detailed information on obstetrics & gynecology books, visit our website **www.jaypeebrothers.com**

INFERTILITY MANAGEMENT

Series Editors
Juan A García-Velasco
Manish Banker

Editor
Rohit Gutgutia

INFERTILITY MANAGEMENT SERIES

INVESTIGATING INFERTILITY



Contents

1. Basics of Human Reproduction: As We Understand It Now **1**
Azadeh Patel, Jayesh Patel, Manish Banker
- History *1*
- Male Reproductive System *2*
- Female Reproductive System *4*
- Fertilization *13*
- Uterus, Endometrium, and Implantation *14*
- Neuroendocrinology *19*
- Genetics in Reproduction *21*
- Immunology in Reproduction *24*

2. Role of History Taking and Clinical Examination in an Infertile Couple **31**
Arindam Rath
- Before We Start History Taking of the Infertile Couple *31*
- History Taking and Clinical Examination of the Male *32*
- History Taking and Clinical Examination of the Female *36*

3. Preconceptional Evaluation of a Couple **41**
Laxmi C
- Evidence-based Effectiveness *42*
- Preconception Care: Timing is Key *43*

4. Assessing Ovulatory Function and Ovarian Reserve **53**
Puneet Rana Arora, Shalu Gupta, Nalini Mahajan
- Normal Physiology *53*
- Ovarian Reserve *60*
- Ultrasound *63*

5. Tubal Evaluation: An Eternal Dilemma **68**
Richa Jagtap, Manjushri Kothekar
- Anatomy and Physiology *68*
- Tubal Evaluation *68*

6. Mechanical Issues in Fertility: How to Evaluate? 79
Jayesh Patel, Azadeh Patel, Juan A García-Velasco
- Epidemiology *79*
- Mechanical Causes in Female Infertility *80*
- Mechanical Causes in Male Infertility *88*

7. How to Assess the Receptivity of the Human Endometrium? 98
Jose Miravet-Valenciano, Carlos Marin, Maria Ruiz-Alonso, Carlos Simon
- Endometrial Factor and its Importance in Assisted Reproductive Techniques *98*
- Diagnosis of Endometrial Receptivity *100*
- Endometrial Transcriptomics *109*
- Improving Endometrial Receptivity Assessment Through Personalized Medicine *113*

8. Evaluating the Peritoneal/Pelvic Factors Affecting Fertility 122
Madhuri Patil
- Evaluation of Female Infertility *123*
- Other Diagnostic Procedures for Evaluating Tubal Infertility and Endometriosis *124*
- Management Implications of Categorization of Tubes *131*
- Tubal Cannulation and Selective Salpingography *133*
- Evaluation of Peritoneal Fluid in Women with Endometriosis *140*
- Postsurgical Adhesions *141*
- Second Look or Repeat Laparoscopy *141*
- Repeat Laparoscopy for Recurrent Endometriosis *142*
- Discussion *142*
- Take-Home Message *143*

9. Assessment of the Male 148
Rupin Shah
- History *148*
- Examination *150*
- Investigations *150*

10. Role of Semen Analysis in Understanding Fertility Potential 154
Sayali Palnitkar, Irene Rubio Palacios, Javier Herrero
- History/Background *154*
- Semen Analysis *154*

- Cut-off Reference Values and Classification of Semen Samples *162*
- Limitation of Semen Analysis *162*
- Controversies *162*
- Implication of WHO Criteria *164*
- What Routine Semen Analysis Cannot Assess? *164*
- Sperm Function Tests *165*
- Future of Andrology Laboratory *168*

11. Genetics of Fertility **170**
Rajni Khajuria, Kabir Sachdeva, Carmen Rubio Lluesa, Pere Mir Pardo
- Introduction to Routine Genetic Tests in Fertility *170*
- Cytogenetic Aspects of Infertility *170*
- Genetic Aspects of Infertility *178*

12. When to Stop Investigating and Start Treating? **205**
Rohit Gutgutia
- Role of Further Investigations *205*
- Treatment Options *206*

Index *211*

CHAPTER

2

Role of History Taking and Clinical Examination in an Infertile Couple

Arindam Rath

INTRODUCTION

Infertility is defined as a lack of pregnancy after 12 months of unprotected sexual intercourse with the same partner.[1] This condition may be affecting one in six couples worldwide. Reasons for such prevalence involve the decline in natural fertility with female age, an increased incidence of sexually transmitted infections, higher exposure to environmental toxins, and lifestyle factors such as smoking and obesity.[2]

It is estimated that 75% of infertile couples will achieve conception after evaluation and treatment for infertility. The success of therapeutic interventions depends on proper history taking, clinical examination and proper diagnostic evaluation of the couple.

