

Laparoscopic Surgery in Gynaecology

and

Common Diseases in Women

Surgery with Minimal Scars and Maximal Benefits

Dr. S. Selva FRCOG



About the author

Dr S. Selva (Sevellaraja Supermaniam) is a Consultant Obstetrician and Gynaecologist and a subspecialist in Reproductive Medicine at a private hospital in Melaka, Malaysia. He heads the O&G unit and the IVF Centre at the hospital.

Dr. S. Selva obtained his undergraduate degree from the University of Malaya in 1985. After working in various hospitals in Malaysia and the United Kingdom, he became a member of the Royal College of Obstetricians and Gynaecologists, United Kingdom, in 1991. He then served as a specialist and later a consultant OBGYN in Johor Bahru. In 1994, he left the public service and joined a private hospital in Melaka and has been there since. Dr. S. Selva obtained his Masters in Reproductive Medicine from the University of Western Sydney in 2003. He also became a Fellow Of the Royal College of Obstetricians and Gynaecologists, United Kingdom and a Fellow of the International College of Surgeons, in 2003. He then obtained the Bachelor of Endoscopy from Belgium in 2013.

Dr S. Selva received his initial training in laparoscopic surgery under Prof. Soong Kwei Yong and Dr. Lee Chyi Long at the Chang Gung Memorial Hospital, Taipeh in 1994. He has been a dedicated laparoscopic surgeon since then, having performed about 5000 laparoscopic surgery cases so far. The types of cases that he performs involve advanced techniques such as single incision laparoscopic surgery, laparoscopic surgery for rectovaginal endometriosis, laparoscopic sacrocolpopexy and laparoscopic radical hysterectomy. He has also trained many national and international gynaecologists in laparoscopic surgery. He recently started a fellowship in laparoscopic surgery and infertility, the first of its kind in Malaysia. So far he has trained 3 Fellows. Dr. Selva has been performing 3D laparoscopy since 2013.

Dr S. Selva is the immediate past President of the Asia Pacific Association of Gynaecological Endoscopy (APAGE). He is also a reviewer of the Journal of APAGE (GMIT- Gynaecological Minimally Invasive Therapy). Dr. S. Selva is a board member of the International Society of Gynaecological Endoscopy. He is a Past President of the Obstetrical and Gynaecological Society of Malaysia and currently chairs its endoscopic subcommittee and is involved in promoting gynaecological endoscopic surgery in Malaysia. He was the organizing chairman of the International Society of Gynaecological Endoscopy Congress in Kuala Lumpur in 2004. He was also the organizing chairman of the annual congress of the Asia Pacific Association Of Gynaecological Endoscopy (APAGE 2014). He has organized numerous workshops in laparoscopic surgery and has also been the preceptor for many laparoscopic surgery workshops in Malaysia and abroad. Dr. S. Selva has also won numerous awards for video presentations in laparoscopic surgery, at the annual Malaysian Congress of O&G. He has written a chapter entitled "Polycystic Ovarian Syndrome" in the book, Obstetrics and Gynaecology for Postgraduates. He has also written a chapter entitled " Single Incision Laparoscopic Surgery using Common Laparoscopic Instruments" in the book, Practical Endoscopy Tips by Experts.

Besides laparoscopy, Dr. Selva is also an IVF specialist having obtained his training at King's College in London in 1997. In 1997, he started the IVF Centre at the hospital he currently works in.

Introduction

Although laparoscopic surgery in gynaecology has been in existence for over 30 years, the public is still unaware of its benefits. It is frequently perceived as dangerous and risky surgery. The aim of this book is to educate the public on the availability and benefits of laparoscopic or “keyhole surgery” for different gynaecological diseases.

In order to understand laparoscopic surgery in gynaecology, it is important to understand common gynaecological conditions. The first part of this book is dedicated to the explanation of common gynaecological diseases in women. In the second part, I will deal with how laparoscopic surgery is performed, its advantages and disadvantages and all the different types of gynaecological conditions for which laparoscopic surgery can be performed.

Although this book is entitled laparoscopic surgery in gynaecology, I have included the other component of minimally invasive surgery in gynaecology which is hysteroscopy, covered in Part 3. Endoscopic surgery or minimally invasive surgery, which is the term that encompasses both laparoscopic and hysteroscopic surgery should have been the correct title for this book, but I decided on “Laparoscopy” because it is the more commonly known term to the general public. I have also included interesting facts and cases in some of the chapters to further augment the understanding of the topic.

There are many medical terms and abbreviations used throughout this book. I have added a glossary of some of these medical terms at the end of this book. When the symbol (g) appears after a word, it means that an explanation of that word can be obtained in the glossary. I have also included a list of medical abbreviations used in this book. Please refer to them when necessary.

I have spent a considerable amount of time creating videos for many of the chapters in this book. They cover many of the chapters in the written format with videos of surgeries. I have given the URL (on vimeo) where these videos can be viewed. I have also given QR codes for each videos, so that it will be easy for you to access these videos. The QR code to get to the channel on vimeo, which contains all the videos is:

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Another way of viewing these videos through your mobile devices is to download an app that can be obtained for free from my webpage www.selvaapps.com.

If you would like these videos in DVDs or a thumbdrive you can purchase them by writing to me at info@melakafertility.com. Readers will benefit most by reading a chapter and then watching the accompanying video on that chapter. This will give a better understanding of the topic discussed. My own experience has taught me that one can learn much more from a video than from merely reading a book, (especially if it concerns technical issues such as those discussed in this book).

I hope you will enjoy reading this book and watching the videos, as much as I have had in preparing this book.

Dr. S. Selva

(Sevellaraja Supermaniam)

Melaka, Malaysia

November 2016

Dedication

To my wife Sarojini and my children: Ashmeera, Amita and Ainesh.

Acknowledgements

A number of people have influenced my career development. I would like to convey my deepest gratitude to these people:

My teachers:

- Dato' Dr Alex Mathews and Dr Padmawathy, for my initial training in Obstetrics and Gynaecology.
- Prof. Soong Kwei Yong and Prof. Lee Chyi Long for introducing me to operative laparoscopy.
- Dr Masaaki Ando, Dr. Rakesh Sinha, Dr. Suresh Nair, Dr. Prashant Manghesikar, Prof. Joo Hun Nam, Prof. Arnauld Wattiez, Dr Harry Reich, Dr Bruno J. Van Herendaël for teaching me advanced laparoscopic surgery during live surgery workshops organised in Malaysia.
- Dr Masaaki Ando, Dr. Rakesh Sinha and Dr Shailesh Puntambaker for allowing me to visit their centres to observe and assist in laparoscopic surgery.

My patients who have trusted me to treat them and operate on them. Without them I would not have been able to gain all the experience needed to perform advanced laparoscopic surgery.

Dr. Vijaendreh Subramaniam, gynaecological oncologist, for collaborating with me in performing laparoscopic radical hysterectomies.

Miss Allison Beh Kheng Yin for the illustrations.

My wife, Sarojini for all her support and advice. Her editing skills have enabled me to make this technical book more readable for the general public.

Foreword

Foreword By Dato' Dr. Alex Mathews

Laparoscopic surgery, also known as minimally invasive surgery, has come a long way and has revolutionised the performance of a large number of surgical procedures. It is now utilised in most surgical specialities.

Laparoscopic surgery in gynaecology has developed into a highly sophisticated and precise form of surgery. Today many advanced gynaecological procedures can be performed safely and effectively using laparoscopic techniques.

In surgeries, there are usually 2 separate steps; the first, an incision (a cut) through the skin layer of the body and the second, the actual surgery deeper inside the body. In these conventional "open" surgeries, the cut on the skin layer is fairly large. This is to ensure good visibility and manoeuvrability for the surgery to be done effectively. The pain and discomfort after surgery, in most cases, is mainly from the cut on this skin layer.

