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FAMILY BALANCING
with IVF-PGTA

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Foreword
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CHAPTER 6

Preconception Techniques: From Shettles to Sperm Sorting

ABSTRACT

Before the rise of embryo-based sex selection through in vitro fertilization (IVF) and preimplantation genetic testing for aneuploidy (PGTA), couples seeking to influence the sex of their offspring relied on a range of preconception techniques rooted in cultural traditions, physiological theories, and, more recently, clinical sperm sorting technologies. From timing intercourse relative to ovulation, dietary modifications, and sexual positioning, to the laboratory separation of X- and Y-bearing sperm, these approaches reflect the enduring human desire to control reproductive outcomes—often in service of cultural, lineage, or emotional motivations. This chapter traces the evolution of preconception sex selection methods, beginning with the controversial but popular Shettles and Whelan methods, both of which depend on assumptions about the differing mobility and viability of X- and Y-bearing sperm. We examine the scientific basis and reported outcomes of each, along with dietary and environmental approaches derived from ancient and modern sources. The second half of the chapter focuses on laboratory sperm-sorting methods—particularly the Ericsson albumin method, gradient centrifugation, and flow cytometry-based Microsort, the most accurate preconception method to date. While many of these approaches offer varying degrees of enrichment, none can guarantee sex selection comparable to embryo biopsy and PGTA. Yet due to their affordability and less invasive nature, they remain popular in regions where IVF is cost-prohibitive or restricted. The chapter concludes by exploring ethical considerations and the blurring boundary between preconception and embryo-based selection in contemporary fertility care.

Keywords: Preconception sex selection, Shettles method, Whelan method, sperm sorting, Microsort, Ericsson method, gradient centrifugation, reproductive autonomy

INTRODUCTION

Efforts to influence the sex of offspring have existed for millennia. Ancient Hindu, Chinese, and Greek texts include recommendations for timing, positioning, and environmental factors believed to sway conception toward a desired gender.[1] The *Charaka Samhita* advised rituals, gazing at white bulls, and seasonal preparation to conceive sons,[1] while ancient Chinese birth charts used maternal age and lunar calendars to predict or "plan" gender. While not scientifically validated, these practices reflected deeply held beliefs that gender outcomes could be controlled through intention and behavior. In patriarchal societies, son preference has historically driven these efforts. The economic and cultural value placed on male children—heirs,

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caregivers, ritual performers—spurred generations of couples to seek low-risk, low-cost methods for increasing the chance of a son.

THE SHETTLES AND WHELAN METHODS: TIMING, POSITION, AND PH

Among the most well-known 20th-century approaches to preconception gender selection is the Shettles Method, developed by Dr Landrum Shettles in the 1960s. Based on laboratory assumptions, Shettles proposed that Y-bearing (male-producing) sperm are smaller, faster, but less resilient, while X-bearing (female-producing) sperm are larger, slower, and longer-living.[2] From these claims, a protocol emerged:

- *To conceive a boy:* Intercourse should occur as close to ovulation as possible.
- *To conceive a girl:* Intercourse should occur 2–3 days before ovulation.

Shettles also recommended deep vaginal penetration and alkaline environments (e.g., douching) for male selection, and shallow penetration and acidic vaginal conditions for female selection.[2]

Critics argue that these theories are biologically simplistic and unproven. A multicenter World Health Organization (WHO) study found no consistent link between ovulatory timing and offspring gender.[3] Nevertheless, Shettles' book has sold millions of copies, and his method remains in use among couples preferring natural approaches.

The Whelan Method, developed by Dr Elizabeth Whelan, contradicts Shettles. It proposes that intercourse earlier in the cycle (4–6 days before ovulation) favors boys, while intercourse closer to ovulation (2–3 days before) favors girls.[4] Though based on small-scale retrospective studies, Whelan claimed a 68% success rate for male selection and 56% for female.

Both methods lack large-scale, blinded, controlled clinical validation and remain controversial. Still, they reflect popular demand for noninvasive sex selection.

DIETARY AND FOLK APPROACHES: FROM AYURVEDA TO ACID–ALKALINE THEORY

Nutritional modifications for gender selection also have deep historical roots. A popular modern version is the Preconception Gender Diet, developed from French studies by Stolkowski and Lorrain in the 1980s.[5] The theory holds that high sodium and potassium intake promotes boy conception, while high calcium and magnesium favors girls.

- *Boy diet*: High in salt, bananas, and red meat; low in dairy
- *Girl diet*: High in dairy, leafy greens; low in sodium and animal protein

Some proponents explain this through the yin-yang framework or through claims about cervical mucus pH. However, the original studies

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involved fewer than 300 women and lacked replication.[5] Ayurveda and traditional Chinese medicine also describe gender-linked body types, seasonal influences, and herbal prescriptions. However, there is little robust data supporting their efficacy.

