meet two sisters who've changed the future of fertility

Anna Grace Yarber is the first baby ever born in the United States as a result of the transplant of ovarian tissue. Here, 25-year-old twins Stephanie Yarber and Melanie Morgan talk about the extraordinary bond that allowed Stephanie to ask her sister, "Will you share your ovaries with me?"

by Leslie Goldman

Above: Stephanie cradles 17-day-old Anna Grace with Melanie by her side. Left: "It's positive!"—Stephanie celebrates her pregnancy.

Two of a kind

STEPHANIE: If you lived in the small town in Alabama where my identical twin, Melanie, and I grew up, you probably would have gotten us mixed up. Everyone did. But that didn't bother us: We loved that we shared the same green eyes, the same Southern accent, and that we played on the same softball team. It was almost as if we were one person. When Mel stubbed her toe, my foot hurt.

So we weren't surprised when we both got our first period around the same time, when we were 11. But when I was 14, my periods became irregular, then they just stopped. My mother took me to a reproductive endocrinologist in Birmingham who ran a bunch of tests, including some to check to see if I had a brain tumor. I was so scared it was something serious—my whole family was. So at first when they diagnosed me with premature ovarian failure, or early menopause, we were relieved that it wasn't life-threatening. Even when my doctors explained that I wouldn't be able to have children naturally, it didn't *fully* sink in. At 14, motherhood seemed so far off, anyway. But Melanie understood what was at stake. That night she said, "Don't worry—I'll give you my eggs." ▶

PHOTOGRAPHED BY KARIM SHAMSI-BASHA/CORBIS.

MELANIE: Because we were only 14, we had no idea what this plan might entail—in vitro and everything. I knew if I needed a kidney, Stephanie wouldn't hesitate to give me hers. So why would my eggs be any different? The funny thing is, I was secretly jealous of her condition. I thought to myself, "Why does *she* not have to deal with a period?"

Marriage—and motherhood?

STEPHANIE: The fact that I couldn't have kids *really* hit me a few years later, when I met my husband, Kevin. He was adorable, with dark hair and really kind blue eyes. I knew right away that he was The One. It sounds corny, but I just felt it immediately in my heart. He was such a gentleman: On our first date he brought me a rose, then two roses on our second date. After just a few weeks, I confided in him about my premature ovarian failure. I also mentioned my hopes of using Melanie's eggs. As it turned out, his sister couldn't have children either, so my situation didn't throw him. He told me he would support me, whatever I wanted to do. That's when I knew for sure that he really loved me.

Kevin and I got married on June 6, 1998. We were 18 and completely in love. I couldn't wait to start a family with him, but we couldn't afford it yet. In vitro is expensive, and so is raising a child. So we scrimped and saved money from our jobs (I worked part-time at a bank and he works at an aluminum plant). Finally, in 2001, when we were 21, with savings and money from refinancing our home, we had the $15,000 needed for the egg donor and in vitro process.

MELANIE: We had to make sure I was a good egg donor candidate, so they gave me a bunch of tests. I wasn't really nervous because it was such a common procedure—our doctor had even donated eggs herself. And my husband, Anthony (we got married in January 1998), was incredibly supportive of our plan. Everything was going well until the unexpected happened: I got pregnant. Anthony and I already had two daughters: Caitlyn, then 4 years old, and Hailey, then 2. The news of a third child was definitely a surprise. I felt bad—I was trying to help *Stephanie* get pregnant, not myself!

STEPHANIE: Of course Kevin and I were so happy for them, but at the same time, we were upset, because her pregnancy postponed our starting a family. The truth is that with each baby Mel had, our desire to become parents got stronger. Now, with Mel pregnant again, we had two choices: wait until she delivered and resume our efforts, or adopt. After talking and praying, we decided that we wanted to wait for Melanie to deliver and get back to in vitro.

After her daughter Alyssa was born in August 2002, Melanie took three months to let her body recover, and then in early December, we geared up for another round of in vitro. For six months, she and I woke up at 5 a.m. to drive to a clinic an hour away so Melanie could have her follicle checkups and blood tests. I even learned how to give her the twice-a-day injections that stimulated her egg production.

MELANIE: She was so scared of hurting me, she could only manage a few shots. I was in nursing school, though, so I just did them myself: I considered it good practice. My husband gave me some of the shots, too. He was great at it—and great through all of this. He wanted what we all wanted: for Stephanie and Kevin to have a family of their own.

Would in vitro work?

STEPHANIE: On the day of the procedure, the doctors retrieved and fertilized 14 of my sister's eggs. Of the 14, two were implanted in me—they implanted more than one to increase the odds of a viable pregnancy. We were all so excited. But a few weeks later, we found out the procedure hadn't worked: I wasn't pregnant. Kevin and I just fell apart; we held each other and cried. When Melanie heard, she jumped in her car and drove over and cried with us. After all of that time and all of Melanie's effort, we were absolutely devastated.