In laparoscopic surgery one difference is that the cut on the skin layer is much smaller. The surgery is performed through small cuts using specially designed instruments that can be manipulated through these incisions. The internal structures are clearly visible to the surgeon because of highly specialised small cameras placed inside the body that transmit the image onto a high-definition video screen. The surgeon operates while looking at the screen. The assistant and observers can follow the entire surgery on the screen.

Major advantages of laparoscopic surgery include less tissue damage, clearer vision, and often better access to hidden structures. Several procedures never before possible with conventional surgery are now being done laparoscopically with great efficiency and minimal damage to surrounding tissues. The recovery period is shorter and return to work is much quicker without compromise on outcome.

However, the training of a laparoscopic surgeon is a long and intensive process. Basic training is done first on laboratory models. Then, there is a process of watching and assisting senior surgeons. The trainee surgeons then perform surgeries under direct supervision. Only then do surgeons embark on surgery independently.

Surgeons continually update their skills through advanced training. As in all surgeries, complications can occur, but with due care and proper training these can be reduced to a minimum.

One of the pioneers of advanced laparoscopic gynaecological surgery in Malaysia is the author of this book, Dr. S. Selva.

Dr. Selva started laparoscopic surgery early. Initially, there was only very basic equipment available. However, Dr. Selva quickly advanced his skills, training in some of the best centres overseas.

Today Dr. Selva is an acknowledged expert and trainer and innovator in advanced techniques. He has a busy schedule providing training to surgeons who want to improve their skills.

Dr. Selva has another passion, i.e. a long standing desire to help patients and other lay-persons understand gynaecological laparoscopic procedures. He does this in his book using clear descriptions, pictures, and videos of actual surgeries. He, thus, helps lay-persons to participate meaningfully in making decisions in consultation with their doctors.

This book with the accompanying videos is an excellent contribution to public medical education.

I have no doubt it will be useful for many. Even medical practitioners of other disciplines will find this book interesting and informative.

To all who have any interest in knowing more about this subject I can heartily commend this remarkable publication.

Dato' Dr. Alex Mathews FRCOG

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Case Studies

Case No.	Description of Case	Page
2.1	5 of 6 sisters with fibroids	45
2.2	Fibroids that caused sudden inability to urinate	47
3.1	Spontaneous pregnancy immediately after laparoscopic cystectomy for an endometrioma	69
3.2	Successful spontaneous pregnancy after taking oral contraceptive pills to decrease the recurrence rate of endometrioma	73
4.1	Severe dysmenorrhea caused by endometriosis and adenomyosis treated with Depoprovera® injection	83
4.2	Successful IVF in a patient with adenomyosis	85
5.1	Twisted gangrenous ovarian cyst	99
6.1	Endometrial polyp that was a cancer	109
6.2	Removal of an endometrial polyp in a subfertile lady leads to a natural pregnancy	109
7.1	Pregnant after laparoscopic surgery for ectopic pregnancy	7.1
11.1	Twin pregnancies with IVF in a lady with a complete uterine septum	166
11.2	Excision of a non-communicating rudimentary horn	167
17.1	Rectal injury	241
17.2	Bladder injury	243
17.3	Small intestine injury	245
17.4	Postoperative bleeding	246
17.5	Accidental injury to the right external iliac vein during laparoscopic radical hysterectomy	247
24.1	Spontaneous pregnancy after laparoscopic myomectomy	298
24.2	Laparoscopic myomectomy for large uterine fibroids	301
24.3	Laparoscopic myomectomy for a large submucous fibroid	303

Case Studies

Case No.	Description of Case	Page
25.1	Pregnancy after IVF in a patient who had undergone bilateral cystectomy for endometrioma	313
25.2	Spontaneous pregnancy in a young lady who underwent 2 previous laparoscopic cystectomies for large endometriomas	314
26.1	Spontaneous pregnancy after laparoscopic salpingotomy for an ectopic tubal pregnancy	323
26.2	Laparoscopic resection of a cornual ectopic pregnancy	326
27.1	Laparoscopic salpingoophrectomy and omentectomy for an ovarian cancer	338
28.1	Spontaneous pregnancy after reversal of tubal ligation	349
29.1	Bilateral hydrosalpinx : laparoscopic bilateral salpingectomy done followed by 2 successful IVF cycles	352
30.1	Recurrent Pelvic Inflammatory Disease (PID): laparoscopic salpingectomy	364
30.2	Laparoscopic adhesiolysis and fimbrioplasty done followed by a successful IVF cycle	366
31.1	Spontaneous pregnancy after adenomyomectomy	371
31.2	Hysterectomy done for severe adenomyosis	373
32.1	Laparoscopic sacrocolpopexy for vaginal vault prolapse	385
34.1	Cancer of the endometrium: Total Laparoscopic Hysterectomy and Bilateral Salpingoophrectomy and Pelvic Lymphadenectomy	405
35.1	Cancer of the cervix stage 1B: Laparoscopic radical hysterectomy and pelvic lymphadenectomy	411
36.1	Uterine perforation during office hysteroscopy	427
40.1	Hysteroscopic resection of uterine septum resulted in a spontaneous pregnancy in a woman with 2 previous miscarriages	459
40.2	Hysteroscopic lysis of intrauterine adhesions leading to spontaneous pregnancy	457
41.1	Spontaneous pregnancy after transcervical resection of fibroid for submucous fibroid	467

Interesting Facts

Fact No.	Topic	Page
2.1	Can the diagnosis of uterine sarcoma be made without surgery?	51
3.1	Use of oral contraceptive pills in young unmarried women	76
15.1	Why is laparoscopic surgery not so popular among gynaecologists?	222
16.1	Is enema necessary before laparoscopic surgery?	230
18.1	Controversy on morcellation of fibroids	260
21.1	Should all women with infertility undergo a routine laparoscopy?	278
24.1	Can laparoscopic myomectomy be performed in women who never had sexual intercourse (virgo intacta) ?	305
33.1	Should the ovaries be removed during hysterectomy?	398
33.2	What is the difference between subtotal hysterectomy and total hysterectomy?	399

Videos that accompany this book

All videos can be obtained at this channel:
<https://vimeo.com/channels/1005699>

Videos in Each Chapter

- Video 1.1 Normal female pelvic anatomy - <https://vimeo.com/149588511>
- Video 2.1 Uterine fibroid - <https://vimeo.com/149599112>.
- Video 3.1 Endometriosis - <https://vimeo.com/149606168>
- Video 4.1 Adenomyosis - <https://vimeo.com/149611964>
- Video 5.1 Ovarian cyst - <https://vimeo.com/149616411>
- Video 5.2 Twisted ovarian cyst Laparoscopic Right Salpingoophrectomy - <https://vimeo.com/149700129>
- Video 5.3 Laparoscopic surgery for bleeding ovarian cyst - <https://vimeo.com/159002671>
- Video 6.1 Endometrial Polyp - <https://vimeo.com/159004117>
- Video 7.1 Ectopic pregnancy - <https://vimeo.com/149705868>
- Video 8.1 Tubal block and hydrosalpinx – <https://vimeo.com/159005056>
- Video 9.1 Pelvic inflammatory disease - <https://vimeo.com/159011692>
- Video 10.1 Uterovaginal prolapse - <https://vimeo.com/149728206>
- Video 11.1 Congenital uterine abnormalities - <https://vimeo.com/159012013>
- Video 11.2 Excision of non communicating uterine horn - <https://vimeo.com/159012375>
- Video 15.1 Laparoscopic Surgery in Gynaecology an overview - <https://vimeo.com/149733613>
- Video 17.1 Complications of laparoscopic surgery - <https://vimeo.com/149741703>
- Video 18.1 Laparoscopic tissue removal – <https://vimeo.com/155090018>
- Video 19.1 How is single incision laparoscopic surgery performed - <https://vimeo.com/149741718>
- Video 19.2 Single incision bilateral tubal ligation with Filshie's clip - <https://vimeo.com/149741716>
- Video 19.3 Single incision laparoscopic salpingoophrectomy for ovarian cyst - <https://vimeo.com/149741720>
- Video 19.4 Single incision laparoscopic cystectomy - <https://vimeo.com/149741715>

