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International Gestational Surrogacy in the United States, 2014–2020

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Structured Abstract

Objective:

To describe characteristics, trends, and outcomes of international gestational surrogacy cycles in the United States (US).

Design:

Retrospective cohort study.

Subjects:

All assisted reproductive technology cycles in the US reported to the Society for Assisted Reproductive Technology Clinic Outcome Reporting Systems that included an embryo transfer to a gestational carrier from 2014–2020.

Exposure (for observational studies):

International versus US intended parents.

Main Outcome Measures:

Cycle characteristics, geographic distributions, and obstetrical outcomes.

Results:

Of 40,177 embryo transfers to a gestational carrier from 2014–2020, 32% were for international intended parents. The number and percent of international intended parents gestational carrier cycles increased each year from 2014 (n=2758, 22.0%) to 2019 (n=4905, 39.8%) with a decrease in 2020 (n=4713, 31.8%). Compared to cycles for US intended parents, there was a larger decrease in gestational carrier cycles between 2019 and 2020 for international intended parents (3.9% vs 32.2%). International intended parents were more likely to be male sex (41.3% vs 19.6%), older than 42 years (33.9% vs 26.2%) and identify as Asian race (65.6% vs 16.5%). International intended parents were largely from China (41.7%), followed by France (9.2%) and Spain (8.5%). Gestational carriers for international intended parentss were more commonly younger than 30 years (42.8% vs 29.1%) and identified as Hispanic race (28.6% vs 11.7%) compared to gestational carriers for US intended parents. Cycles with international intended parents were more likely to use donor eggs (67.1% vs 43.5%), intracytoplasmic sperm injection (72.8% vs 55.4%), and pre-implantation genetic testing (79.0% vs 55.8%). Cycles with international and US intended parents had similar obstetrical outcomes, including live birth (adjusted risk ratio [aRR] 1.01, 95% confidence interval [CI] 1.00–1.03) and multiple pregnancy (aRR 1.00, 95% CI 0.94–1.06) rates.

Conclusion:

An increasing number of international intended parents are utilizing gestational surrogacy in the US and more frequently using cost-enhancing specialized treatment techniques. This increase is potentially due to restrictive international commercial surrogacy laws and the increased availability of reproductive medical expertise. Given this growing demographic, continued examination of the volume of cross-border reproductive treatment, as well as the legal and ethical considerations, is warranted.

Keywords: Gestational carrier, surrogacy, in vitro fertilization, third party reproduction, cross-border reproductive care, preimplantation genetic testing

Introduction

Gestational surrogacy is an increasingly utilized treatment for intended parents who are not able to carry a pregnancy due to prior obstetric complications, medical comorbidities in which pregnancy is contraindicated, and for same-sex male couples who desire a biological connection to their child (1). International gestational surrogacy has grown in the last two decades with advances in both the global reproductive industry and reproductive technologies (2). In the United States (US) from 1999–2013, approximately 16% of intended parents using a gestational carrier were not US residents (3). Several European countries have also experienced an increase in intended parents from a different country of origin using gestational carriers (4–7).

International gestational surrogacy exists and thrives for many reasons, including the illegality of commercial surrogacy in some countries; desirable legal frameworks available internationally; cost-prohibitive nature of domestic surrogacy; and the political, social, and cultural contexts of various individual countries (8–13). Although the US is known for its expensive healthcare, it has remained a leader and a central hub for cross-border reproductive care (CBRC) because of its medical expertise and the current societal and legal atmosphere (12–14). Given that individuals are increasingly traveling to the US for this care, it is imperative to understand the trends and outcomes of international gestational surrogacy in the US.

To date, two studies have used national data to assess CBRC, and more specifically, gestational surrogacy in the US (3, 15). Perkins et al. found that the proportion of international gestational carrier cycles declined from 1999–2005 (9.5% to 3.0%), but then increased from 2006–2013 (6.3% to 18.5%) (3). Levine et al. examined CBRC from 2006–2013 and found that the use of a gestational carrier was 7.8 times more likely with international intended parents compared to US intended parents (12.4% vs 1.6%) (15). In both studies, detailing cycle characteristics and obstetrical outcomes for international gestational carrier cycles were outside the scopes of the study. Using data from the Society for Assisted Reproductive Technology (SART) Clinic Outcome Reporting System (CORS), we aim to describe the demographics, updated trends, and outcomes of international surrogacy in the US, specifically when the intended parents are non-US residents.

