



## Fertility's frontier

### **More women are freezing their eggs to increase their chances of conceiving later. But the results are far from certain.**

By Shari Roan  
Times Staff Writer

July 18, 2005

Last winter, with her boyfriend "dragging his feet" about a commitment and her 36th birthday come and gone, Megan Griswold decided it was time to frankly assess her prospects for having a child. Within months, the Seattle acupuncturist was on a plane headed for Los Angeles. There, she had several dozen eggs withdrawn from her ovaries and frozen for possible use down the road.

She may never need them — she could marry in a year or two and become pregnant naturally — but freezing the eggs has given her peace of mind. "I would like to be a mother, and the anxiety was starting to build," she says. Although not looking to be a trailblazer, Griswold is among the first wave of women poised to transform female fertility. Until recently, only healthy volunteers in clinical trials or women about to undergo cancer treatment have had eggs removed and frozen for possible future fertilization and implantation.

But as the ability to successfully thaw and use the eggs has grown, so too has the demand for the procedure and doctors' willingness to market it to healthy women. Now women who aren't ready to become mothers, but who want to preserve that option, are signing up to have some of their eggs removed and frozen.

Nationwide, the number of clinics offering egg banking is expected to double this year from the handful of centers that have pioneered the technology. Huntington Reproductive Center in Pasadena, which Griswold used, is one of three egg banks to open in the last few months in California. The others are at USC and Stanford University in Palo Alto. These banks join a few other California infertility clinics that have been offering egg freezing for some time.

The trend has the potential to rewrite the script for young adulthood, persuading women to further defer marriage and motherhood. Female fertility peaks at age 27 and by age 40, the chance of getting pregnant is less than 10%. By freezing their eggs, women can be relatively free of their biological clock's stressful drumbeat.

"I wanted to separate my desire to have kids with my timing for choosing to be with someone," Griswold says. "It has helped relieve the pressure that fertility is clouding your judgment about whether to be with someone. You want to have children with the right person."

The procedure is expensive — upwards of \$10,000 — and the resulting pregnancy rate thus far has been low. But if that success rate rises, more women probably would be willing to undergo the procedure. Census figures show there are more than 5 million single, childless women in their 30s in the United States.

And they're not the only takers. Extend Fertility, a national company that partners with infertility clinics to offer egg freezing (including the one in Pasadena), says its market survey found that 25% of women seriously interested in egg freezing were married and 13% had children. Divorced women with children who think they may want to have another child someday also are potential clients.

Barbara Bestor recently signed up for egg freezing at USC Fertility after a candid discussion with her gynecologist. A divorced architect with two children, ages 5 and 6, she knows time is running out on her fertility. Egg freezing "is like an investment in the chance that I might want to have another kid," the 38-year-old Los Angeles woman says. "It's the ultimate feminist solution. You don't have to say, 'I have to have a kid right now.'"

#### **A new science advances**

The ability to postpone motherhood in this fashion was made possible by the discovery that the age of a woman's eggs is more important than her biological age. In the last two decades, even post-menopausal women have become pregnant and delivered babies by using donor eggs from much younger women. Those developments created the incentive to preserve a woman's own eggs while they were still young.

But egg freezing — the scientific term is oocyte cryopreservation — has been fraught with difficulty. Although sperm and even embryos have proved easy to freeze, the egg is the largest cell in the human body and is water-logged. When frozen, ice crystals form that can destroy the cell. Over the years, researchers have learned that they must dehydrate the eggs before freezing and place them in a special medium. Because the shell of the egg hardens when thawed, sperm must be injected with a needle to fertilize the egg.

These advances have produced between 100 and 200 babies worldwide today (no one keeps official statistics). Most of the births are concentrated at a dozen or so centers. Because egg freezing is still a new science, however, experts disagree on whether this first generation of clients can depend on the technology's success.

Based on recent data, many doctors say that a healthy woman younger than 37 has about a 20% chance of getting pregnant (estimates vary from 15% to 30%). In contrast, a 37-year-old woman undergoing traditional in vitro fertilization has about a 35% chance of giving birth. Egg freezing is typically not recommended after age 37.

"It's a quantum leap from five years ago," says Dr. Thomas Kim of CHA Fertility Center in Los Angeles of success rates. In 2002, CHA Fertility became the first Los Angeles clinic to offer egg freezing. "I don't think births are isolated incidents anymore." It takes a lot of frozen eggs to produce a single baby, however. Most clinics recommend a woman store at least 30 eggs — which may require more than one menstrual cycle to stimulate and retrieve eggs.

"The truth is that we have a long ways to go to give women concrete statistics," says Dr. John Wilcox, medical director of Huntington Reproductive Center. "We do believe that women who are able to produce high-quality oocytes — ideally women under age 38 — have a good chance of achieving a pregnancy if they can store about 30 oocytes."

A study by Kim showed that of 186 eggs taken from 10 patients, just under 75% survived the thawing process. About 55% of those eggs were successfully fertilized. Four of the 10 women became pregnant and two miscarried. Of the two patients who delivered babies, one had triplets. The study was presented in May at a meeting of the Pacific Coast Reproductive Society. Since then, four more of Kim's patients have become pregnant.

"Until we have statistically significant numbers we can prove, I don't want to push this," he says. "Everyone can say, 'I can freeze eggs.' But you need to be able to thaw it and make an embryo and get a woman pregnant."

Even clinics skilled at the technique don't have large numbers of pregnancies to back their estimates of success. "We've got the recipe, now we need to fine-tune it," says Dr. John Jain, a reproductive endocrinologist at USC Fertility, which recently announced a triplet pregnancy with frozen eggs.