- Video 19.5 Single incision laparoscopic salpingectomy for Ectopic Pregnancy - <https://vimeo.com/149741723>
- Video 19.6 Single Incision Total Laparoscopic Hysterectomy - <https://vimeo.com/149741719>
- Video 19.7 Single Incision Laparoscopic Myomectomy - <https://vimeo.com/149741721>
- Video 20.1 3D laparoscopy - <https://vimeo.com/159012750>
- Video 22.1 Laparoscopic sterilization - <https://vimeo.com/149484799>
- Video 23.1 Laparoscopic surgery for polycystic ovarian syndrome - <https://vimeo.com/159013473>
- Video 24.1 How is laparoscopic myomectomy performed? - <https://vimeo.com/150033425>
- Video 24.2 Laparoscopic myomectomy for a large uterine fibroid - <https://vimeo.com/150296714>
- Video 24.3 Laparoscopic myomectomy for a large submucous fibroid - <https://vimeo.com/150158638>.
- Video 25.1 Laparoscopic surgery for endometriosis - <https://vimeo.com/149998622>
- Video 25.2 Laparoscopic cystectomy for endometrioma and ovarian cysts - <https://vimeo.com/149998620>
- Video 25.3 Laparoscopic surgery for rectovaginal endometriosis - <https://vimeo.com/159015020>
- Video 25.4 Laparoscopic management of bladder endometriosis - <https://vimeo.com/163190083>
- Video 26.1 Laparoscopic salpingectomy for ectopic pregnancy - <https://vimeo.com/149858701>
- Video 26.2 Laparoscopic salpingotomy for ectopic pregnancy - <https://vimeo.com/149858702>
- Video 26.3 Laparoscopic resection of cornual ectopic pregnancy - <https://vimeo.com/150044031>
- Video 26.4 Laparoscopic excision of ovarian ectopic pregnancy - <https://vimeo.com/149858698>
- Video 26.5 Laparoscopic salpingoophrectomy for a large ectopic pregnancy with a concomitant intrauterine pregnancy heterotrophic pregnancy - <https://vimeo.com/149858699>
- Video 27.1 Laparoscopic cystectomy for a large Dermoid cyst - <https://vimeo.com/150455054>

- Video 27.2 Laparoscopic cystectomy for a mucinous cystadenoma – <https://vimeo.com/159017867>
- Video 27.3 Laparoscopic salpingoophrectomy and omentectomy for an ovarian cancer - <https://vimeo.com/159018922>
- Video 28.1 Reversal of tubal ligation - <https://vimeo.com/150044038>
- Video 29.1 Laparoscopic bilateral salpingectomy for bilateral Hydrosalpinx - <https://vimeo.com/150044052>
- Video 29.2 Laparoscopic bilateral fimbrioplasty for bilateral Hydrosalpinx - <https://vimeo.com/150044057>
- Video 29.3 Hysteroscopic Cannulation for Proximal Tubal Block - <https://vimeo.com/150044067>
- Video 29.4 Laparoscopic salpingectomy for a twisted gangrenous hydrosalpinx - <https://vimeo.com/159019614>
- Video 30.1 Laparoscopic salpingectomy in a patient with recurrent pelvic inflammatory disease - <https://vimeo.com/159027900>
- Video 30.2 Laparoscopic adhesiolysis and fimbrioplasty done followed by a successful IVF cycle - <https://vimeo.com/159031234>
- Video 31.1 Laparoscopic excision of adenomyosis - <https://vimeo.com/159031690>
- Video 32.1 Laparoscopic surgery for uterovaginal prolapse - <https://vimeo.com/150044077>
- Video 32.2 Laparoscopic sacrocolpopexy for vaginal vault Prolapse – <https://vimeo.com/150044082>
- Video 32.3 Subtotal hysterectomy and sacrocolpopexy - <https://vimeo.com/150044086>
- Video 33.1 Total laparoscopic hysterectomy - <https://vimeo.com/150079694>
- Video 33.3 Total laparoscopic hysterectomy for severe endometriosis - <https://vimeo.com/150079701>
- Video 34.1 Total laparoscopic hysterectomy and pelvic lymphadenectomy for endometrial cancer - <https://vimeo.com/159032432>
- Video 35.1 Laparoscopic radical hysterectomy for cervical cancer - <https://vimeo.com/150127506>
- Video 36.1 Overview of hysteroscopy - <https://vimeo.com/150239548>
- Video 37.1 Diagnostic Hysteroscopy - <https://vimeo.com/150317709>
- Video 40.1 Hysteroscopic resection of uterine septum - <https://vimeo.com/159033073>
- Video 41.1 Transcervical resection of fibroid - <https://vimeo.com/149851760>

Contents

Part 1 : Common gynaecological diseases		Page
1.	Normal female anatomy	33
2.	Uterine Fibroids	41
3.	Endometriosis	59
4.	Adenomyosis	79
5.	Benign Ovarian cysts	89
6.	Endometrial polyps	105
7.	Ectopic pregnancy	117
8.	Tubal block and hydrosalpinx	131
9.	Pelvic inflammatory disease	139
10.	Uterovaginal prolapse	145
11.	Congenital Uterine abnormalities	159
12.	Cancer of the Endometrium	175
13.	Cancer of the Cervix	187
14.	Cancer of the Ovary	195
Part 2 : Laparoscopic Surgery		Page
15.	Overview of laparoscopic surgery in gynaecology	213
16.	Preparation for laparoscopic surgery	225
17.	Complications of laparoscopic surgery	233
18.	Laparoscopic Tissue Removal	253
19.	Single Incision Laparoscopic surgery	263
20.	3D (three dimensional) laparoscopy	271
21.	Laparoscopic Surgery for Infertility	275
22.	Laparoscopic Tubal Sterilization	281
23.	Laparoscopic Surgery for Polycystic Ovarian Disease	289
24.	Laparoscopic Surgery for Fibroids	293
25.	Laparoscopic Surgery for Endometriosis	307
26.	Laparoscopic Surgery for Ectopic Pregnancy	317

Part 2 : Laparoscopic Surgery	Page
27. Laparoscopic Surgery for Ovarian Cyst	331
28. Laparoscopic Tubal Ligation Reversal	343
29. Laparoscopic Surgery for Tubal Block and Hydrosalpinx	351
30. Laparoscopic Surgery for Pelvic Inflammatory Disease	359
31. Laparoscopic Surgery for Adenomyosis	369
32. Laparoscopic Surgery for Uterovaginal Prolapse	377
33. Laparoscopic Removal of the Uterus (Hysterectomy)	389
34. Laparoscopic Surgery for Endometrial Cancer	401
35. Laparoscopic Surgery for Early Cervical Cancer	409

Part 3 : Hysteroscopic Surgery	Page
36. Overview of Hysteroscopy	417
37. Diagnostic Hysteroscopy	433
38. Operative Hysteroscopy	439
39. Hysteroscopy for Abnormal Uterine Bleeding	445
40. Hysteroscopy in Infertility	453
41. Hysteroscopic Removal of Fibroid (Transcervical Resection of Fibroid)	463

Glossary	472
Abbreviation	483
Index	

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PART 1

Common Gynaecological Diseases

Chapter 1

The Normal Female Pelvic Anatomy

Chapter 1 : Basic Anatomy

In order to understand gynaecological diseases and gynaecological laparoscopic surgery, it is important to first understand the normal female pelvic anatomy.