Materials and methods

Population

The data used for this study were obtained from SART CORS. SART-associated ART clinics voluntarily submit their annual data, which are then verified and reported to the Centers for Disease Control and Prevention in compliance with the Fertility Clinic Success Rate and Certification Act of 1992 (Public Law 102–493). In 2020, 79% of ART clinics were SART members, which accounted for over 90% of reported IVF treatment cycles in the United States (16). All gestational carrier cycles involving an embryo transfer between 2014 through 2020 were included in this study.

Definitions

A gestational carrier is defined as a person who has consented to have a genetically-unrelated embryo implanted in her uterus that was created via in vitro fertilization (IVF) using gametes from the intended parents and/or a donor (17). Intended parents or an intended parent is a couple or person who seeks to reproduce with the assistance of a gestational carrier. For purposes of this study, an international intended parent is an individual that is not a US resident and has traveled from an outside country to the US to utilize a gestational carrier.

Statistical Analysis

The number and percentage of ART cycles involving an embryo transfer to a gestational carrier was calculated for each year of the study period and stratified based on whether the intended parents were international or from the US. The trend in the number of cycles involving international intended parents was evaluated using a Poisson model. The number and percentage of gestational carrier cycles involving international versus US international parents was further examined by state. Given the deidentified nature of the data in this analysis, clinic state was censored in SART CORS data if only a single clinic reported cycles within a specific year. International intended parent's geographic origin was also reported. A geographical density map was constructed to illustrate the countries of origin for international intended parents.

We evaluated demographic and cycle characteristics comparing gestational carrier cycles for international intended parents versus US intended parents. Demographic information pertaining to intended parents was reported, including age at transfer, race/ethnicity, number of prior cycles, gravidity, parity, prior live births, prior miscarriages, and use of donor oocyte. Three variables relating to gestational carrier use were added to the SART CORS database in 2016, including reason for gestational carrier use, age of gestational carrier, and gestational carrier race/ethnicity, and are therefore only available from 2016 to 2020. Oocyte age refers to the age of the female intended parent or oocyte donor at the time of oocyte retrieval. Absence of a uterus refers to the absence of a uterus due to prior surgery (e.g., hysterectomy) or for same-sex male couple intended parents. Chi-squared analyses were used to evaluate for differences in demographic and cycle characteristics between international and US intended parents.

Using log binomial regression models, we calculated the relative risk (RR) and adjusted relative risk (aRR) for clinical pregnancy (defined as a clinically identifiable intrauterine pregnancy) and live birth in gestational carrier cycles for international versus US intended parents. We adjusted the aRR for several factors including oocyte age, embryo transfer type (fresh versus frozen), intracytoplasmic sperm injection (ICSI) use, preimplantation genetic testing (PGT), timing of embryo transfer (day 2/3 versus day 5/6), number of embryos transferred, and donor oocyte use. Among cycles with a clinical pregnancy, the RR and aRR for miscarriage were calculated. Among live births, the RRs and aRRs for term delivery (≥37 weeks gestation), pre-term (≥32 weeks and <37 weeks gestation), and very preterm (<32 weeks gestation) were calculated comparing gestational carrier cycles for international intended parents versus US intended parents. Additionally, the RR and aRR with 95% confidence intervals (CIs) for multiple gestation were calculated comparing gestational carrier cycles for international intended parents and US intended parents.

Data were analyzed using SAS 9.4. This study was approved by the Emory University Institutional Review Board.

Results

Between 2014–2020, there were 40,177 gestational carrier cycles involving an embryo transfer, 32% of which were for international intended parents. The total number of gestational carrier cycles increased from 2014 to 2019 for US intended parents (from 2,758 to 4,905) and international intended parents (from 780 to 3,240) followed by a decline in 2020 for both groups (Figure 1). There was a notably steeper decline in the number of gestational carrier cycles involving international intended parents, with a 32.2% decrease from 2019, compared to a 3.9% decrease observed for US intended parents in the same period. Of all gestational carrier cycles, the percentage involving international intended parents steadily increased from 22.0% in 2014 to 39.8% in 2019, then dropped to 31.8% in 2020.

Figure 1.

