

The Fertility Specialist



Dr Rina Agrawal

MRCOG, MD, PhD, FICOG.

She's one of the top fertility experts in London and was trained by legendary Professor Sir Robert Edwards, the Nobel Prize Winning Pioneer of IVF who created the first test-tube baby. Our Editor went to meet Dr Rina Agrawal to find out all the latest advances in this exciting branch of medicine.

Photograph courtesy of Dr Rina Agrawal

Arriving at 121 Harley Street, I enter an imposing marble hall and announce myself to the receptionist who picks up the phone to call Dr Rina Agrawal. But as she's talking, the front door opens and in walks Dr Christian Jessen from Channel 4's Embarrassing Bodies. He looks a little moody, strides past us to the lift and disappears. An interesting omen, I say to myself, and a couple of minutes later am following in his footsteps, riding up in the ornate trellised lift to the third floor.

Greeted by a friendly medical secretary, I am escorted along a luxurious corridor to a wide, sunlit consulting room where Andy Warhol's Marilyn Monroe covers one white wall in a gleaming set of silver-frames. Dr Rina Agrawal rises to greet me and I am struck by how petite she is; a slender, elegant woman beautifully dressed and, at first, quite formal. We sit opposite each other at the desk while her secretary brings me a welcome cup of coffee. I ask Dr Agrawal if she deals solely with IVF and as she replies I am incredibly impressed by her articulacy; her English is better than mine and it's her second language.

"The majority of patients I tend to see are women who are having trouble conceiving or a couple who cannot

We then retrieve the eggs directly from the ovaries and get the semen sample from the husband on the day the woman has her egg collection. We mix the semen sample with the eggs and put the mixture in the incubator in the laboratory where fertilisation happens. 80% of all eggs will fertilise. The next day, we check for fertilisation. Eggs which have fertilised will start to divide. Two days after fertilisation the embryos will divide into 2 – 4 cells."

Does that mean twins or quads?

"No, no!" Dr Agrawal has an infectious laugh. "Cells must divide for the embryo to evolve into an individual. So only the cells which are capable of division will be able to form an embryo. Cells in a fertilised egg which do not divide will stop growing and never form into an embryo. Initially, they will divide into the 2 - 4 stage but it's difficult to decide which of these embryos will make a baby. So we leave them in the incubator for another day during which they divide into 6 -8 cells, but not all of these will become a baby. So we leave the embryos in the dish for yet 2 more days, during which those which will go on to become a baby divide into anything between 16 – 32 cells. This is called the morula stage. We leave them for

“At the age of 28 female fertility drops by 10% but by the time a woman is 45 her fertility will drop by 80%.”

conceive. At the first consultation I begin investigating why they are unable to conceive and decide on the right treatment for them. Sometimes, this can be as simple as advising them when the fertile phase is. One of the most common reasons couples do not conceive is because they don't make love during the fertile phase."

I have this image of IVF as a service which patients demand on arrival - rather like shopping for a designer baby. This clearly is not the case?

"No, and I will only recommend IVF if it is necessary." Dr Agrawal says. "To begin with, we look for more practical solutions such as predicting the fertile phase. If that does not work, we can give ovulation induction; giving medication to the woman to help her ovulate. When she does ovulate we advise the couple to make love. If that doesn't work, we take it to the next stage by again giving ovulation induction and getting the husband to come in and produce a semen sample. We prep the semen sample by mixing it in a culture media, putting it in a centrifuge (a small mechanical spinning device) and spinning it. We take the best sperms out; those which are the fastest moving. Then we inject them into the woman's womb. This is known as artificial insemination or intrauterine insemination and if this does not result in conception, we move to the next stage which is IVF."

So what exactly is IVF?

"We give the woman medications, but this time not to help her make one or two eggs, but 10 to 15 eggs in her ovaries.

yet 1 more day, which is 5 days after egg collection."

What happens on the fifth day?

"The embryos that will become babies reach the blastocyst stage on the fifth day. Blastocyst is an advanced stage embryo where the dividing cells have produced an outer cell mask which becomes a placenta and an inner cell mask which becomes a baby. If we put embryos back into the mother's womb at this stage, the chances of pregnancy are at their highest. This is called a blastocyst transfer."

How many fertilised eggs will reach the blastocyst stage?

"Only 40% of all incubated IVF embryos will reach this stage. Not all eggs, sperms and embryos are destined to become babies. We fundamentally assist with conception and leave mother-nature to harvest the best embryos. This process is basically what happens in the womb."

Dr Rina Agrawal has spent most of her professional life working, studying and researching Assisted Conception. A Consultant and Honorary Associate Professor in Reproductive Medicine, Obstetrics and Gynaecology, she has worked with some of the most famous experts in the world, most notably Professor Sir Robert Edwards who pioneered the first IVF treatment in 1978, resulting in the birth of Louise Brown, the world's first so-called 'test-tube baby.' Professor Sir Robert Edwards was awarded the Nobel Prize in recognition of this in 2010. But although he is the most famous of all her mentors, he is by no means the only one of note. At the London Women's Clinic her

training involved 4 of its Directors, all leading experts internationally renowned for their pioneering work in the fields of Assisted Conception and Reproduction Medicine; Professor Sir Robert Edwards, Professor Howard Jacobs, Professor Stuart Gamble and Professor Essenden.

“I was very fortunate, she says, “to have been trained by such eminent consultants.”