The female reproductive system consists of 4 major parts: the uterus, vagina, fallopian tubes and ovaries.



Figure 1.1 Female body showing the female reproductive system

Uterus

The uterus, or womb, is a hollow, pear-shaped organ with a thick muscular wall. It is subdivided into two parts: the corpus (body), and the cervix (neck).

- The corpus comprises the fundus, which is the top portion of the uterus; and the cavity of the uterus. The cavity is where the embryo/foetus develops during pregnancy. The inner layer or the lining of the uterus, is called the endometrium. Every month, it thickens in preparation for potential pregnancy and sheds during menstruation if pregnancy does not occur. The middle layer of the uterus is known as the myometrium. It is mainly composed of smooth muscle cells, which collectively give the uterus the strength to contract and expel the foetus during childbirth. The outermost layer of the uterus is the serosa, also known as the perimetrium.
- The cervix is the lower constricted segment of the uterus that joins the upper part of vagina. The small cervical opening into the vagina is called the external os while the one in the uterine cavity is called the internal os. They allow the sperm to enter the uterus during sexual intercourse and the menstrual fluid to flow out of the uterus during menstruation. The cervix can be visualised from the vagina.

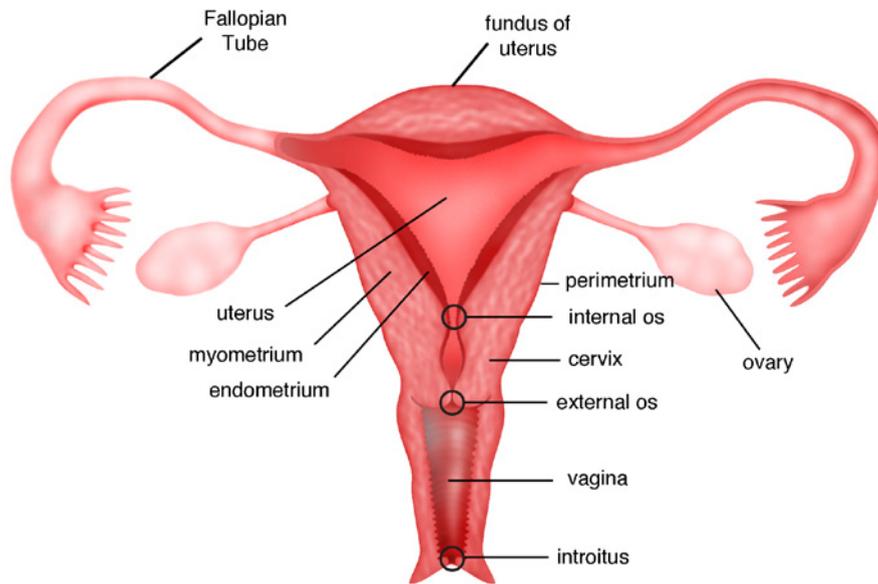


Figure 1.2 Front section of female reproductive system

Vagina

The vagina is a muscular, narrow canal that extends from the vaginal opening called introitus, to the cervix. It is also known as the birth canal due to the fact that the foetus passes through it to be born during natural childbirth. The inner wall of the vagina is surfaced with numerous folds of soft elastic mucous membrane called vaginal rugae. This allows the vagina to expand considerably during sexual intercourse or childbirth. During menstruation, the vagina provides a channel for the menstrual fluid to flow out of the body.

Ovaries

The ovaries are small, oval-shaped paired glands that are attached to each side of the uterus via a thin, fibrous ovarian ligament. The pair is responsible for storing and nurturing immature egg cells to become mature eggs. Every month, one of the ovaries releases a mature egg into its neighboring Fallopian tube. In addition to producing eggs, the ovaries produce two main female sex hormones: the oestrogen and progesterone, which are vital in regulating menstrual cycles.

Fallopian tubes

The fallopian tubes, sometimes simply called tubes, are the two channels that connect the ovaries to the uterus. They are the main structures that facilitate fertilization. Each tube is divided into 5 main portions:

1) Fimbriae

The fringe-like structure located at the end of the tube that captures an egg released from the ovary and draws it into the tube.

2) Infundibulum

The funnel-like structure of the tube, which is margined by the fimbriae.

3) Ampulla

The longest portion of the tube with a thin wall (almost muscle-free) and wide lumen (g). It is usually the portion where fertilization takes place.

4) Isthmus

The almost straight portion of the tube with a relatively thick muscular wall and with the narrowest lumen(g).

5) Interstitium

The portion of the tube that is closest to the uterus. It is sometimes known as the uterine portion of the tube for the fact that it lies within the uterus.

The inner lining of the fallopian tube is made up of fine finger like projections called the cilia.

These cilia are important in assisting the movement of the eggs towards the uterine cavity and the sperms into the ampulla of the fallopian tube.

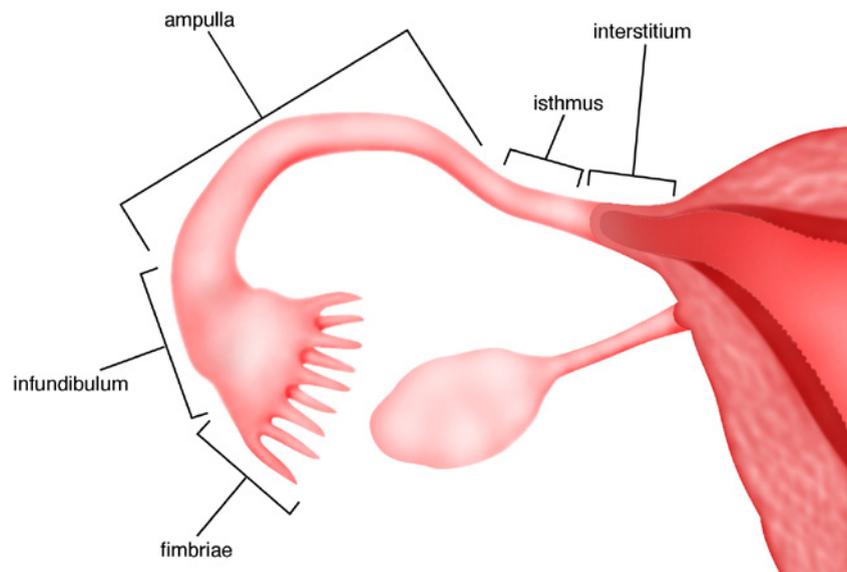


Figure 1.3 Anatomy of the Fallopian Tube.

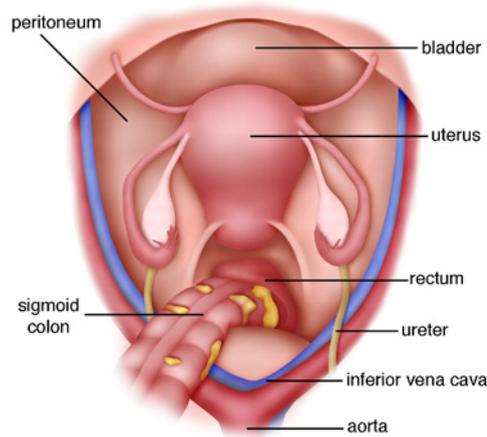


Figure 1.4 Superior view of the pelvic organs

Figure 1.4 is a different view of the female pelvis. It is how the pelvis looks when a gynaecologist looks at the pelvis either through a laparotomy (large incision on the abdomen) or through a laparoscope (key hole surgery).