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Number and percentage of international and US gestational carrier cycles from 2014–2020

There were differences in demographic characteristics comparing US and international intended parents (Table 1). International intended parents were more likely to be male sex (41.3% vs 19.6%; $p<0.0001$), be older than 42 years (33.9% vs 26.2%; $p<0.0001$), and identify as Asian race (65.6% vs 16.5%; $p<0.0001$). Furthermore, they were less likely to identify as White (26.5% vs 69.9%; $p<0.0001$) or Black race (0.9% vs 5.2%; $p<0.0001$). Regarding fertility diagnoses, international intended parents were more likely to have ovulatory dysfunction (30.6% vs 27.9%; $p<0.0001$) and diminished ovarian reserve (30.4% vs 24.7%; $p<0.0001$) compared to US intended parents. International intended parents were more likely to use a gestational carrier due to absence of a uterus than US intended parents (43.1% vs 23.4%; $p<0.0001$). There were also differences in the demographics of the gestational carriers utilized by international versus US intended parents. Gestational carriers selected by international intended parents were more commonly younger than 30 years (42.8% vs 29.1%; $p<0.0001$) and a larger proportion identified as Hispanic race compared to those selected by US intended parents (28.6% vs 11.7%; $p<0.0001$).

Table 1.

Patient characteristics of assisted reproductive technology cycles utilizing a gestational carrier for international intended parents compared to US intended parents, 2014–2020.

	International Intended Parents		US Intended Parents		p-va
Variable	**N**	**%**	**N**	**%**	
No. of cycles[a]	12925		27252		
Patient sex[b]					<0.(
Female	6508	58.6%	16950	80.4%	

Male	4593	41.3%	4131	19.6%	
Age of intended parent, years					<0.(
<35	2650	20.5%	7499	27.5%	
35–37	2340	18.1%	5305	19.5%	
38–40	2222	17.2%	4805	17.6%	
41–42	1335	10.3%	2504	9.2%	
>42	4378	33.9%	7139	26.2%	
Intended parent Race/Ethnicity[c]					<0.(
Hispanic	485	6.0%	1164	6.8%	
Black (non-Hispanic)	72	0.9%	900	5.2%	
White (non-Hispanic)	2154	26.5%	11995	69.9%	
Asian	5316	65.5%	2849	16.6%	
Two or more races	85	1.1%	175	1.0%	
Other	<5	<0.01	81	0.5%	
Missing/Unknown	4810	37.2%	10088	37.0%	
Used donor oocytes	8678	67.1%	11869	43.5%	<0.(
Used donated embryos	123	1.0%	349	1.3%	0.0
Infertility diagnosis[d]					
Male factor[e]	859	6.6%	2864	10.5%	<0.(

Tubal factor[f]	313	2.4%	1035	3.8%	<0.(
Endometriosis	216	1.7%	1054	3.9%	<0.(
Uterine factor[g]	1311	10.1%	4716	17.3%	<0.(
Diminished ovarian reserve	3933	30.4%	6737	24.7%	<0.(
Unexplained	488	3.8%	1361	5.0%	<0.(
Other	5389	41.7%	13522	49.6%	<0.(
Recurrent pregnancy loss[b]	280	2.5%	825	3.9%	<0.(
Ovulatory dysfunction[h]	3720	30.6%	6826	27.9%	<0.(
Age of gestationl carrier, years[b]					<0.(
<30	5531	42.8%	7941	29.1%	
30–34	4416	34.2%	9647	35.4%	
35–39	2442	18.9%	7297	26.8%	
≥40	536	4.2%	2367	8.7%	
Race/Ethnicity of gestational carrier[b,c]					<0.(
Hispanic	1339	28.6%	1320	11.7%	
Black (non-Hispanic)	257	5.5%	714	6.3%	
White (non-Hispanic)	2936	62.7%	8890	78.6%	
Asian	102	2.2%	247	2.2%	
American					

Indian/Alaska Native	17	0.4%	39	0.3%	
Native Hawaiian/Other Pacific Islander	16	0.3%	19	0.2%	
Two or more races	19	0.4%	88	0.8%	
Missing/Unknown	6415	57.8%	9764	46.3%	
Intended parent number of prior cycles[i]					<0.(
0	1069	12.8%	3953	17.1%	
1	2784	33.4%	6791	29.4%	
2+	4479	53.8%	12377	53.5%	
Intended parent number of prior live births[i]					<0.(
0	6299	75.6%	15843	68.5%	
1	1443	17.3%	4551	19.7%	
2+	590	7.1%	2727	11.8%	
Intended parent number of prior spontaneous abortions[i]					<0.(
0	6357	76.3%	16072	69.5%	
1	952	11.4%	3649	15.8%	
2+	1019	12.2%	3392	14.7%	