In this chapter, we look at the role of history taking and clinical examination of the couple to achieve a working diagnosis.

BEFORE WE START HISTORY TAKING OF THE INFERTILE COUPLE

Even before history taking is commenced, a discussion of the process of reproduction and conception will help the infertile couple understand the basis for diagnostic testing and future treatment. It always makes sense to explain separately ovarian function, pelvic anatomy and the male factor including the role of coitus to put the couple at ease so that they can volunteer information accordingly. It is also good to point out that in at least one-third of couples, more than one potential cause for the infertility will be detected. This way we can cover other relevant fertility factors even when one particular factor seems obvious. Again, in 20–25% couples initial evaluation may not reveal any abnormality in which case a working diagnosis of unexplained infertility needs to be made. During history taking, there is ample opportunity

JAYPEE BROTHERS

for the clinician to discuss myths and facts regarding reproduction and dispel a few misconceptions gathered from friends and media.

Infertile couples often need the opportunity to express their concerns, frustrations, and fears, and support groups can help to meet that need.[3] Group meetings can help couples to realize that their problem is not unique and to learn how others cope with similar problems. Whereas severe anxieties can have adverse effects on ovulatory function and coital frequency, there is no substantial evidence that the usual anxieties of couples trying to conceive cause or contribute to their infertility.

We can also take this meeting as a chance to explain the various ART procedures so that they can realize the role of such procedures and find their suitability in their personal case.

So, we feel that the initial history taking session is a very important interface which shall determine the future course of the couples interaction with the clinician based on the interaction.

HISTORY TAKING AND CLINICAL EXAMINATION OF THE MALE

General Information

Age and other background information considered to be relevant to male fertility such as occupation, ethnic group, religion, and so on, should be recorded.

Fertility History

Determining whether infertility is primary or secondary is the first step in the fertility history. This is accomplished by asking the patient about previous marriages and outcomes.[4] Primary male infertility is the case when the man has never impregnated a woman. Secondary male infertility applies when the man has at some time impregnated a woman, even if the woman is the partner in the presenting couple. In the case of secondary infertility, one should determine the time elapsed since impregnation. Whether a case of primary or secondary infertility, one should estimate the duration of infertility of the present couple. Inquiring about previous work-ups and/or treatment for infertility is important and should be discussed in detail.

Family History

The patient should be asked about the existence of a family history of infertility, spontaneous abortion, stillbirth, and congenital disease. Diethylstilbestrol (DES) exposure in utero may be a cause of male infertility.[5]

JAYPEE BROTHERS

General History

Diseases can influence fertility either directly or indirectly. Diabetes mellitus affects fertility through vascular, neurological and metabolic alteration. Tuberculosis may destroy the urogenital tract. Fever exceeding 38°C can affect spermatogenesis for the succeeding 6 months. Hypogonadism, gynecomastia and testicular atrophy are commonly observed in men with hepatic cirrhosis.[6] Chronic renal failure is associated with hypogonadism and hyperprolactinemia.[6] Spermatogenic arrest has been observed in adrenogenital syndrome. Cystic fibrosis is a known factor in male infertility. Bronchiectasis may be a part of the immotile cilia syndrome or Young's syndrome. Neurological diseases such as paraplegia, spina bifida, neuropathies, and congenital abnormalities of autonomic innervation may affect sexual activity. Irradiation of the genital area is a risk factor and is dose-dependent: permanent sterility is observed for single dose field with 600 to 800 rads.[7] Cimetidine, spironolactone, nitrofurantoin, sulfasalazine, and cytotoxic drugs depress sperm density and quality.[5] Tranquillizers, depressant drugs and some antihypertensive drugs may cause impotence.

