sovereign will, prayer and waiting on God. If this does lead to one going through IVF, then as Christians we must be aware what our Christian conviction allows and denies. Overall, it must also incorporate our thanksgiving to God and faith in Him, for whatever our lot, God is in control.
APPENDIX

The following article allows us to become aware of the language used by the secular world in their reading of IVF. The vocabulary of science can be detached, impersonal and dehumanizing. What more it is interesting to ask whether medical researchers and doctors have usurped the role of God? There are hints of eugenics, selection and commercial interest in the report. These are the very things that go against our Christian conviction and ethical position.

Article by BBC Medical Correspondent, Fergus Walsh, 17 May 2013.

Time-lapse imaging which takes thousands of pictures of developing embryos can boost the success rate of IVF, according to British research. The method, reported in Reproductive BioMedicine Online, can be used to select embryos at low risk of defects. Scientists at the CARE fertility group say such informed selection can improve birth rates by 56%. Other experts say the result is exciting, but the study of 69 couples is too small to be definitive.

The research followed the couples at the CARE fertility clinic in Manchester last year, when 88 embryos were imaged and implanted. The embryos were put into an incubator and imaged every 10-20 minutes. The researchers classified the embryos as low, medium or high risk of chromosome abnormalities based on their development at certain key points. Eleven babies were born from the low risk group (61% success rate) compared to five from the medium risk group (19% success rate) and none from those deemed high risk.

"In the 35 years I have been in this field this is probably the most exciting and significant development that can be of value to all patients seeking IVF," said Prof Simon Fishel, managing director of CARE Fertility Group. "This technology can tell us which embryo is the most viable and has the highest potential to deliver a live birth - it will have huge potential. This is almost like having the embryo in the womb with a camera on them."

In standard IVF, embryos are removed from the incubator once a day to be checked under the microscope. This means they briefly leave their temperature-controlled environment and single daily snapshots of their development are possible. Using the time-lapse method embryos don’t leave the incubator until they are implanted allowing 5,000 images to be taken. "Removing embryos from the incubator potentially exposes them to damage, so it must be a good thing to be able to look at the pattern of development over time. "These results are very interesting but this is a very small study and any interpretation of the findings must be made with caution as we are dealing with the hopes and expectations of patients," said Dr Virginia Bolton from the assisted conception unit at Guy's and St Thomas' NHS Foundation Trust.

Sheena Lewis, professor of reproductive medicine at Queen's University, Belfast, said: "This may well be the technique we have been waiting for to improve embryo selection and thus success in fertility treatment. "However, this is a small study with just 46 embryos being
followed through to birth. Much more research will be needed before this becomes a routine clinical tool."

Around a dozen private and NHS clinics are using time-lapse embryo imaging. It costs around £750 in addition to about £3,000 for IVF.

Embryo screening:

Continual embryo monitoring through time-lapse imaging is aimed at selecting those with the lowest risk of aneuploidy - where the cells have chromosome abnormalities. Aneuploidy is the single biggest cause of IVF failure.

But this form of embryo screening is a predictive rather than diagnostic tool. Couples at high risk of passing on a chromosomal abnormality may prefer to have Pre-implantation Genetic Screening. This invasive test removes cells from the early embryo for analysis. It costs around £2,500 on top of the £3,000 charged for conventional IVF.

Bibliography:


7. Steinberg, D. The Depersonalisation of Women through the administration of In Vitro Fertilisation, in Anthony Dyson.

8. The Ethics Committee of the American Society for Reproductive Medicine, American Society for Reproductive Medicine, Financial Compensation of Oocyte Donors, 2006.