Cycle type					<0.(
Fresh	647	5.0%	3265	12.0%	
Frozen-thawed[j]	12278	95.0%	23987	88.0%	
Oocyte source age[k, c]					<0.(
<30	6903	53.4%	9493	34.8%	
30–34	1833	14.2%	6577	24.1%	
35–37	1079	8.4%	4109	15.1%	
38–40	898	7.0%	2740	10.1%	
>40	594	4.6%	1335	4.9%	
Missing	1618	12.5%	2998	11.0%	
Used intracytoplasmic sperm injection[l]	9411	72.8%	15101	55.4%	<0.(
Used preimplantation genetic testing[l]	10205	79.0%	15202	55.8%	<0.(
No. of embryos transferred					<0.(
1	9770	75.6%	19326	70.9%	
2	3009	23.3%	7498	27.5%	
3+	146	1.1%	428	1.6%	

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[a]Includes all ART cycles that resulted in at least one transfer to a gestational carrier (e.g. does not include ART cycles where there were no embryos to transfer)

[b]Only available for 2016–2020
[c]Denominator for percentages does not include those that are missing
[d]Not mutually exclusive (shown for all patients all years except where noted)
[e]Includes male factor due to abnormal semen parameters (e.g. oligospermia), azoospermia, and prior vasectomy
[f]Includes tubal factor due to history of tubal ligation, history of hydrosalpinx, and history of other tubal disease
[g]Includes absence of uterus or significant uterine anomaly
[h]Only available for 2015–2020
[i]Available for female patients only (n=23,458)
[j]Includes 54 with fresh and frozen embryos
[k]For autologous IVF cycles, includes age of the intended parent at the time of the retrieval. For cycles using donor oocyte, includes the age of the oocyte donor at the time of retrieval.
[l]Includes use of intracytoplasmic sperm injection or preimplantation genetic testing for some or all embryos

Of all gestational carrier cycles involving international intended parents, 75.3% were performed at clinics in either California (n=8,378; 64.8%) or Oregon (n=1,355; 10.5%). The next three most common states were Connecticut (n=462; 3.6%), Nevada (n=462; 3.6%), and Illinois (n=353; 2.7%). In comparison, gestational carrier cycles done for US intended parents were more evenly distributed among states with the two most common states being California (n=6667; 24.5%) and Texas (n=2631; 10.0%), closely followed by Connecticut (n=1914; 7.0%), Illinois (n=1530; 5.6%), and New York (n=1165; 4.3%). The country of origin for international intended parents are illustrated in Figure 2. The five most common countries of origin were China (n=5395; 41.7%), France (n=1182; 9.2%), Spain (n=1104; 8.5%), the United Kingdom (UK) (n=689; 5.3%), and Israel (n=651; 5.0%).

Figure 2.

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Distribution of international intended parents utilizing a gestational carrier by country of origin from 2014–2020

ART cycle characteristics differed between gestational carrier cycles to international and US intended parents. International intended parents more frequently used donor oocytes (67.1% vs 43.5%; $p<0.0001$), an oocyte source less than 35 years of age (67.6% vs 58.9%; $p<0.0001$), and adjunct fertility treatments or techniques, such as ICSI (72.8% vs 55.4%; $p<0.0001$) and PGT (79.0% vs 55.8%; $p<0.0001$) (Table 1). International intended parents were less likely to have two embryos transferred at once compared to US intended parents (23.2% vs 27.5%; p<0.0001).

Prior to adjusting for oocyte age, use of ICSI, fresh vs frozen cycles, PGT use, day of embryo transfer, number of embryos transferred, and use of donor oocytes, there were statistically significant increase in clinical pregnancy (RR 1.07; 95% CI 1.05–1.08) and live birth rates (RR 1.09; 95% CI 1.07–1.11) for international intended parents compared to US intended parents (Table 2). However, following adjustments, there were no differences in likelihood of live birth (aRR 1.01; 95% CI 1.00–1.03), miscarriage (aRR 0.96; 95% CI 0.89–1.03), or multiple gestation (aRR 1.00; 95% CI 0.94–1.06) comparing gestational carrier cycles involving international versus US intended parents. Among cycles resulting in live birth, there were no statistically significant differences in likelihood for term or very preterm birth (aRR 1.02; 95% CI of 0.99–1.04 or aRR 1.09; 95% CI of 0.92–1.26).

