Step by Step®
Intrauterine Insemination

**System requirement:**
- Windows XP or above
- Power DVD player (Software)
- Windows media player version 10.0 or above
- Quick time player version 6.5 or above

*Accompanying DVD ROM is playable only in Computer and not in DVD player.*

Kindly wait for few seconds for DVD to autorun. If it does not autorun then please follow the steps:
- Click on my computer
- Click the **drive labelled JAYPEE** and after opening the drive, kindly double click the file **Jaypee**
1. Set up of IUI Lab.

2. Semen cryopreservation.
   a. Mixing freezing medium to sample
   b. Loading straws and cryovials
   c. (i) Straws vapour phase
      (ii) Vials vapour phase
   d. (i) Cryovial plunging in LN2
      (ii) Cryostraw plunging in LN2
   e. Thawing of the sample

Dedicated to

My Mother
For her untiring investment of love,
time and effort in us

My Father
For giving us the right direction and
unconditional support

A thank you to both,
for being there always in time of need and
giving us the right values
Contributors

Aanchal Jain
FNB
(Fellow in Reproductive Medicine)
Sir Ganga Ram Hospital
New Delhi

N Subramanian
Sr. Consultant Urologist
Indraprastha Apollo Hospitals
New Delhi

Pankaj Talwar
ART Specialist and
Human Embryonic Stem Cell Biologist
Assisted Reproductive Technologies Centre
Army Hospital (Research and Referral)
Delhi Cantt

RK Sharma
Director
Assisted Reproductive Technologies Centre, and
Head of the Department of Obstetrics and Gynecology
Army Hospital (Research and Referral), Delhi Cantt

Reeti Sahani
Senior Consultant
Radiology and Imaging Sciences
Indraprastha Apollo Hospital, New Delhi

S Sareen
Chief medical officer and
ART Specialist
Assisted Reproductive Technologies Centre
Army Hospital (Research and Referral), Delhi Cantt
Intrauterine Insemination

Sandeep Talwar
Consultant, Centre of IVF and Human Reproduction
Sir Ganga Ram Hospital
New Delhi

Sudha Salhan
Professor and Head Department of Obstetrics and Gynecology
Vardhaman Mahavir Medical, College and Safdarjang Hospital
New Delhi

Surveen Ghumman Sindhu
Specialist Vardhaman Mahavir Medical College and Safdarjang Hospital
New Delhi

Umesh N Jindal
Jindal IVF and Sant Memorial Nursing Home
#3050, Sector 20 D
Chandigarh
It is indeed a great pleasure to write a foreword for this book on *Intrauterine Insemination*.

IUI has been practiced since a long time and is today, the first and probably the most important armamentarium we have for managing infertility. As the male factor infertility increases, so will the percentages of IUI increase. IUI has the advantage that it can be performed by the general gynecologist.

Today in this world of so many communicable diseases, CPA and litigations, we all have to be very careful about handling gametes *in vitro*, even for IUI. It is mandatory to get both the partners tested and to use washed sperms and not raw semen. For donor insemination banked sperms and not fresh donor sperms should be used.

Infertility is now a superspecialty of Obstetrics and proper training with adequate infrastructure and understanding is needed.

I congratulate Dr Surveen Ghumman Sindhu for bringing out this Step by Step book on IUI which has been written in a wonderful and concise manner. She has presented this subject in a very systematic way making it easy for a general gynecologist to be initiated into this technique.

**Dr Narendra Malhotra**  MD FICOG  
Consultant and Director, MNMH (P) Ltd. Agra  
Apollo Pankaj Hospital (P) Ltd, Agra (India)  
President, Federation of Obstetric and Gynaecological Societies of India-2008
Intrauterine insemination is a technique which goes back 200 years, since John Hunter first advocated it to a man with hypospadias to inject his seminal fluid into his wife’s vagina with a syringe, resulting in a normal pregnancy. Though being a less invasive and much cheaper technique as compared to other assisted reproduction techniques such as IVF it has not received the importance it should have. Thus there has been no systemic approach to this simple form of treatment and no specific protocols are easily available for the practicing gynecologist.

Lately sperm preparation methods developed for in vitro fertilization and embryo transfer have lead to an awakening in interest of IUI. So much so that there is a plethora of disjointed information available leading to confusion in treatment of such patients.

This book has been planned in such a manner so as to specially help, those starting in the field of IUI in helping them in proper patient selection and counseling and providing information in a concise manner, at the same time touching on the latest techniques. It has a chapter which focuses on factors which improve success rates. A detailed ovarian stimulation protocol is given so as to enable the prescribing gynecologist to incorporate this management with IUI, thus improving success rates.