The uterus is in the centre. In front (anterior) of the uterus is the urinary bladder. Behind (posterior) to the uterus is the rectum. A slippery membrane called the peritoneum(g) covers the whole pelvis and abdomen. Beneath the peritoneum, on either side of the pelvis, run the ureters. The ureter is a small tube that carries urine and runs from the kidney to the bladder. Large blood vessels are present on both sides of the pelvis. These blood vessels carry blood from the heart to both the legs and back.

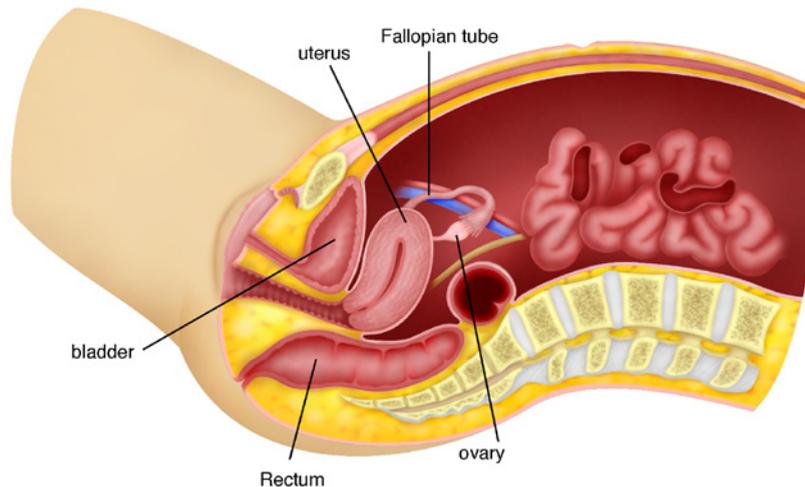


Figure 1.5 Side view of the abdomen and pelvis

Figure 1.5 is a side view of the abdomen and pelvis. The uterus is in the centre. On the side and behind the uterus are the fallopian tubes and the ovaries. In front of (anterior to) the uterus is the urinary bladder and behind it (posterior to) is the rectum.

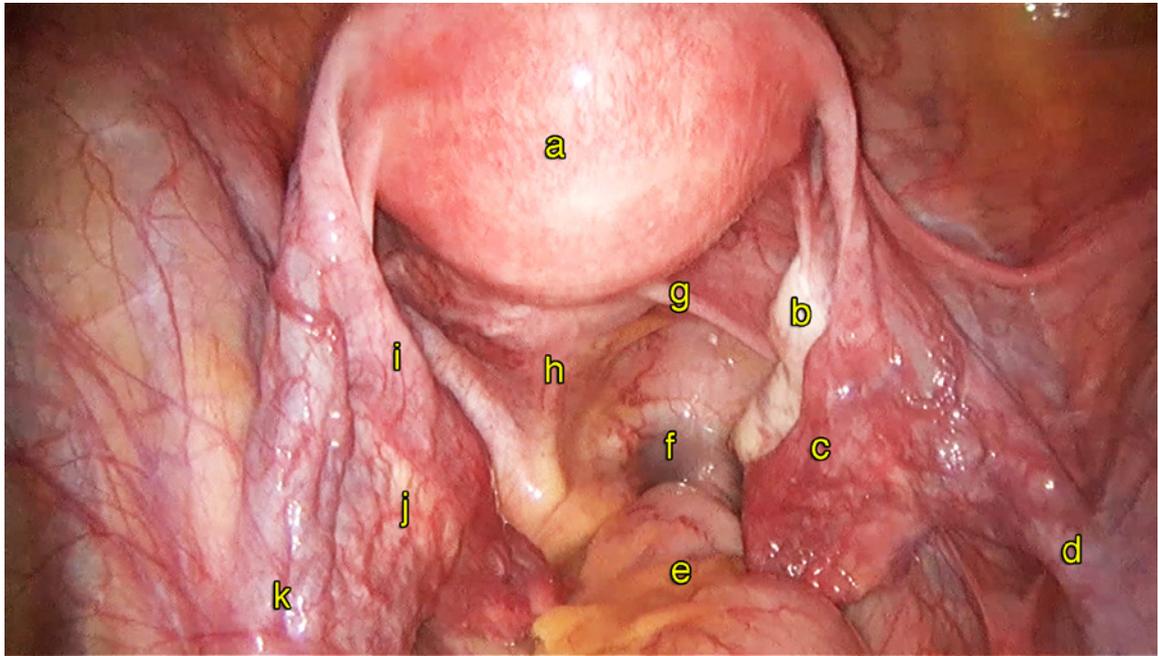


Figure 1.6 Laparoscopic view of a normal pelvis

Figure 1.6 Laparoscopic view of a normal pelvis

- (a) Uterus,
- (b) Right ovary,
- (c) Right fallopian tube,
- (d) Right infundibulopelvic ligament,
- (e) Rectum,
- (f) Pouch of Douglas,
- (g) Right uterosacral ligament,
- (h) Left uterosacral ligament,
- (i) Left fallopian tube,
- (j) Left ovary,
- (k) Left infundibulopelvic ligament.

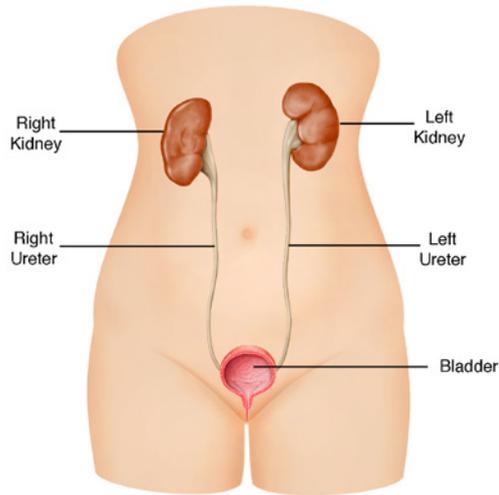


Figure 1.7 Urinary system

Figure 1.7 shows the urinary system. Ureters connect the kidneys to the urinary bladder. Ureters are found behind the peritoneum on the pelvic sidewalls. They run below the ovaries and on the side of the cervix under the uterine arteries before entering the bladder via the ureteric tunnel. Ureters are important structures to identify during gynaecological surgeries.

Scan Me



Watch Video 1.1

Normal female pelvic anatomy.

<https://vimeo.com/149588511>

Summary

It is important to understand the normal female anatomy before proceeding to learn about common gynaecological diseases and laparoscopic surgery for gynaecological diseases.

Chapter 3

Endometriosis

Chapter 3 : Endometriosis

Endometriosis is a disease in which the endometrial tissue, or the lining of the uterus, grows outside the uterus to its surrounding areas and even to distant parts of the body. This displaced endometrial tissue is influenced by female hormonal changes and responds to them in a similar way like the inner lining of the uterus, such as thickening, breaking down and even bleeding during menses. The ongoing process causes inflammation (g) in the surrounding areas and the formation of scar tissue, which usually distorts the anatomy of the surrounding organs and interferes with their functions.

