



An Overview of Surrogacy Technology

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Abstract

Surrogacy is the practice involving assisted reproductive technology ("ART") presenting important ethical and legal concerns, notably in the realm of a third-party parenting. However, its journey to reality remains riddled with legal as well as moral quandaries. While the Surrogacy Act of 2021, which went into force, seeks to deconstruct the different legal complexities involved as well as to provide guidance. Considering the socioeconomic norms that govern the real circumstance at ground zero. Surrogacy may either be commercial or altruistic, depending on whether a surrogate is compensated financially during her pregnancy. This approach is becoming more widespread; estimated that over 30,000 patients obtain donor eggs each year to support their families. Surrogacy cycles have become easier for assisted reproductive technology (ART) clinics with better embryology laboratory and freezing facility, as a result of the development of efficient vitrification methods. The primary risk of surrogacy is obstetric complications, with multiple order pregnancies usually more prevalent. Although American Society for Reproductive Medicine (ASRM) and European Society of Human Reproduction and Embryology committees make several recommendations for single embryo transfer, barely 15%-20% of clinics adhere to single embryo transfer criteria. Over the future decades, humans may witness the first offspring produced with synthetic eggs and sperm and "born" by ectogenesis (artificial womb technology). In summary, surrogacy laws and regulations are evolving both in India and globally, efforts are being made to regulate and restrict commercial surrogacy, prioritizing the needs of infertile couples and safeguarding against exploitation and unethical practices in the surrogacy industry.

Keywords: Assisted Reproductive Technology (ART); Surrogacy; Ectogenesis; Womb

Introduction

"Surrogate" is derived from the Latin term "Subrogare," which means "appointed to act in the place of." Surrogacy is the practice involving assisted reproductive technology ("ART") presenting important ethical and legal concerns, notably in the realm of a third-party parenting [1].

With the development of *in vitro* fertilisation (IVF), women without wombs, those with uterine anomalies that prevent pregnancies, those with serious medical conditions, or those with other contraindications to pregnancy can become mother by an embryo

they have created or received from a donor which is then implanted into the uterus of a gestational carrier. This approach has made it feasible for homosexual couples and single men to become fathers, by using their sperm and donor oocytes to generate an embryo.

Surrogacy's historical dimensions

- 1980- Michigan Lawyer Noel Keane wrote the first surrogacy contract.
- 1985- A woman carried the first successful gestational surrogate pregnancy in the USA.

- 1986- Featured the birth of Melissa Stern, sometimes known as “Baby M,” in the United States. Mary Beth Whitehead, the biological and surrogate mother of Melissa, refused to offer the couple with whom she had signed the surrogacy contract custody of Melissa.
- 1990 - Anna Johnson, a gestational carrier in California, refused to hand the baby over to Mark and Crispina Calvert, the intended parents.
- Indication for Surrogacy.

Current situation in India and globally

Since 2002, commercial surrogacy for foreigners has become legal in India. Surrogacy is prohibited for foreign nationals, including OCIs (Overseas Citizenship of India) and PIOs (from November 3, 2015), under a clause in the draft ART Bill, 2014, and an announcement from the Health Ministry of India [2]. The Surrogacy (Regulation) Bill 2016, which is now awaiting legislative approval, prohibits all other types of commercial surrogacy in India [3]. The proposed Bill authorizes surrogacy only for infertile Indian couples who have been married for at least 5 years and have a medical reason for surrogacy. It excludes surrogacy arrangements for homosexual, live-in couples, single parents, OCIs, PIOs, and foreigners. Therefore, the Surrogacy Bill suggests that the intended couple must lack previous surviving child, either naturally, through adoption, or surrogacy [4].

The revised Surrogacy (Regulation) Act, 2021, came into effect on January 25th, 2022 [5]. The modified legislation permits only charity surrogacy, barring people with financial resources from abusing and taking advantage of the surrogacy option, and it forbids commercial surrogacy as well as the trade of human gametes and embryos. According to estimates, roughly 50% of the approximately 25,000 surrogate children generated in India each year were for couples from Western countries [6].