Table 2.

Treatment and pregnancy outcomes comparing gestational carrier assisted reproductive technology cycles to international versus US intended parents, 2014–2020

	International Intended Parents		US Intended Parents		
Variable	**N**	**%**	**N**	**%**	**RR (95% CI)**
Among transfers[a]					

Not pregnant	3151	24.6%	7708	28.5%	0.86 (0.83–0.89)	
Clinical pregnancy	8526	66.5%	16891	62.4%	1.07 (1.05–1.08)	
Live Birth	7373	57.5%	14276	52.8%	1.09 (1.07–1.11)	
Among pregnancies, miscarriage	1108	13.0%	2530	15.0%	0.87 (0.82–0.93)	
Gestational age among live births[b]						
Term >=37w	5433	74.1%	10365	72.8%	1.02 (1.00–1.03)	
Pre-term 32w-36w	1633	22.3%	3381	23.7%	0.94 (0.89–0.99)	
Very pre-term <32	271	3.7%	500	3.5%	1.05 (0.90–1.21)	
Number born among live births						
Singleton	6298	85.4%	12150	85.1%	Ref	
Multiples[c]	1075	14.6%	2126	14.9%	0.98 (0.92–	

					1.05)	

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RR = relative risk; aRR = adjusted relative risk
[a]Excludes 299 cycles with unknown outcomes.
[b]Excludes 64 cycles with implausible gestations (less than 20 or greater than 45w).
[c]Includes 15 stillbirths with live birth.
[d]Adjusted for oocyte age, use of donor oocytes, use of intracytoplasmic sperm injection, use of preimplantation genetic testing, fresh versus frozen cycle, day of embryo transfer, and number of embryos transferred

Discussion

In this study, we provide a comprehensive analysis of international gestational carrier cycles in comparison to US gestational carrier cycles using the SART CORS database from 2014 through 2020. We found that international gestational surrogacy in the US steadily increased from 2014 to 2019 and then decreased from 2019 to 2020. The decrease in international gestational carrier cycles between 2019 and 2020 is likely secondary to the COVID-19 global pandemic, and therefore, is not reflective of true gestational carrier trends (18).

During the COVID-19 global pandemic, like many other countries, the US imposed quarantines, entry bans, and travel restrictions. Specifically, on January 31st, 2020, a nationwide travel ban was instituted from China for non-US citizens followed by several other countries over the next few months including Iran, the UK, Ireland, Brazil, as well as multiple countries in Europe (19). Travel between China and the US remained difficult up until the end of 2022, and therefore, negatively impacted CBRC in the US during this time.

The overall growth during our study years in number of CBRC cycles are likely due to a few reasons. There are many legal barriers, which are heavily influenced by the cultural climate in these countries. For example, both altruistic and commercial surrogacy are illegal in China, France and Spain (20, 21). In France, prior to 2021, single women and same-sex female couples were denied access to IVF, artificial insemination, and sperm donation (7). In the UK, the situation presents a unique set of challenges: while altruistic surrogacy is permissible, the lack of enforceability of surrogacy agreements complicates the transfer of parental rights, necessitating post-birth court applications (20, 22). Adding to this complexity is the legal provision that allows donor-conceived children to uncover the identity of their donors upon reaching the age of 18 (23). While such transparency has been demonstrated to be beneficial to child and family adjustment, some parents do not align with this view (24). Consequently, a notable segment of UK citizens, particularly those seeking nonidentified gamete donors, opt for reproductive services abroad (13). By contrast, although surrogacy in Israel is legal with state approval, prior to 2021 it was limited to heterosexual couples or single women, therefore preventing same sex male couples, single men, or transgender individuals from seeking these services (20). Lastly, some intended parents may choose CBRC in the US for their children to have US citizenship at birth.

The fact that international intended parents are more likely to be male and to utilize donor oocytes suggests that same-sex male couples or single males planning to parent are traveling to the US to contract with a gestational carrier. This may be due to well established supportive same-sex surrogacy laws in certain states (25, 26). Specifically, international intended parents primarily selected clinics in California, which is considered one of the most progressive, liberal, and surrogacy-friendly states in the US (27). This is largely a result of the California Assembly Bill 1217, which allows intended parents to establish legal parentage through a pre-birth order instead of a post-birth adoption (24). International intended parents were also older in age (>42 years), which may be because they have tried other forms of ART or waited to advance professionally to have a better financial status to afford a surrogate (28, 29).