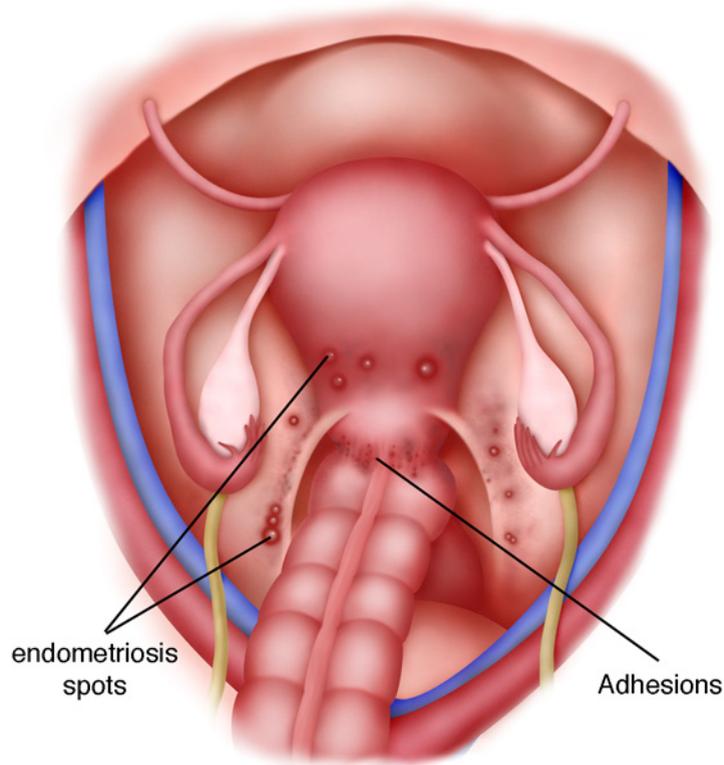


Figure 3.1 Endometriosis on the uterus and uterosacral ligaments with adhesions of the sigmoid colon to the uterus

Endometriosis is highly prevalent and can be found anywhere in the body. The most common sites are the ovaries, the fallopian tubes, the pelvic sidewall, the uterosacral ligaments (g), the Pouch of Douglas (g) and the rectovaginal septum (g). Other less common sites are on the Caesarian section, laparoscopy or laparotomy scars, the bladder, bowel, intestines, colon, appendix, and rectum. In rare cases, endometriosis can invade the vagina, bladder, skin, lung, spine and even the brain.

Types of lesions

There are different types of lesions of endometriosis

1) Peritoneal endometriosis

Endometriotic lesions are seen on the peritoneal surface. It can be seen as many different lesions.

a) Black or bluish lesions

This is the most common type of lesion recognised at laparoscopy



Figure 3.2 Black and bluish lesions of endometriosis

b) White lesions

White opacification of the peritoneum that looks like peritoneal scarring or patches. Some lesions will look yellowish brown while others appear as circular peritoneal defects.

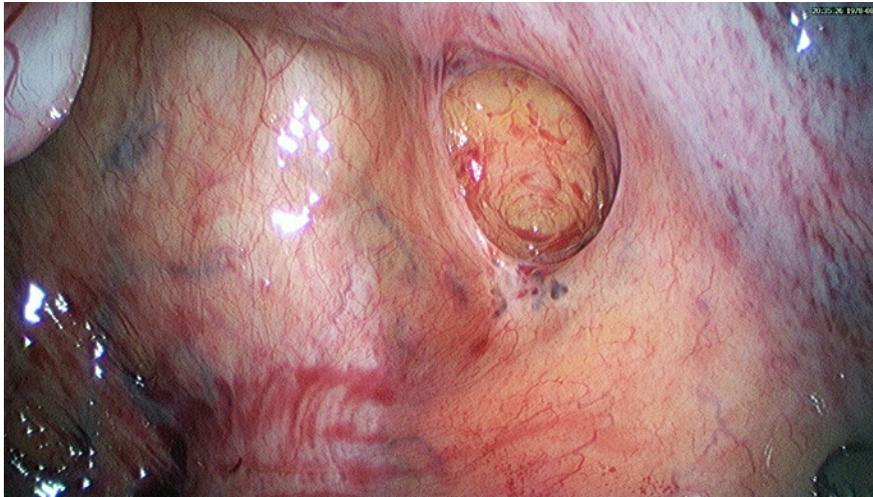


Figure 3.3
Peritoneal defect seen behind the left uterosacral ligament

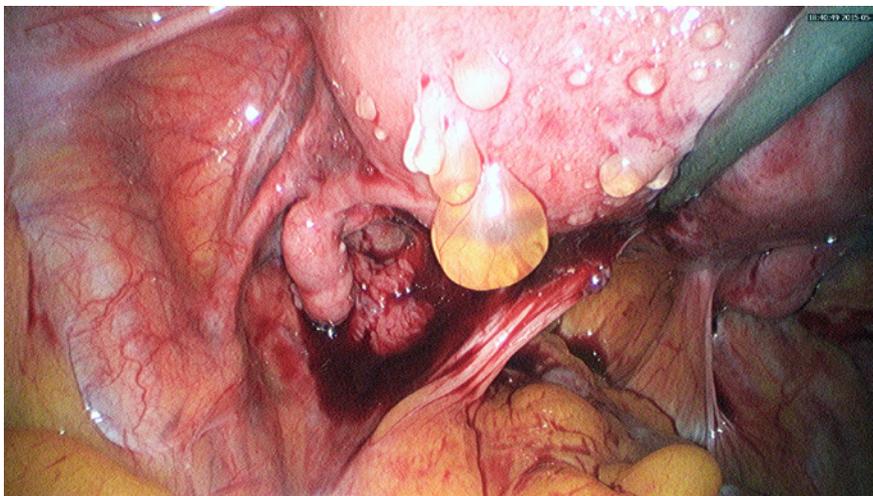


Figure 3.4 Yellowish endometriosis

c) Non-visible endometriosis

Some endometriotic lesions may not be seen in laparoscopy but only confirmed by biopsy

2. Ovarian Endometrioma

These are cysts seen in the ovaries. Their size may range from a few millimeters to several centimeters

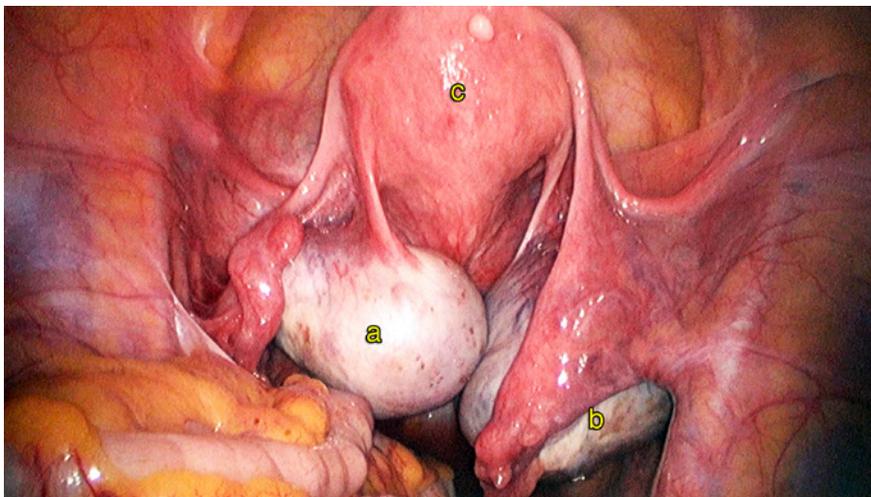


Figure 3.5 Bilateral endometrioma (a) left endometrioma, (b) right endometrioma (c) uterus