For example, experts disagree on how to best freeze eggs. Some use a slow-freezing approach in which eggs are cooled gradually. Others opt for a flash-freezing process called vitrification that is designed to reduce ice crystal damage.

Egg freezing has advanced so rapidly that doctors are also unsure of how many embryos to transfer after the eggs have been thawed and fertilized. Doctors have assumed that embryos created from frozen eggs would result in a lower chance of pregnancy compared with embryos created through standard IVF (fresh eggs and fresh sperm). But, says Jain, the emergence of triplet pregnancies suggests that many of the embryos resulting from frozen eggs are of good quality. Those pregnancies, he says, "tells us that this is working."

### **Working on standards**

All of the local centers are following guidelines, developed by the American Society for Reproductive Medicine, that present egg freezing as an experimental procedure to be conducted in a research setting and under the auspices of an institutional review board. Such boards protect the rights and welfare of patients involved in unproven science.

In guidelines published in October, the organization urged caution in proceeding with egg freezing in healthy women, noting that it has yielded only a limited number of pregnancies and that success rates are still below those seen in standard IVF. The group also recommended that the service not be offered to healthy women. Most clinics have chosen to ignore that advice.

"An important part of counseling these women is what the anticipated results might be," says Dr. Marc Fritz, a reproductive endocrinologist at the University of North Carolina and chairman of the group's guidelines committee on egg freezing. "But those estimates are an extrapolation of little more than 100 children. That's not a terribly well-founded number."

The fact that there is no single, standard protocol for freezing eggs is troublesome, Fritz says, as is the lack of long-term studies. For example, he says, no data exist to show whether eggs frozen for 10 years will be as healthy as those frozen for a few months. And it will take many years of follow-up to ensure that babies born from the technology have no higher rates of birth defects than those conceived through other means.

"We just feel that this, like any new reproductive technology, has to be approached with caution," he says. The American Society for Reproductive Medicine, which has no authority to enforce its guidelines, endorses the service only for cancer patients and others who may lose their fertility due to illness.

Christy Jones, founder of Extend Fertility, agrees that cryopreservation should be acknowledged as experimental, but says that all women should have the option of using it.

"It's not like these women who want a family are childless of their own choice," she says. "It's just the situation of the real world."

### **Hope for the future**

Egg freezing may hold special appeal to people who want to avoid freezing embryos for ethical reasons. An estimated half a million embryos are frozen in the United States, says Jain, because many couples view the embryos as their biological offspring and cannot bear to discard them.

Eventually, egg freezing is also expected to have an effect on egg donation by allowing one donor to store eggs that could be used by several recipients.

Still, perhaps the most compelling current use of egg freezing is to benefit women with diseases that could interfere with fertility. An

estimated 50,000 reproductive-age women are diagnosed with cancer each year in the United States. Radiation and chemotherapy can destroy fertility.

But most young cancer patients are not told about egg freezing, says Lindsay Beck, founder and executive director of Fertile Hope, a nonprofit organization that offers support and information to cancer patients faced with infertility.

Stacie Campbell was 36 when she was diagnosed with invasive breast cancer last year. Along with a mastectomy, her surgeon recommended radiation and chemotherapy. Campbell was devastated. At the urging of her oncologist, Campbell contacted Kim about egg freezing. Although it slightly delayed her cancer treatment and involved taking hormones — which stimulates the development of eggs but can aggravate cancer — the San Diego woman underwent one cycle of egg retrieval and freezing.

Campbell has since completed the cancer treatments and will soon undergo breast reconstructive surgery. The man she was dating when she was diagnosed ended their relationship because of the possibility that the couple might never have children. But Campbell says that freezing her eggs has kept her hopes of having a family alive.

"I have a positive outlook that my disease will someday be solved," she says. "I didn't want to look back and say, 'Why didn't I do this?' It's like having money in the bank."

### **A hedge against infertility**

The age of the eggs used is more important than a woman's biological age in determining her chances of a successful pregnancy. Freezing eggs when a woman is young holds promise for successful pregnancies later in life.

### **How egg freezing works**

#### 1. Extract eggs

Woman receives drugs to produce multiple eggs. Ultrasound-guided needle is used to extract eggs from the ovary.

#### 2. Identify

The eggs, which are in fluid when extracted, are poured onto a flat dish. Individual eggs are identified with a microscope and withdrawn for freezing.

#### 3. Prepare for freezing

Because ice crystals can form within the eggs and damage them, technicians remove the water from the eggs and bathe them in an 'antifreeze' solution before freezing. Laboratories vary in how they freeze the eggs. Some prefer a slow freezing technique, while others use a flash-freezing process called vitrification.

#### 4. Freeze

Eggs are stored in tubes in a liquid nitrogen storage tank.

#### 5. Thaw and fertilize

Each egg is thawed and injected with a needle containing a single sperm—a procedure called ICSI. Eggs begin to develop into embryos.

#### 6. Implant

Embryos are implanted into the uterus using a catheter.

### **The case for younger eggs**

Among women undergoing assisted reproductive technologies, pregnancy rates fall as they age when their own fresh eggs are used. Donor eggs from younger women provide better success rates.

Sources: Centers for Disease Control, Times research

### **Fertility's costs**

Insurance does not cover the cost of egg freezing, even for women undergoing cancer treatments that can cause infertility. Many clinics offer financing. A nonprofit organization, Fertile Hope, can arrange for discounts of up to 75% for cancer patients who qualify for financial assistance.

The typical breakdown of costs for egg freezing:

- Ovarian stimulation, egg retrieval and freezing: \$10,000 to \$13,000
- Annual storage fee: \$500
- Fertilization and implantation: \$3,500 to \$5,000 for one or two embryo transfer cycles.