Urogenital History

Age at puberty (normal, precocious or delayed) should be registered. Any pathology that possibly causes testicular damage should be inquired about, with details concerning the site, the treatment given, complications due to treatment, and evolution of the pathology. A history of cryptorchidism may lead to testicular atrophy. Testicular injury may initiate antisperm antibody formation or testicular damage especially if it is accompanied by scrotal bleeding or hematuria. Testicular torsion leads to testicular damage if not treated within six hours. Mumps orchitis may be the cause of testicular atrophy. Varicocele can impair testicular function.[6]

History of Sexually Transmitted Diseases (STD)

A positive history of STD is suggestive of damage and/or obstruction of the genital tract. Data should be collected about the number of episodes, the time passed since the most recent episode, and treatment during the most recent episode. One should also inquire about the causative organism.

Surgical History Related to Infertility

Testicular and scrotal operations, e.g. orchiectomy, orchiopexy, testicular detorsion, repair of inguinal hernias, varicocelectomy and hydrocelectomy may be followed by decreased fertility. Operations of the epididymis and vas deferens such as epididymovasostomy and vasovasostomy may lead to

JAYPEE BROTHERS

antisperm antibody formation or genital tract obstruction. Prostatectomy is followed by impotence of variable degree and retrograde ejaculation. Urinary cystectomy, bladder neck operations, repair of urethral strictures and repair of a hypospadias can all affect fertility.

Habits

The subject should be questioned about environmental and/or occupational exposure to hazardous factors, such as radiation, chemicals, drugs, heat and traumas. Some personal habits can seriously affect men's fertility, such as wearing tight pants, taking excessively hot baths and sauna.[7] Cigarette smoking alters sperm motility and count. Alcohol consumption depresses sperm motility and count and, if used in high concentration, leads to impotence.[8]

Sexual History

Daily or more frequent intercourse may depress the sperm count below normal levels. Abstinence for seven days or more may decrease motility due to increased proportions of older sperms.[5] For most couples, coitus every 36 hours around the time of ovulation will give the optimal chance for pregnancy. Intercourse is considered adequate if it occurs more than twice per month, but if the frequency is twice or less per month it is considered inadequate and may be an etiologic factor of infertility and a possible sign of sexual dysfunction.[5]

Absence of libido or decreased libido is not only a cause of decreased coital frequency, but may also be a sign of an endocrine or a psychological disease. Dyspareunia may underlie either an organic or a psychological problem.

Impotence is defined as the inability to achieve or sustain an erection for a sufficient duration to have coitus and achieve an orgasm.[6] If coital erection is inadequate, inquiry about early morning erection and masturbatory erection should be made. If both occur normally, the diagnosis of primary impotence is excluded and coital impotence is attributed in most cases to a psychological factor. In primary impotence, erection cannot be achieved in any circumstance. It may be due to hypogonadism with androgen failure, pelvic vascular disease, or due to a systemic disease, such as diabetic neuropathy, anemia, tuberculosis and cancers. Secondary impotence is due to psychological factors in 90% of cases, and is characterized by failure of erection in the case of coitus only. Sometimes the man is impotent only when he consumes alcohol or with the use of some antihypertensive drugs or central nervous system (CNS) depressants.[8]

Ejaculation is considered adequate if it occurs intravaginally with emission of semen from the external urethral meatus. It is considered inadequate in the following conditions: (1) extravaginal ejaculation that may be due to ejaculation praecox or extreme hypospadias; (2) retrograde ejaculation into the

JAYPEE BROTHERS

bladder; and (3) anejaculation, i.e. failure of emission that may be of organic or psychological origin.[9] In the last case, if nocturnal and/or masturbatory ejaculation occurs normally, this indicates a psychological factor. Previous experience of painful ejaculation may also be a factor behind anejaculation.