3. Rectovaginal Endometriosis

This type of endometriosis obliterates the Pouch of Douglas

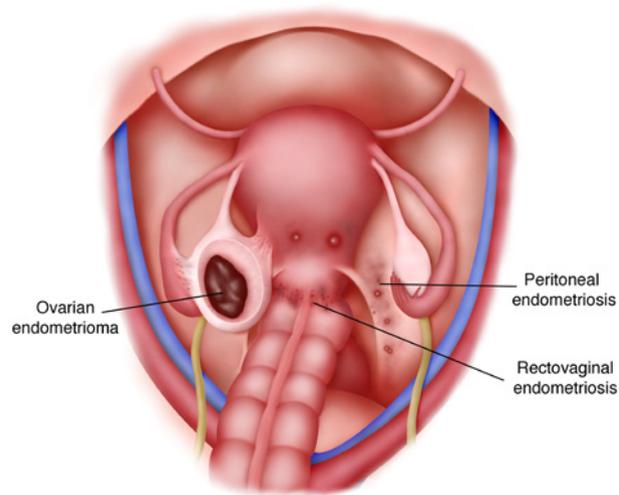


Figure 3.6 Endometrioma, rectovaginal endometriosis and peritoneal endometriosis

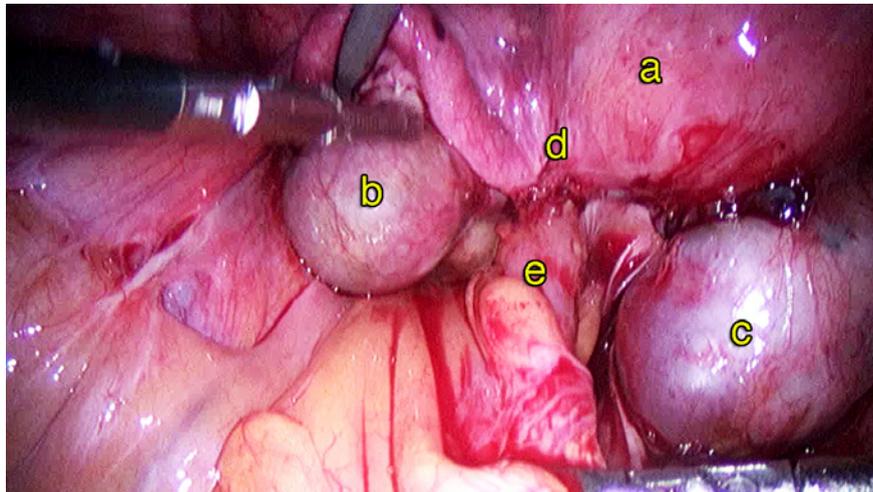


Figure 3.7 rectovaginal endometriosis
(a) uterus, (b) left endometrioma, (c) right endometrioma,
(d) rectovaginal endometriosis, (e) rectum

Cause

There is no accurate explanation as to what causes endometriosis. Many theories have been formed to explain the origin of the disease. One of the most popular and widely believed theories is Sampson's Theory of Retrograde Menstruation, postulated by Dr. John Sampson in the 1920's. According to the theory, during menstruation each month, a certain amount of menstrual fluid (consisting of blood, endometrial tissue, etc.) in the uterus is forced backwards through the fallopian tube into the abdominal cavity. The body usually responds to this kind of spilling by reabsorbing the menstrual fluid back into the circulatory system. However, in some women, possibly due to an immune system dysfunction, the fluid (particularly the endometrial tissue) is not reabsorbed but instead implants itself and grows on the pelvic and abdominal organs as endometriosis.

Signs and Symptoms

1) Pelvic pain

Most women with endometriosis experience severe pelvic pain, lower back pain and cramps before and during menstruation. This is called dysmenorrhea. The pain is typically described as aggravating as the menstruation progresses (e.g. the pain on day 4 of the menses is worse than that on day 1). Some women may also experience intense pain around the time of ovulation. There may be other signs that do not correlate with the menstrual cycle such as dyspareunia, (pain during intercourse), and dysuria (painful urination). For dysuria, blood may be occasionally seen in the urine.

2) Heavy or irregular vaginal bleeding

Women with endometriosis may experience excessive menstrual bleeding (menorrhagia) or bleeding between periods (menometrorrhagia).

3) Infertility

Some women with endometriosis may experience little or no pain at all but are unable to conceive and are usually first diagnosed with endometriosis while seeking treatment for infertility. These are usually cases where the formation of scar tissue (adhesions) due to endometriosis, has somehow distorted the reproductive organs and therefore results in inability to conceive.

4) Painful bowel movements

Some women may experience bowel pain followed by abdominal bloating, constipation, or diarrhoea. The pain may intensify during menstruation.

5) Rectal bleeding during menstruation.



Figure 3.8 Ultrasound picture showing two bilateral endometriomas

Diagnosis

There are no specific tests to assess whether a woman has endometriosis. Exploring a patient's medical history may give the doctor some clue to the presence of this disease, and it is usually corroborated by a pelvic examination. The pelvic examination may reveal nodularity in the Pouch of Douglas; uterine enlargement or irregularity; pelvic masses or pelvic tenderness. In cases of ovarian endometrioma (chocolate cyst), the ultrasound can detect ovarian cysts that appear in the form of black bubbles. Sometimes, the doctor may order a CA-125 test for the patient as it has been suggested that women with endometriosis are likely to have an elevated level of CA-125 (a cancer antigen) in their blood (see chapter 14). In any case, it is possible for endometriosis to be mistaken for other gynecological conditions that have similar symptoms and vice versa. The only reliable way to confirm and verify the suspected diagnosis of endometriosis is through laparoscopy.

Treatment Options

Due to the fact that the exact cause of endometriosis remains unknown, there is currently no absolute cure for this disease. There are, however, several treatment options that aim to relieve the pain of endometriosis and reduce its growth.

They are:

- a) Pain medication
- b) Surgery
- c) Hormone therapy

a) Pain medication

Some women may experience pain for a short duration. For these patients, painkillers may be sufficient to relieve their symptoms. The types of painkillers administered range from simple analgesics such as paracetamol and aspirin, as well as nonsteroidal anti-inflammatory drugs (NSAIDs) for example Ponstan® and Syn-Flex®; to narcotic analgesic (drugs that are similar to morphine).

b) Surgery

Surgery is the main treatment option for women with endometriosis. Laparoscopic surgery can be performed to diagnose as well as, treat endometriosis at the same time. The aim of surgery is to diagnose the endometriosis as well as remove as much of the diseased areas as possible.

It is important to do all the necessary investigations to determine the severity of the disease prior to the surgery. The patient should discuss with her gynaecologist the extent of surgery that needs to be performed. One must understand that the more extensive the surgery, the greater the risk of complications. Success of the surgery depends on the skill of the surgeon. An experienced laparoscopic surgeon will be able to excise all the endometriotic lesions in a single surgery. On rare occasions, a laparotomy may be necessary to excise extensive endometriosis.



Case 3.1 : Spontaneous pregnancy immediately after laparoscopic cystectomy for an endometrioma

SSP, a 29 year old lady who had been married for 1 year, came to see me in June 2014 for her inability to conceive. She was asymptomatic. Examination and ultrasound showed 2 right clear cysts measuring 4.22 x 6.66 cm and 3.09 x 3.76 cm and there were 2 left endometriomas measuring 2.05 x 1.89 cm and 1.75 x 2.25 cm. She underwent a laparoscopic cystectomy. Postoperatively, she was well. She was encouraged to conceive without any delay. She missed her menses in December and conceived spontaneously.

Scan Me



Watch Video 25.2

Laparoscopic cystectomy for endometrioma and ovarian cysts

<http://vimeo.com/149998620>

Discussion

Endometriosis and endometrioma cause infertility. Laparoscopic surgical removal of endometriosis and endometrioma, if performed well, can result in spontaneous pregnancy.

c) Hormone therapy

Endometriosis is known to be exacerbated by the hormone oestrogen. Oestrogen is produced by the growing oocytes in the ovaries. Whenever there is menstruation the endometriotic lesion will also bleed, causing pain and the formation of adhesions.

Therefore, one way to suppress endometriosis growth and relieve its symptoms, is to lower oestrogen levels by preventing menstruation.

Hormonal therapies are usually given after laparoscopic surgery.