In August 2003, we decided to give it another try. But the in vitro failed again. This time, we had forced ourselves to have more realistic expectations—our doctor had told us that the chances of success were only 15 to 20 percent—but we were still crushed: Conceiving a child was all we thought

Donating eggs is one thing, but an *ovary*? That would require anesthesia and could affect Mel's fertility. **But she didn't hesitate. "Let's go for it!" she said.**

The twins' identical DNA increased the odds of a successful transplant.

miracle science How ovarian transplants could end infertility.

The mystery of the female "biological clock" may one day be a thing of the past, according to Sherman Silber, M.D., director of the Infertility Center of St. Louis at St. Luke's Hospital and author of *How to Get Pregnant.* Here, Silber explains the breakthrough procedure that made Stephanie Yarber a mom.

Dr. Silber: When Stephanie contacted me, it was the call I had been prepared to receive for 25 years. No one had performed a successful ovarian transplant yet. Although I had done a more invasive version of this surgery in the 1980s, the recipient wasn't able to get pregnant as a result of the procedure. But I knew Stephanie would have a better chance of conceiving. And I knew from animal studies that a less invasive outpatient technique called cortical grafting could work—though it had never been tried with people.

Contrary to what most people believe, *eggs are located in the one millimeter outer shell of each ovary, like the peel of an orange*—not inside, like the seeds of a watermelon. So we can take out the ovary, put it on ice, shave off that shell, and have all the eggs intact. That's what we did with Melanie's left ovary. I cut the egg-rich shell in thirds, yielding three circular pieces. Next, through a tiny incision in Stephanie's torso, I exposed one of her ovaries, shearing off her outer shell. We then took one of the pieces of Melanie's ovary and grafted it onto Stephanie's ovary. Then we repeated the procedure on Stephanie's other side. The final third was frozen, so if anything happens—say, Melanie loses an ovary—we can transplant it back to her. The frozen tissue will remain that of a 24-year-old.

We also saved some small sections of both sisters' ovarian tissue for further study. *The twins represent an incredible opportunity to figure out the causes of infertility in women.* By scrutinizing the differences in their DNA sequences, a process that could take several years, we may be able to identify the specific gene area that controls a woman's egg supply—the basis of her biological clock. There's another benefit: If a woman decides, for whatever reason—from career to cancer—that she cannot have children right now, we can remove and freeze an ovary while she's still young, saving it as insurance for a later time.

Before this procedure, Stephanie was on synthetic hormone replacement to prevent osteoporosis because she was menopausal. But now, she doesn't need synthetic hormones; she's producing her own estrogen. I believe she'll be able to have more babies with Melanie's ovary. The only downside? For the first time in her life, she has to worry about birth control.

about, and now it felt like nothing was ever going to work. We had to face the possibility that I might never get pregnant.

Still, I wasn't ready to give up. So one night I sat down at my computer and typed in "premature ovarian failure," hoping to find a story online about a new medicine or herb that might help me. I found an article about something called ovarian donation, which is very different from egg donation. According to this article, a Chinese woman had donated one of her two ovaries to her nonidentical twin sister. The recipient didn't go on to have a baby, though. And this case hadn't been published in a medical journal—meaning it might have just been one of those Web rumors. But to me it meant one thing: hope. With more digging, I discovered that there was a doctor in the United States who had attempted an ovarian transplant. That patient didn't end up having a baby either. Still, I was so excited, my heart was pounding. But before I talked to the doctor—Sherman Silber at the Infertility Center of St. Louis at St. Luke's Hospital—I had to ask Melanie. Donating eggs is one thing, but an *ovary*? That would require general anesthesia and might even affect her fertility. She didn't hesitate. "Let's go for it!" she said.

MELANIE: I was ecstatic; I would've done anything to help Stephanie and Kevin. I remember when we placed our newborn daughter, Alyssa, in Kevin's arms, he broke down and cried. I already had three kids of my own and I was pretty sure I was done, so I wasn't worried about my fertility.

STEPHANIE: Kevin, Melanie, and I drove to St. Louis to meet with Dr. Silber. We clicked right away. He was really kind and patient, explaining everything to us so we understood each step of the procedure. Dr. Silber would transplant one third of Melanie's left ovary into my left ovary, one third into my right ovary, and the other third would remain frozen in case Melanie needed it later. If everything went smoothly, Dr. Silber said, I would start menstruating within a few months of the operation. If the surgery worked and I became pregnant and delivered, it would be the first successful ovarian transplant in history to result in a baby. But we weren't doing it for the attention or to make medical history. We just wanted a child.

Dr. Silber did tell us there were no guarantees, as this had never been done successfully before. And he gave us pages and pages of consent forms to sign explaining possible risks, but despite all of that, Kevin and I had a good feeling. It helped that Dr. Silber wasn't too concerned about Melanie's fertility because she was keeping one ovary.

And so we set the surgery date for April 21, 2004. The night before, I was really scared. I'd been under anesthesia before but this was different: It was an experimental procedure. I tried to be strong, but I started crying as they wheeled me to the operating room. I think it was a combination of fear of the surgery itself, worrying about whether it would work, and knowing Mel was going under anesthesia too.