Physical Examination

General Examination

Height, arm span, and the upper to lower body ratio should be measured to exclude eunuchoidism. Gait should be looked at, as it may indicate the presence of a neurological disease. Body weight, blood pressure and a general physical examination help assess the general health, and will disclose any chronic debilitating disease. If there is a history of neuropathy, endocrinopathy, cardiovascular, respiratory, renal or hepatic disease, or a clinical suspicion is aroused during the physical examination, the suspected disorder should be investigated thoroughly. Secondary sexual characteristics including hair distribution, body configuration, pubertal stage, and evidence of gynecomastia should be looked for carefully.

Urogenital Examination

The penis should be examined for size, circumcision, the presence of surgical or traumatic scars and induration plaques of Peyronie's disease that may cause deformation of the erect penis, thus hindering vaginal intercourse. If hypospadias is present, one should look for whether the urethral meatus is near the corona of the glans, or on the proximal part of the penile shaft. Delivery of semen could still occur intravaginally if the opening is in the distal part of the shaft. Semen will be delivered outside the vagina if the opening is proximal or lies in the perineal region. Any discharge from the urethra should be cultured. Nontender induration of the urethra suggests a stricture. Tenderness and induration may indicate periurethritis.[10]

Each scrotum should be examined individually for presence of the testis, its size, the presence of a hydrocele, masses, nodules, and tenderness. The average size of the adult testis is 5 × 3 cm, equivalent to a volume of 25 mL. The lower size limit for a mature testis is about 4 × 2.5 cm, corresponding to a volume of approximately 15 mL. Smaller than normal or very soft testes in an adult indicate impaired germinal tissue mass, due either to primary testicular failure or to hypothalamic-pituitary insufficiency. When determining the size of the testis, the patient should be examined in the recumbent position to avoid the risk of syncope. The scrotal skin is stretched over the testicle, the contours of which are isolated from the epididymis. The testis is palpated between the thumb and first two fingers. The volume of each testicle is compared with the corresponding ovoid of the Prader orchidometer.[9]

JAYPEE BROTHERS

A varicocele can only be detected with the patient standing; if present it should be graded according to the following criteria: Grade III: if the distended venous plexus visibly bulges through the scrotal skin; Grade II: if there is intrascrotal venous distension which is easily palpable but not visible; and Grade I: distension is only palpable while the patient is performing a Valsalva maneuver. Subclinical varicocele should be recorded if no distension can be detected, but there is any abnormal finding during scrotal thermography and/or Doppler echography.

The epididymis should be examined while the patient is standing. The epididymis is examined between the thumb and forefinger along its entire course. A normal one is difficult to palpate, however if the epididymis is palpable it should have a regular outline, a soft consistency, and should not be tender. Nodular induration may suggest tuberculosis. Any swelling and tenderness may indicate epididymitis.

The vas deferens should be palpated along its entire course below the inguinal canal. A normal one should be palpable, but not thickened.[9,10]

Inguinal examination can be performed while the patient is standing, or in recumbent position. Any palpable or visible abnormalities should be recorded in detail. If the testes are not palpable in the scrotum, an attempt to palpate them in the inguinal region should be made.[9,10]

Rectal examination is carried out with the patient in the knee-elbow position. Palpation should be performed from the cranial to the caudal part and from lateral to medial. The prostate is normally soft, regular and not tender upon slight pressure. The central groove should be easily identified in a normal prostate. The seminal vesicles are not palpable, if normal.

After completion of the history and physical exam, some patients can be diagnosed directly as having sexual and/or ejaculatory dysfunction. Sexual dysfunction applies to those patients with inadequate erection and/or inadequate frequency of intercourse. Ejaculatory dysfunction applies when there is normal intercourse, but followed either by an ejaculation or ejaculation occurring outside the vagina. Retrograde ejaculation is suspected in patients with normal intercourse and orgasm, but no emission of semen. To be sure of the diagnosis, a postorgasm urine sample should be analyzed for the presence of spermatozoa.

Table 2.1 shows the summary of relevant history and physical examination findings for determining male factors in the infertile couple.

HISTORY TAKING AND CLINICAL EXAMINATION OF THE FEMALE

Present History

The current problem/complaint, age, occupation, recent cervical smear findings, breast changes such as milk-like discharges, excessive hair growth

JAYPEE BROTHERS

Table 2.1: Summary of relevant history and physical examination findings for determining male factors in the infertile couple.