Surrogacy is fully prohibited in 50 nations and permitted in 40, according to a survey performed by Cornell Law School, the International Human Rights Policy Advocacy Clinic, and the National Law University. Surrogacy is not regulated in 30 countries, there is not much data accessible in 72 countries, and surrogacy is partially authorized in 21 nations [7]. The Surrogacy Arrangement Act 1985 of the United Kingdom, which became the very first country in the entire world to regulate surrogacy, has provisions for altruistic surrogacy.^[8] Even yet, commercial surrogacy is legal in numerous states in the United States, including New York State (NYS) being the first to grant licenses to gestational surrogacy organizations [8]. This approach was permitted by Babylonian law and traditions in order to prevent the otherwise unavoidable divorce [9].

Although the United States, Georgia, Ukraine, and Colombia have surrogacy-friendly legislation, stricter regimes are being enacted in Iceland, Germany, Sweden, Austria, and other nations [9]. Bulgaria refers to it as a “substitute mother” rather than a surrogate term. The Medical Council of Thailand’s 2002 guidelines; that prohibited commercial gamete donation and surrogacy was not legally binding [10]. In September 2014, an IVF laboratory was set up at a clinic in Phnom Penh, Cambodia, and commercial surrogacy was made available in conjunction with another Thai clinic [11]. In 2021, Jadva., *et al.*, noted that the official number of overseas surrogacy cases marginally outnumbered domestic ones, with children born overseas accounting for 51% of cases (162) and children born at UK accounting for 43% of cases (136).

Purposes for surrogacy

An absence of uterus is an absolute mark for surrogacy. Mayer-Rokitansky-Kuster-Hauser syndrome or a history of obstetrics hysterectomy or hysterectomy for gynecological grounds such as cervical cancer or endometrial cancer could be potential causes. Significant anatomical abnormalities, such as a small unicornuate uterus, a T-shaped uterus, or numerous fibroids associated with unsuccessful reproductive treatment attempts, are also concerns. Other reasons for surrogacy include women who have serious medical issues, makes pregnancy impossible. Surrogacy can be considered as a last resort for the treatment of patient with repeated miscarriage and recurrent implantation failure where all possible tools for self-pregnancy have been exhausted [13].

Characteristics for selection of surrogate

Surrogate is often a married woman between the ages of 23 and 35 (25-35 as per the Surrogacy Bill, 2016), with at least a child under the age of three and no more than two years interval between two deliveries [14]. Regular blood tests are performed, as well as testing in order to rule out the presence of human immunodeficiency virus (HIV), hepatitis B virus surface antigen, and hepatitis C virus; moreover, an electrocardiogram, Pap smear, and mammography are instructed. The woman will be subjected to a routine pelvic and abdominal ultrasound for ruling up any anatomical abnormalities. Detailed counselling for all parties involved in surrogacy agreements is essential; participants must be confident and comfortable regarding their decisions, as well as have confidence in one another.

Generally, surrogacy are two types: traditional surrogacy and gestational surrogacy. Traditional (genetic/partial/straight) surrogacy; is the outcome of the artificial insemination where the surrogate mother is implanted along with the original father’s sperm, rendering her a genetic parent with the intended father. Gestational Carrier describes a woman who accepts having a couple’s fertil-

ized egg (embryo) placed in her uterus and bears the pregnancy for the couple, who must generally adopt the unborn child [15]. Carrier does not contribute any eggs and hence not biologically (genetically) linked to the child. Due of the recognized cardiovascular and medical issues in Turner's Syndrome patients, gestational surrogacy is mostly recommended.

Surrogacy may either be commercial or altruistic, depending on whether a surrogate is compensated financially during her pregnancy. If the surrogate receives compensation for the surrogacy agreement, it is deemed commercial, and it is referred to be altruistic if she receives no financial compensation other than reimbursement of her medical and other pregnancy related expenditures as well as insurance coverage for her. Altruistic surrogacy depends upon a "gift relationship" inspired by love or altruism whereby a woman or often a closer friend, relative offers the gift of a child for an infertile couple. On the other side, commercial surrogacy is based on a business partnership [16].