MELANIE: I wasn't really scared. I'd already had a C-section, so I was thinking, How hard could it be? And I knew we were in really good hands. I also had faith in God. I believe He made Stephanie and me the way we are for a reason—twins, the early menopause, and now this. I just knew we were going to be okay.

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STEPHANIE: When we came to after the surgery, Dr. Silber told me that the operation itself had been a success, but as far as whether the surgery would "take," whether I would start getting my period, we would just have to wait and see.

Hope reborn

STEPHANIE: Right on target, on July 10, 2004, I got my period. I was so excited, but the bleeding only lasted a day. Dr. Silber said it was a good sign, though; it showed my body was trying to kick-start my fertility.

Then, a few months later, on a family boating trip, I took a bathroom break and saw that I was bleeding again. I screamed at the top of my lungs for my mother and Melanie. My mom later told me that when she heard me yelling like that, she thought I had seen a snake! Once they realized that I'd gotten my period, we all held onto each other and jumped up and down. We must have looked crazy. Of course, I was wearing a white bathing suit and didn't know how to put a tampon in, so Melanie had to help me. But after all we had been through, I didn't care about any of that. I finally had my period after more than a decade—and I owed it all to Melanie.

As it turned out, I didn't need those tampons for long. Kevin and I had been trying to conceive ever since the surgery, and I had been taking my temperature to track my fertility. One day I noticed my temperature was high, so I bought a home pregnancy test on a break from my job at the bank. It came out positive! I was freaking out, so I told my boss, who had been totally supportive through my entire ordeal, and got permission to leave for the emergency room to have blood drawn to confirm the results (my doctor was away). My mother met me there, and we were so nervous waiting for the results that we bought *another* drugstore test. It was positive! Mom was taking pictures of me with the pregnancy tests while we waited for the official results, but eventually, I had to go back to work. That's when I got the call that I had been waiting years for: I was pregnant.

People have asked, "If the ovary's from Mel, **who is the 'real' mom?" But that's never been an issue for us.**

I called my mom, who was with my sister, to tell them the news. They started screaming with joy.

Meanwhile, Kevin, who works the graveyard shift at the plant, was asleep. So I surprised him, putting the two pregnancy tests and a congratulations card inside a gift bag, which I handed to him when he woke up. When he pulled the tests out of the bag, he broke down crying. Then he kept hugging

me and our baby that was now growing inside me. At our first ultrasound, the baby—due in June—was too small to see the heartbeat. But at the second one, Kevin and I saw that little heart beating and both started crying. At about 14 weeks, we decided to find out the baby's sex. We were having a girl!

MELANIE: Stephanie's pregnancy was pretty smooth, until the week before Mother's Day. She was 34 weeks along when she caught a virus that caused severe vomiting, diarrhea, and contractions. She was so sick they admitted her to the hospital. It was scary, but at that point, ultrasounds showed the baby weighed 6 lbs. 9 oz., so theoretically she could have been delivered. But for the baby's own good, the doctors wanted to keep her in there just a little bit longer. Luckily, they were able to stop the contractions by hydrating Stephanie with intravenous fluids.

Welcome, Anna Grace

STEPHANIE: I went into labor on June 6. I had actually been having contractions all week, but they were pretty irregular. That morning, I had a doctor's appointment and went home with instructions to wait until the contractions became more regular. A few hours later they started coming every few minutes, and that's when we knew it was time to go straight to the hospital.

MELANIE: Stephanie was in a lot of pain. It was tough to watch her work so hard to have this baby, but Stephanie's strong, and at 10:50 p.m., she gave birth to Anna Grace. The baby weighed 7 lbs. 15 oz. and was gorgeous, with the most beautiful complexion. I've had three children myself, but I've never watched a baby come out. It was amazing.

People have asked, "Well, if the ovary is from you, then who is the 'real' mom?" That's never been an issue for Stephanie or me, or our husbands. With the in vitro, I told Stephanie that after the eggs left my body, they're hers. With the ovary, it's the same. This baby is completely hers and Kevin's, and she's going to be an amazing mother. I have three wonderful children. Now it's her turn.

I have such a great appreciation for everything Dr. Silber and his team did. I donated my ovary to help Stephanie, but if this can help other women, then it will have been even more worth it. I once babysat a little girl who got cancer when she was 10. Doctors told her she might never have children. If they might be able to do this procedure with sisters and not just identical twins, it may help people like her to have kids.

STEPHANIE: When I first saw Anna Grace—we named her Anna after my mother's middle name, Ann, and Grace because it's by the grace of God that she's here with us—I couldn't do anything but cry. It was so overwhelming to hold her in my arms and know she is mine. It's a miracle that this surgery came along, and a miracle that my sister is the kind of giving person she is. I even think it's a miracle that Anna Grace joined our family at the moment when she did: She was born on Kevin's and my seventh anniversary. What better present could there be—she is truly our little angel. ®

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