History	*Physical examination*
• A history of poor fertility	• Examination of the penis, noting the location of the urethral meatus
• Coital frequency and timing	• Palpation and measurement of the testes
• Duration of infertility and prior fertility	• Presence and consistency of both the vasa and epididymides
• Childhood illness	• Presence or absence of a varicocele
• Developmental history	• Body habitus
• Systemic medical illness (e.g. diabetes, mellitus and upper respiratory disease)	• Hair distribution
• Previous surgery	• Breast development
• Medication	
• Sexual history (including sexually transmitted infections)	
• Exposures to gonadal toxins (including environmental and chemical toxins and heat)	

Source: Adapted from Practice Committee of the American Society for Reproductive Medicine.

with or without acne on face and chest, hot flushes, eating disorders, any current associated medical illness as diabetes and/or hypertension, drug intake prescribed as nonsteroidal antiinflammatory drugs (NSAIDs), sex steroids and cytotoxic drugs or recreational as marijuana and cocaine, smoking, alcohol, and caffeine consumption.[6]

Menstrual History[11]

Menstrual history alone often is sufficient to establish a diagnosis of anovulation. Menses in normally ovulating women generally are regular, predictable, consistent in volume and duration, and typically accompanied by a recognizable pattern of premenstrual and menstrual symptoms. Conversely, those in anovulatory women generally are irregular, unpredictable or infrequent, vary in flow characteristics, and exhibit no consistent pattern of molimina. Women with regular menses are almost always ovulatory. Women with irregular or infrequent menses may ovulate, but not consistently, and do not require specific diagnostic tests to prove what is already obvious. We need to check for the age of menarche, mid cycle symptoms, primary or secondary amenorrhea. All of these specific histories shall guide toward relevant investigations.

JAYPEE BROTHERS

Obstetric History

Previous pregnancies, *if any*, and its outcome, recurrent pregnancy loss, induced abortion, postabortive infection or puerperal sepsis needs to be asked for.

Contraceptive History

Previous use of any contraceptive method, particularly intrauterine system, and any associated problems. If there is use of IU system then, we need to be proceed accordingly.

Sexual History

Coital frequency, timing in relation to the cycle, use of vaginal lubricant before, or vaginal douching after, coitus, loss of libido, as well as, any associated problems as difficult or painful coitus.

Past History

Medical or surgical as pelvic infection, tuberculosis, bilharziasis, ovarian cyst, appendicectomy, laparotomy, cesarean sections, and cervical conization. Immunization status especially regarding Rubella needs to be ascertained.

Family History

Similar problem among the female members, consanguinity, diabetes mellitus, hypertension, twins delivery, breast cancer in first degree relatives need to be asked.

General Examination[11]

Vital signs (especially blood pressure), body height and weight (BMI = ratio between weight in kilograms and height in square meters) for over or under weights, secondary sexual characters, any excessive hairs with/without acne on face or chest, and acanthosis nigricans. Abnormal skin depigmentation as vitiligo may suggest an autoimmune systemic disease. Examination should include also the thyroid gland.

Breast examination: To evaluate its development and to exclude any pathology or presence of occult galactorrhea.

Chest examination: For lungs and heart.

Abdominal examination: For any abdominal mass, organomegaly, ascites, abdominal striae, and surgical scars.

Genital examination: Type of circumcision, size and shape of clitoris, hymen, vaginal introitus, site, size, shape, surface, consistency, mobility and

JAYPEE BROTHERS

Table 2.2: Summary of relevant history and physical examination findings for determining female factors in the infertile couple.