She must be a real expert on fertility by now herself?

“Actually, human beings are not very fertile.” She smiles. “For instance, a young healthy couple in their 20s making love regularly have only an 18% chance of pregnancy per month, although after 1 year of regular lovemaking this would leap to 80 – 85% and after 2 years 90 - 95%. Women only produce 1 egg per menstrual cycle, not multiple eggs, which is why we don’t produce a litter!”

What are the most common causes of infertility?

“One of the commonest reasons is that the woman is deferring pregnancy in favour of a career or other reasons.



“A young healthy couple in their 20s making love regularly have only an 18% chance of conceiving each month.”

But the later she leaves it the less likely she is to conceive. At the age of 28 female fertility drops by 10%. After 30 it drops by 20%, after 35 by 50% and after 45 it drops by a significant 80%. Also, the risk of miscarriage increases with age. So the best way for women to ensure children if they really must defer until they are older is to come to a fertility clinic and have their eggs frozen at an early age. We can now vitrify – rapid freeze – the eggs. The younger the woman, the better the eggs, so the sooner a woman has her eggs frozen the better.”

Are there any other common infertility causes?

“Yes, polycystic ovaries. Some women can have them all their lives and be unaware of it because there will be no real symptoms. But other women can have multiple symptoms such as irregular periods, no periods at all, acne, excess fat, excess body hair or a high insulin concentration disorder. Or infertility can be a result of the man’s sperm not being strong enough.”

What do you do if the man’s sperm is the cause of infertility?

“If during IVF it becomes clear that the man’s sperm sample is not strong - he may have few sperms or sperms which are not very active – we will use ICSE (Intra Cycoplasmic Sperm Insemination). This is a highly specialised procedure performed by the embryologist. He will hold each individual egg with a pipette and inject one sperm into it. The embryologist has to be specially trained for this. But there is another procedure called IMSI – Intracytoplasmic Morphologically-Selected Sperm

Injection. This is where the best sperms are individually selected. We look at the sperm under a microscope and take the best sperms out to be injected during ICSE.”

It all sounds very high tech.

Dr Agrawal laughs and her passion for her specialist subject shines through; “Assisted Conception is one of the youngest branches of medicine but it is one of the fastest moving. Each day brings a new advance in Reproductive Medicine and a new research paper. It’s so exciting. I have to keep up to date with every new advance and because they come so fast it keeps me on my toes!”

What are the latest advances?

“Well, one new development is the Embryoscope – an incubator with miniature cameras inside so that you don’t have to open the incubator to study the developing embryos because the cameras show us a live screen of every second of development. Published research shows that this is a much better way to harvest embryos because they are allowed to develop undisturbed. But only a small handful of units currently have the Embryoscope units.”

What about surrogacy? Is it true that older women are better off with surrogacy?

“Surrogacy is a much more viable option for older women with success rates in excess of 50%. We take eggs from a younger healthier woman, less than 35 years old, and mix them with the older woman’s partner’s sperm. The

embryos are created in the incubator before being implanted in the woman's womb. The woman then grows the baby in her womb, gives birth to it, breastfeeds it and brings it up as her own child. So in all respects – even legally – the baby is hers.”

Is the baby allowed to discover the identity of its biological mother?

“Yes, the HFEA (Human Fertilisation and Embryology Authority) implemented the SEED Act of 2005 granting children the right at the age of 18 to find out the name of their biological parent.”

Are there any drawbacks to surrogacy?

“We know of couples who have bought sperm from the internet and had it delivered to their door which is very dangerous because it probably has not been screened. Also, as women grow older, the egg shell called the zona becomes very thick so the implanted egg will not attach to the lining of the womb - the endometrium. Sometimes we have to break the zona which is called Assisted Hatching; either physically using chemicals or with a laser in Laser Assisted Hatching. That will help implantation in the womb.”

I've read about multiple births; how does this happen?



Photograph courtesy of Dr Rina Agrawal.

“We now have incubators with miniature cameras inside to ensure the IVF embryos develop undisturbed as they do in nature.”

“We usually implant one or two embryos. In rare cases, both will attach and the woman will have twins. But that's why the HFEA does not allow us to put more than 2 embryos into the womb. In previous years, they insisted there was only a 25% chance of twins but now it must be not more than 10%.”

Why is that?

“Because we know multiple pregnancy has a higher complication rate. However, we can vitrify and preserve good embryos from an IVF cycle for future pregnancies. Some couples have conceived twins and then returned after their birth to conceive again, another set of twins, so they have completed their whole family from just one IVF cycle.”

It all sounds like a series of miracles of modern science. Are there any challenges?

“The most challenging area of IVF is the ethical dilemmas that we face. We can create an embryo with one single person. There is no need for a father. We can create an embryo from one cell from one person. We can use eggs from different species. A rabbit and a sheep were mated in IVF with eggs from one and sperm from the other to create a chimera but you are not allowed to grow these beyond embryonic stage. In 2008 research in this area was granted to

Kings College Hospital and Newcastle. But they've stopped it now.”

Yes, that does sound rather Frankenstein-esque. But research is vital for progress, surely?

“Research is very important. If we have to learn new things to make ourselves better and help couples to have babies then we need to progress, but we also have to know where to draw a line. If you step beyond that line the implications are severe. Don't forget Dolly the sheep was not a perfect sheep. All research must be regulated.”

Sarah Holland

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