Egg donor

Egg donation is a successful therapy for infertility due to decline in ovarian function. Although this may occur at any age, women in their late 30s and 40s are far more likely to experience it. Donor eggs provide the greatest conception and delivery rates compared to other fertility therapy as well as enable you to bear your own child if you are unable to conceive with your own eggs. This approach is becoming more widespread; is estimated that over 30,000 patients obtain donor eggs each year to support their families [17].

IVF is the procedure of removing eggs, collecting sperm samples, and combining them in a laboratory dish and after the embryo has been developed, it is implanted to the uterus of the expectant mother or a gestational surrogate.

Sperm donor

In the laboratory, sperm from either the recipient's male spouse or a sperm donor is utilized to fertilize these eggs. The intended parents will have a genetic relationship with their child if they contribute the sperm required to fertilize the egg. Sperm donors must be of legal age, preferably under the age of 40, to reduce the possible hazards associated with elderly male parents [18]. The procedure for donor sperm insemination differs depending on if whether the female factor infertility is also involved and the patients can obtain sperm from any of several nationwide certified sperm banks. Donors to these banks are appropriately screened and the sperm is quarantined and after choosing a suitable donor, the bank will ship frozen sample of the sperm to the respective facility.

Embryo donation

Embryo donation is an approach which enables embryos developed from individuals undergoing fertility therapy to be donated to other infertile patients with the goal in helping them becoming pregnant. Untreatable infertility involving both spouses, incurable fertility in a single woman or woman without a male companion, recurrent pregnancy loss assumed because of embryonic causes, and genetic abnormalities affecting one or both partners constitute all reasons for embryo donation. Additionally, the female partner's uterine cavity is examined, and her endometrium is prepared with progesterone and estrogen in anticipation for an embryo transfer [19].

Surrogate embryo transfer might be fresh or frozen, depending on the gestational carrier's availability. Surrogacy cycles have become easier for assisted reproductive technology (ART) clinics with better embryology laboratory and freezing facility, as a result of the development of efficient vitrification methods.

Surrogacy obstetric care

Surrogate home is a facility where a surrogate resides during her whole prenatal time till the day of birth and where all her medical and personal necessities are fulfilled. Because of the importance of the pregnancy, surrogate obstetrics care is thorough, and she is monitored for a 24-hour nursing team as well as a nutritionist, physiotherapist, counsellors, and gynaecologist for her medical treatment. Surrogates receive obstetrics assessments every 20 days till the due date, obstetrics scans every 6-8 weeks, anomaly scans every 11-13 weeks, anomaly scan and 3D-4D scans at 20-22 weeks, and growth scans in 28 weeks and 34-36 weeks. The surrogate is maintained under surveillance for at least 15 days post-delivery before being discharged [2].

Risk associated with surrogacy.

The primary risk of surrogacy is obstetric complications, with multiple order pregnancies usually more prevalent. Although American Society for Reproductive Medicine (ASRM) and European Society of Human Reproduction and Embryology committees make several recommendations for single embryo transfer, barely 15%-20% of clinics adhere to single embryo transfer criteria [20].

Beyond risk to one's health, surrogacy may cause mental trauma, according to Foster (1987), who reported that many surrogate women experience emotional distress upon deciding to relinquish a child [21].

Religious concerns in surrogacy

The religious perceptions upon surrogacy are all based on traditional surrogacy, which was the sole option in ancient times; however, with the development of IVF and gestational surrogacy, the relevancy for these ideas is being called into doubt. According to the Catholic Church, techniques that include the separation of husband and wife by allowing access of another individual other than the couple are severely immoral [22].

Islam takes a similar stance on chastity, and Jewish religious institutions have only recognised surrogacy if it is complete gestational surrogacy with both intended parents' gametes involved and fertilisation done through IVF [23].