History	*Physical examination*
• Duration of infertility	• Weight, body mass index, blood pressure, and pulse
• Menstrual history	• Thyroid enlargement and presence of any nodules or tenderness
• Pregnancy history	• Breast secretions and their character
• Previous methods of contraception	• Signs of androgen excess
• Coital frequency and sexual dysfunction	• Vaginal or cervical abnormality or discharge
• Past surgery (procedures, indications)	• Pelvic or abdominal tenderness, organ size, or masses
• Hospitalizations (illnesses or injuries)	• Uterine size, shape, position, and mobility
• Pelvic inflammatory disease (sexually transmitted diseases)	• Adnexal masses or tenderness
• Thyroid disease, galactorrhea, hirsutism	• Cul-de-sac masses, tenderness, or modularity
• Abnormal pap smears or cervical surgeries	
• Current medications and allergies	
• Family reproductive history	
• Exposure environmental hazards	
• Use of tobacco, alcohol, or illicit drugs	

Source: Adapted from Practice Committee of the American Society for Reproductive Medicine.

direction of uterus, any palpable adnexal mass, vaginal discharge, tenderness, uterosacral ligament thickening, and nodules in the cul-de-sac denoting either endometriosis or tuberculosis by pervaginal (PV) examination. A perspeculum examination is also helpful to rule out certain conditions.

Table 2.2 shows summary of relevant history and physical examination findings for determining female factors in the infertile couple

CONCLUSION

To conclude, adequate history taking and examination would definitely help the clinician in decision making regarding investigations and the therapeutic options. This is very important in a multifactorial condition such as infertility where we could have myriad of investigations for both partners.

But more importantly, the quality of interaction during this session shall be of immense help to the infertile couple in understanding their situation, the solutions available and above all in reassuring them.

JAYPEE BROTHERS

REFERENCES

1. Revised Glossary on ART Terminology, 2009. Journal article: Fertility and Sterility. 2009;92(5).
2. PLoS Med. 2012 Dec; 9(12): e1001356.
   Published online 2012 Dec 18. doi: 10.1371/journal.pmed.1001356
   National, Regional, and Global Trends in Infertility Prevalence Since 1990: A Systematic Analysis of 277 Health Surveys
   Maya N. Mascarenhas, Seth R. Flaxman, Ties Boerma, Sheryl Vanderpoel, and Gretchen A. Stevens.
3. Cousineau TM, Domar AD. Psychological impact of infertility. Best Pract Res Clin Obstet Gynaecol. 2007;21:293.
4. Urologic Nursing Examining Male Infertility Susanne Quallich Urol Nurs. 2006;26(4):277-88.
5. Speroff L, Glass RH, Kase NG (eds). Clinical Gynecologic Endocrinology and Infertility, 4th edition. Williams & Wilkins, Baltimore. 1989.
6. Yen SC, Jaffe RB (eds). Reproductive Endocrinology, 3rd edition. W.B. Saunders Company, Philadelphia. 1991.
7. Martin-du Pan R, Campana A. Physiopathology of spermatogenic arrest. Fertil. Steril. 1993;60:937-46.
8. Labby DH: In: Benson RC (ed), Current Obstetric & Gynaecologic Diagnosis & Treatment, 4th edition. Lang, California. 1982. pp. 486-501.
9. Rowe PJ, Comhaire FH, Hargreave TB, Mellows HJ (eds). WHO manual for the standardized investigation and diagnosis of the infertile couple. Cambridge University Press, Cambridge. 1993.
10. Hammond MG. Evaluation of the infertile couple. Obstet. Gynecol. Clin. North Am. 1987;14:821-30.
11. Fertil Steril 2015;103:e4450. 2015 by American Society for Reproductive Medicine.

JAYPEE BROTHERS

for detailed information on obstetrics & gynecology books, visit our website **www.jaypeebrothers.c**

INFERTILITY MANAGEMENT SERIES

INVESTIGATING INFERTILITY

This handbook on investigating infertility is a concise treatise of considerable use to the practicing gynecologists. It has been able to cover a large part of what constitutes essential knowledge when it comes to the initial investigation, and when treatment planning for the trying-to-conceive couple is concerned.

It also covers the history taking and general examination for both the partners in due detail. Furthermore, it takes up factor-specific investigations and planning. Some of the newer concepts like endometrial receptivity and its diagnosis have been covered nicely. Similarly, the newer semen analysis guidelines have been explained in the context of the older guidelines so that decision-making is easier for the clinician regarding the management of the male.

We have also tried to explain the genetics of infertility in a lucid language in keeping with the explosion of knowledge in this sphere.