THE ERICSSON METHOD AND GRADIENT CENTRIFUGATION

Developed in the 1970s by Dr Ronald Ericsson, the Ericsson Method is one of the first clinical sperm-sorting procedures for sex selection. It is based on the hypothesis that Y-bearing sperm swim faster and can be separated through differential migration in an albumin gradient.[6] Sperm samples are layered onto a column of human serum albumin and allowed to swim through. Faster (Y-bearing) sperm settle lower and are collected for insemination if a boy is desired; upper fractions are used to attempt a girl. Clinical studies have reported sex-selection success rates of up to 75% for boys and 70% for girls.[6] However, DNA analyses have shown that sorted samples still contain a mix of X and Y sperm, casting doubt on the enrichment claims.[7]

A related method is gradient centrifugation, such as the Percoll or PureSperm technique, which separates sperm based on density. Some studies have reported male offspring rates as high as 88% following insemination with bottom-layer fractions.[8] However, others have questioned the accuracy and repeatability of these results.[9]

MICROSORT: PRINCIPLES, OUTCOMES, AND LIMITATIONS

The most advanced preconception sperm-sorting technology is Microsort, which uses flow cytometry to distinguish X- and Y-bearing sperm based on their DNA content. Because the X chromosome is larger, it absorbs more fluorescent dye, allowing a laser to differentiate between the two types as they pass through the cytometer.[10]

Microsort-enriched sperm can be used in intrauterine insemination (IUI), in vitro fertilization (IVF), or ICSI:

- *Female selection (X-bearing):* ~90% success
- *Male selection (Y-bearing):* ~75–80% success

Microsort has been used in over 6,000 documented cycles, primarily in the United States and Mexico.[11] Its accuracy and safety were demonstrated in clinical studies, and it received Food and Drug Administration (FDA) investigational approval. However, due to ethical concerns over nonmedical sex selection, it remains restricted in many countries. Despite its sophistication, Microsort is expensive and requires specialized facilities. For couples unable to access preimplantation genetic testing for aneuploidy (PGTA) but unwilling to rely on natural methods, it represents a middle-ground option.

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ETHICAL CONSIDERATIONS AND GLOBAL REGULATION

The ethics of preconception sex selection are debated across fertility, legal, and human rights domains. Arguments in favor cite reproductive autonomy, emotional well-being, and family balancing. Critics warn of reinforcing gender stereotypes, societal imbalance, and the commodification of reproduction.[12]

Countries vary widely:
Permissive: US, UAE, and Cyprus—allow elective sex selection under clinical protocols.

Restrictive: India, China, and UK—limit sex selection to medical indications.

Ambiguous: Many nations lack clear policies on sperm sorting or preconception enrichment.

International bodies such as FIGO recommend against nonmedical sex selection except in culturally sensitive, highly regulated cases.[13] Clinics are urged to ensure informed consent, counseling, and nondiscriminatory messaging in their services.

WHERE PRECONCEPTION ENDS AND PGTA BEGINS

While preconception methods rely on probabilistic enrichment, embryo-based sex selection via PGTA offers near-perfect accuracy. In many regions, patients now choose between less reliable but affordable sperm sorting and costly but definitive embryo biopsy.

Clinicians must guide patients through the trade-offs:
- Accuracy versus accessibility
- Invasiveness versus simplicity
- Ethics of intent versus ethics of outcome

For couples seeking emotional closure or to avoid abortion, preconception methods may offer appeal despite lower success rates. But as technology evolves, the boundary between natural planning and genetic selection continues to blur.

CONCLUSION

From Shettles to Microsort, preconception sex selection has charted a long journey through science, hope, and social bias. While few of these methods guarantee results, their popularity reveals a profound human yearning—to shape the future, to fulfill family visions, and to find balance in a world of deeply gendered expectations. Clinicians have a responsibility to inform, counsel and reflect on the broader implications of the services they offer. Reproductive autonomy must coexist with ethical vigilance, ensuring that choice does not become a vehicle for systemic inequality.

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FAMILY BALANCING
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Family Balancing with IVF-PGTA explores one of the most complex and evolving frontiers of modern reproductive medicine, the science and ethics of choosing your child's gender. In this pioneering work, Dr Gautam Nandkishore Allahbadia delves into the medical advances, global policies, cultural influences, and personal choices that shape the landscape of gender selection today. Blending clinical clarity with compassionate insight, the book invites readers into the world of in vitro fertilization (IVF), preimplantation genetic testing for aneuploidy (PGTA), and reproductive autonomy like never before.

Inspirational Quote

Reproductive autonomy is not about controlling life—it is about creating it with intention, dignity, and choice.

–Gautam Nandkishore Allahbadia



Gautam Nandkishore Allahbadia MD DNB FNAMS FCPS DGO DFP FICMU FICOG is a globally renowned Fertility Specialist, Researcher, and Founder of Allahbadia IVF, Dubai Healthcare City (DHCC), Dubai, UAE. With over three decades of clinical experience and more than 150 published scientific papers, he has been at the forefront of innovations in assisted reproduction, particularly in the fields of IVF Lite, egg freezing, and gender selection. His compassionate approach and evidence-based protocols have empowered thousands of families across the world.

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