Surrogacy and reproductive tourism: Economic concerns

Surrogacy, in addition to IVF and donor programmes, has recently emerged as one of the most popular procedures in fertility tourism. India as well as other Asian countries remain the most popular destinations among U.S. women desiring fertility treatments, with 40% undergoing IVF with donated eggs via reproductive tourism [24].

Surrogacy is a form of reproductive procedure, available to those who have enough money, and the business is expected to be worth \$27.8 billion by 2025. Between 2010 and 2014, over ten thousand infants were delivered in the United States following via gestational surrogacy. The cost of surrogacy in the United States is significantly more than in other nations, including the cost of IVF [25].

Surrogacy's social impact

Women across India are empowering themselves to enhance their lives and the quality of life for their families, and it is usual for surrogates for having little access to education, limiting their market career options.

They make roughly Rs. 450,000-500,000 in 9 months, which may offer her and her entire family with better home, food, education, and sanitation which would be otherwise tough.^[2]

The Psychological effects of surrogacy

Surrogacy, as a last resort treatment for several medical causes of infertility, adds a new layer of complexity to the psychological aspects and requires a multidisciplinary approach. As the children reached the age of ten, their contact with the surrogate diminished slightly, although some maintained positive relationships [26].

Surrogacy has produced a slew of psychological concerns; nevertheless, in the grand scheme of things, except for a few cases, the surrogate, intended parents, and child appear to thrive in peace.

Legal and ethical aspects

When a surrogate and intended parent decide to cooperate, they must formalize their relationship by establishing a legal contract. Each of the parties have individual legal representation to defend and preserve their legal interests. Identity and address evidence for both partners, as well as a marriage certificate, are necessary documents from the couple; whereas in the case of a single parent, only identity and address proof are required.

The Child-Parent Security Act (CPSA) is a New York State law that authorizes gestational surrogacy and offers a straightforward way for parents who depend on assisted reproductive technology (ART) to conceive.

Under the 2021 amendment, the Medical Termination of Pregnancy Act, 1971, unmarried pregnant women are legally allowed to get abortions if they desire.

In India, the names of the commissioning parents are initially enlisted on the child's birth certificate (Indian Council of Medical Research 2005), and surrogate mothers lack parental rights for the children, and the commissioning parent(s) immediately transform into the legal parents.

Recent advances in surrogate technology

Over the future decades, humans may witness the first offspring produced with synthetic eggs and sperm and "born" by ectogenesis (artificial womb technology). How we respond to these breakthroughs will be determined by what we do between now and then concerning the link between reproduction and parenthood.

Building families by donation of eggs is a considerably more recent medical innovation; by 2011, egg donations had already risen to 10% of the total assisted reproductive technology (ART) cycles (Practise Committee of the American Society for Reproductive Medicine, 2014).

Conclusion

Surrogacy appears to be a safe approach for certain infertility cases, presenting with promising and significant results. More than any other type of assisted reproduction, a full awareness of the medical, psychology, and legislation pertaining to this vital therapeutic activity is an indispensable requirement for effective surrogacy practise. Many couples have found it to be an incredible blessing and a medical miracle to date.

Physicians providing these services have to comprehend that the privilege of providing gestational carrier therapies entails a professional responsibility for practising safely and ethically, minimising risks to gestational carriers and children born via this practise, as well as a risk to our autonomy as physicians. Potential risks associated with the foetus, neonate, and infant should be recognised and properly investigated.

Any difficulties originating from the IVF practise permitting surrogacy are certainly related with more complex care as compared to normal IVF instances. Relevant and successful methods in resolving surrogacy problems while preserving individuals' basic rights, new rules and regulations must take shifting cultural patterns into consideration.

It is impossible to foresee how surrogacy tourism will evolve on a global scale in the future and there are conflicting viewpoints, as well as no obvious road to an effective strategy. It can be concluded that future commercialization should be avoided by thoroughly researching the truth of the surrogacy procedure.

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