On the whole, this handbook is a well-timed treatise, combining what is classically accepted knowledge with the newer advances in the field of reproductive medicine. Hopefully, it shall be well received in the hands of the fellow clinicians.



Juan A García-Velasco MD PhD is Director of IVI Madrid, Madrid, Spain. He is the IVI Director of Nova IVI Fertility India and GCC, Abu Dhabi, UAE. Dr Juan is also Professor of Obstetrics and Gynaecology at Rey Juan Carlos University, Madrid, where he is Director of their Masters Degree Programme in Human Reproduction.

He graduated from University Medical School, Madrid in 1990 and received his obstetrics and gynaecology certification from La Paz Hospital, Madrid in 1995. He completed his PhD in Medicine at Autonoma University, Madrid in 1995, and from 1997 to 1998, he studied at Yale University, New Haven, Connecticut, USA under a Reproductive Endocrinology and Infertility Fellowship.

Professor García-Velasco's main research interests have been in IVF and endometriosis. He is the Principal Investigator of projects funded by the Ministry of Education and Ministry of Health in Spain, and has received awards from the Spanish Fertility Society, Madrid; Spanish Society of Obstetrics and Gynaecology; and the European Society of Human Reproduction and Embryology. He has published over 150 peer-reviewed articles and 22 book chapters on human reproduction, endometriosis, and hypo- and hyper-ovarian stimulation response.



Manish Banker MD is an infertility specialist and the Executive Director of Nova IVI Fertility Clinics and Pulse Women's Hospital, Ahmedabad, Gujarat, India.

He has done his postgraduation with honors from VS Medical College and Hospital, Ahmedabad. After completing his studies, he had advanced training in in vitro fertilization (IVF) and Endoscopy in Australia and Germany.

Dr Manish has been one of the pioneers in IVF in India and started his IVF practice in 1996. He has to his credit more than 5,000 successful IVF pregnancies.

He has been the immediate past President of the Indian Society for Assisted Reproduction (ISAR). Dr Manish sits on the International Affairs Committee of the American Society for Reproductive Medicine, Birmingham, Alabama, USA; and on the Board of the Pacific Rim Society for Reproductive Medicine (PSRM). He is a Member of the Draft Committee for ART Bill of India, Indian Council of Medical Research (ICMR), Ministry of Health, New Delhi, India, and is the regional representative for the International Committee for Monitoring ART (ICMART), a WHO affiliate.

Dr Manish has also been a Founder Board Member of Asia Pacific Initiative on Reproductive Endocrinology (ASPIRE) (2006–2008), and has been the Chairman of Infertility Committee of the Federation of Obstetricians and Gynecologists of India (FOGSI), Mumbai, Maharashtra, India.

He has delivered numerous orations and talks at International and National Conferences. Dr Manish has to his credit numerous publications and has contributed many chapters to various textbooks. He has been publishing the National ART Registry of India since 2000. He is on the editorial board of Journal of Human Reproductive Sciences (JHRS) and Clinical and Experimental Reproductive Medicine (CERM).



Rohit Gutgutia MBBS DGO is currently the Clinical Director, Nova IVI Fertility, Kolkata, West Bengal, India. He has been a dedicated reproductive medicine practitioner since the last ten years after getting trained in reproductive medicine from Israel under Professor Ami Amit. During this time, he has helped in setting up numerous intrauterine insemination (IUI) and in vitro fertilization (IVF) facilities across most of Eastern India and Bangladesh.

He has worked tirelessly to make fertility management easy and accessible for large sections of local population.

One of the more popular faces on national fertility scene, he has authored chapters in the Federation of Obstetric and Gynaecological Societies of India (FOGSI) publications and books, published papers in indexed journals and has been invited faculty in numerous State and National meets.

Dr Gutgutia is excited by the current scientific efforts to make IVF process painless and logistically possible for the outstation couples.

Available at all medical bookstores
or buy online at www.jaypeebrothers.com

JAYPEE BROTHERS
Medical Publishers (P) Ltd.
www.jaypeebrothers.com

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
INFERTILITY

ISBN 978-93-85999-01-7