A special chapter has been added to give an idea of the equipment used and how to setup an IUI lab. Also
there is an in-depth study into the legal aspect of Donor IUI and Semen banking, a must for every infertility specialist. Investigations like Semen analysis and Ultrasound have been dealt in separate chapters considering their importance in the diagnosis and management of patients requiring IUI. Male factors have been dealt with an andrologist’s viewpoint.

The importance of Sperm preparation can be gauged by the significant reduction in the side effects which were associated with previously used undiluted semen and have been discussed in detail in this book along with the various techniques of IUI. Each step for preparation has been clearly defined in the CD ROM. Sperm cryopreservation and semen banking are gaining importance and have been presented in a systemic manner along with videos for a detailed protocol.

The material has been presented in a manner so as to provide the reader a step by step approach in dealing with such patients and contains flow charts and photographs for better understanding. It is also accompanied with a DVD-ROM with videos of Semen preparation for IUI, setting up of IUI lab and Semen cryopreservation.

I hope that this small attempt in presenting this information by us, in a systematic and easy to understand manner, goes a long way in making IUI more popular and being attempted in patient with appropriate indication as a first line procedure, vis-à-vis the other more expensive procedures like IVF so as to benefit more patients in a cost effective manner.

Surveen Ghumman Sindhu
Acknowledgements

I sincerely thank Dr Sudha Salhan, Professor and Head of Department of Obstetrics and Gynecology at Vardhman Mahavir Medical College and Safdarjang Hospital for encouraging me in this academic venture. In every academic pursuit of mine, I feel deeply indebted to Dr Neerja Goel, my teacher and guide who initiated me on this path, and I would like to express my gratitude to her for her constant guidance along the years.

I would like to convey my deepest appreciation and gratitude to all the contributors for their well researched chapters and videos, and also for sparing their invaluable time and intellectual skills. I have thoroughly enjoyed interacting with all the authors during this period.

My daughters, Jahnavi and Janya, receive special thanks for their understanding and help in bringing about this book. My love and affection for my parents who have encouraged and nurtured me over the years, chipping in to help whenever required. A special thanks to my father who spent long hours editing. Above all, this academic pursuit would not have been possible without the support of my husband - in not one, but many ways. All my ventures have been possible because of his encouragement and help.
I would like to acknowledge the contribution of Shri Jitendar P Vij, Chairman and Managing Director, Tarun Duneja, General Manager (Publishing), Ms Samina and their entire team at M/s Jaypee Brothers Medical Publishers (P) Ltd. for bringing this book to its present form.

I humbly acknowledge that though the name on the cover may be mine but it is the conglomerated effort of all the above which brought this book to its present face.
Contents

1. Indications and Patient Selection for IUI .......... 1
   Surveen Ghumman Sindhu

2. Semen Analysis—The Practical Aspect .......... 21
   Surveen Ghumman Sindhu

3. Computer Assisted Semen Analysis—CASA ........ 79
   Surveen Ghumman Sindhu

4. Setup of IUI Laboratory ............................... 91
   Umesh N Jindal

5. Controlled Ovarian Stimulation and IUI ... 107
   Surveen Ghumman Sindhu

6. Sperm Preparation Techniques for IUI .......... 151
   Umesh N Jindal

7. Techniques of Artificial Insemination ........... 179
   Surveen Ghumman Sindhu

8. Determinants of Success and Optimizing Success of an IUI Program ................ 219
   Surveen Ghumman Sindhu

9. After Insemination—The Luteal Phase ........... 255
   Surveen Ghumman Sindhu

10. Donor IUI, Psychological and Legal Aspects ........................ 273
    Sandeep Talwar, Aanchal Jain
    Surveen Ghumman Sindhu
<table>
<thead>
<tr>
<th></th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Complications of IUI</td>
<td>299</td>
</tr>
<tr>
<td></td>
<td>Surveen Ghumman Sindhu</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Sperm Cryopreservation</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>(Lt Col) Pankaj Talwar, (Col) RK Sharma, S Sareen</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Male Infertility: The Andrologist’s Perspective</td>
<td>369</td>
</tr>
<tr>
<td></td>
<td>N Subramanian</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Ultrasonography and IUI</td>
<td>387</td>
</tr>
<tr>
<td></td>
<td>Reeti Sahani, Surveen Ghumman Sindhu</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Semen Banking—Ethical and Legal Issues</td>
<td>413</td>
</tr>
<tr>
<td></td>
<td>Sudha Salhan, Surveen Ghumman Sindhu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>433</td>
</tr>
</tbody>
</table>