Our research revealed higher use of adjunct reproductive technologies, including ICSI and PGT, among cycles for international intended parents. Gestational carrier cycles are expensive at baseline and those involving international travel increase costs even further. Although more expensive, clinics and patients may be more likely to use these two treatment modalities given the baseline costs of surrogacy and the barriers of international travel they have already overcome.

The higher use of these treatments among cycles for international intended parents may contribute to observed differences in pregnancy and live birth rates when compared to US intended parents. Initial analyses, before accounting for potential confounders, including use of ICSI, use of donor oocytes, and PGT, indicated more pronounced disparities in live birth rates between cycles involving international intended parents and those with US intended parents. However, after adjusting for these variables, the RRs approached 1.0, with confidence intervals nearing 1, suggesting a lessening of observed differences. While these treatments can be helpful in older reproductive aged women, their utility is likely lower when using oocytes under age 35 years of age (30, 31) or those without male factor (32). Nonetheless, the legal, ethical and psychological complexities inherent in gestational carrier cycles merit a nuanced approach. It is also crucial to acknowledge that ICSI is frequently utilized in conjunction with PGT.

Given our study design, there are inherent limitations. The SART CORS database contains limited information regarding gestational carrier demographics, with race/ethnicity and age collected beginning in 2016. It also does not contain information about why international intended parents select the US, rather than another country, for gestational carrier use, and provides limited information for why adjunct treatment options, such as ICSI or PGT, were utilized. In addition, the associated infertility diagnoses are not reported for each patient and clinic state is censored in SART CORS data if only a single clinic reported cycles within a specific year. As a result, our findings may not represent a comprehensive depiction of the intended parent's infertility status or gestational carrier cycles by state. Furthermore, when the intended parent is male, SART CORS data also does not specify whether the intended parent is a single male or male couple.

Despite these limitations, our study provides valuable information pertaining to the characteristics, trends, and outcomes for international gestational carrier cycles in US. Gestational surrogacy is an ethically, legally, and psychosocially complex process. The American Society of Reproductive Medicine (ASRM) specifies that it is justifiable as long as the gestational carrier is provided all information about the associated benefits and risks, gives informed consent, and receives the appropriate legal advice, psychological counseling, and healthcare (17). With the steady increase in cross-border gestational carrier cycles, it is imperative that obstetricians and fertility specialists become increasingly aware of their specific states laws and provide the appropriate preconception, prenatal, and peripartum counseling (13, 33). To this end, we specifically recommend that REI physicians take an active role in ensuring their patients have proper legal representation in both the state of the gestational carrier and in the patient's own country, thereby securing all essential legal protections. ASRM's Ethics Committee opinion provides an overview of potential legal considerations for physicians caring for international patients and raises several concerns, including the risk of "evolving laws" that could make it difficult to travel with a newborn, as well as immigration issues (13).

Conclusions

An increasing number of international intended parents are utilizing gestational surrogacy in the US and, when compared to US intended parents, there is a statistically significant increase in utilization of cost-enhancing specialized treatment techniques, including ICSI and PGT. This increase is potentially due to restrictive international commercial surrogacy laws, the increased availability of reproductive medical expertise, and the cultural and social climate of the US. Given this growing demographic, continued examination of the volume of cross-border reproductive treatment, as well as the legal and ethical considerations is warranted.

Capsule:

Gestational carrier cycles with international intended parents have increased in the United States; outcomes are similar to those of domestic cycles but are more likely to include adjunct treatments.

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Footnotes

Disclosures for all authors: None

Attestation: Data will be made available to the editors of the journal for review or query upon request.

Trial registration: Not applicable

Data Sharing:

Data would need to be requested from the Society for Assisted Reproductive Technology Clinical Outcomes Reporting System (SART CORS). The authors do not have permission from SART CORS to share it.

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Associated Data

This section collects any data citations, data availability statements, or supplementary materials included in this article.

Data Availability Statement

Data would need to be requested from the Society for Assisted Reproductive Technology Clinical Outcomes Reporting System (SART CORS). The authors do not have permission from SART

CORS to share it.