Some of the therapies available are:

- i) Gonadotropin-releasing hormone (GnRH) agonist
- ii) Combined oral contraceptive pills
- iii) Progestogens
- iv) Danazol
- v) Dimetrioise
- vi) Mirena® coil
- vii) Aromatase inhibitors

i) Gonadotrophin - Releasing hormone (GnRH) agonist

Ovulation is controlled by 2 hormones that are produced by the pituitary gland.

The pituitary gland is located in the brain. Above the pituitary gland is the hypothalamus. The hypothalamus produces a hormone called the Gonadotrophin Releasing Hormone which stimulates the pituitary gland to produce FSH and LH. The FSH and LH stimulate the oocytes or eggs in the ovaries to grow and the developing oocytes will produce oestrogen. Gonadotrophin Releasing Hormone agonist will block the stimulation of the pituitary gland by the gonadotrophin releasing hormone. This will cause the pituitary gland to stop producing any FSH and LH thus preventing the growth of the oocytes in the ovaries. As no oocytes are growing, oestrogen production will cease. The patient will stop menstruating. She will be in a menopausal state called pseudomenopause. GnRH agonist are given in either monthly or 3 monthly injections.

Disadvantage of GnRH agonist

The side effects of GnRH agonist are:

- a) Menopausal symptoms such as hot flushes, sweating, dry vagina, mood swings
- b) Osteoporosis – Thinning of the bones called osteoporosis can occur especially if the injections are given for a duration exceeding 9 months.
- c) These injections are also expensive.

Advantages of GnRH analogues

GnRH agonist is an effective treatment in all women. Menstruation will cease. Since it is a monthly or 3 monthly injection there is also no need to remember to take tablets everyday.

ii) Oral Contraceptive pills (OCP)

The oral contraceptive (OCP) pill contains low doses of oestrogen and progesterone. It works by preventing ovulation and so prevents the ovaries from producing oestrogen. Each pack of oral contraceptive pills contain 21 tablets of active pills. Oral contraceptive pills are usually taken for 3 weeks with a 1 week break to induce menstruation. However 3 packs can be taken continuously for 9 weeks followed by a 1-week break. In this way the number of menstruation cycles in a year can be reduced from 12 to 4.

Oral contraceptive pills may be prescribed immediately after a laparoscopic surgery or after GnRH agonist treatment. Since oral contraceptive pills are cheap and with minimal side effects, they can be taken for many years until the patient is ready to conceive.

The advantages of OCP's

The advantages of OCP's are that they are cheap with less side effects and can be taken for a long duration of time.

The disadvantages of OCP's

A tablet has to be taken everyday and it may cause irregular breakthrough bleeding while being taken everyday.



Case 3.2 : Successful spontaneous pregnancy after taking Oral Contraceptive Pills to decrease the recurrence rate of endometrioma

GRR saw me in July 2009 for a problem of dysmenorrhea. She was 36 years old and was still single. Examination and ultrasound showed a fibroid measuring 4.48 x 5.91cm on the fundus of the uterus and a left ovarian cyst resembling endometrioma measuring 5.72 x 4.29 cm. She underwent a laparoscopic cystectomy and myomectomy in October 2009. Postoperatively, she received 3, monthly doses of GnRH agonist injections. She was on regular follow up after that and in December 2010, a small uterine fibroid measuring 1.85 x 1.84 cm was noted. She was advised to take oral contraceptive pills (OCPs) continuously for 3 months with a 1-week break. She took the OCPs continuously (3 months continuously with a 1 week break in between) until she got married in March 2014. The fibroid remained small and there was no recurrence of endometrioma. She spontaneously conceived in November 2014 at the age of 41 yrs.

Discussion

Patients who have endometriosis and are not keen to conceive should receive treatment to prevent the recurrence of the disease. The cheapest and most convenient mode of treatment is Oral Contraceptive Pills taken continuously. This will decrease the number of menses in a year. As endometriosis is dependent on menstrual bleeding, less bleeding during menstruation will reduce the chances of recurrence of the disease.

iii) Progestogens

Progestogens are synthetic progesterone. They are given to prevent ovulation. Progestogens are usually given continuously. There are many types of progestogens available in the market.

An injectable progestogen available in the market is Depoprovera® (medroxy-progesterone acetate). This is a 3 monthly injection that prevents ovulation. The advantage of Depoprovera® is that it is a 3 monthly injection and the patient need not remember taking tablets. The disadvantage is that it causes intermittent bleeding. It may not be suitable for women intending to conceive in the future because it takes a long time for a women to start ovulating after cessation of the injection. It can also lead to osteoporosis.

The newest oral progestagen in the market is dienogest called Visanne®. One of the side effects of oral progestogen such as dienogest is that it can cause irregular per vaginal bleeding. It is usually recommended for 6 to 9 months. Due to the absence of oestrogen, continuous progesterone therapy may lead to osteoporosis.

iv) Danazol and Gestrinone

Danazol and Gestrinone suppress endometriosis by making oestrogen levels lower and androgens (testosterone) (g) levels higher. They were commonly used in the 1980's but are rarely used now. Danazol is usually given in high doses of 600 to 800mg a day for 6 to 12 months. Gestrinone is given at doses of 2.5 to 5mg twice a week for the same duration.

The side effects of danazol are:

Due to high androgen levels the side effects are namely weight gain, bigger muscles, oily skin, increased body hair and cramps.

Due to low oestrogen levels the side effects are namely low libido, hot flushes and smaller breasts.

v) Mirena®

Mirena® is an intrauterine contraceptive device (IUCD) that contains a progesterone called levonogestrel. The uterus will absorb the progesterone causing a decrease in menstrual blood flow. When there is less menstrual blood flow, bleeding from the endometriosis will also decrease thus, suppressing the growth of the endometriosis. The Mirena can be left in the uterus for 5 years. The advantage of Mirena® is that the patient need not take daily medication. The amount of progesterone required to suppress menstruation is also very low because it is directly absorbed into the uterus. As only a small amount of progesterone reaches the rest of the body, the side effects of progesterone is minimal. The disadvantage of Mirena is that it may cause annoying irregular and prolonged spotting in some women. It is also not suitable for women who have not had sexual intercourse.

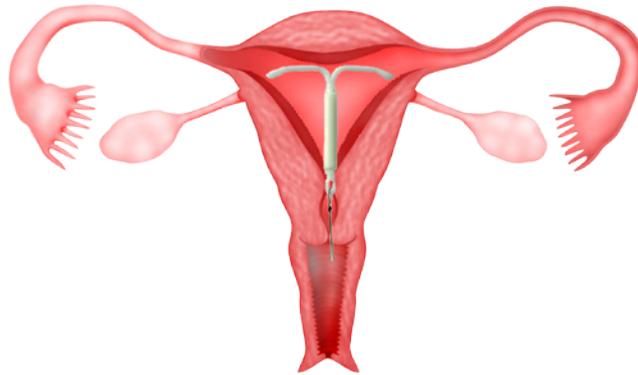


Figure 3.9 Mirena® Intrauterine contraceptive Device

vi) Aromatase inhibitors

Aromatase is the hormone that converts testosterone to oestrogen. Aromatase inhibitors such as anastrozole and letrozole are drugs which inhibit the hormone aromatase. This will lead to a decrease in oestrogen production especially in the endometriotic lesions. The side effect of this medication is that it may lead to osteoporosis or bone thinning, tiredness and menopausal symptoms.

The choice of treatment for endometriosis depends on the patient's age and individual needs, such as the desire to conceive and the severity of the symptoms. Some doctors prescribe hormonal treatment just based on the suspicion of endometriosis by history, examination and ultrasound. This is not recommended because most of the treatments have side effects and it is better to perform a laparoscopic surgery to confirm the disease before commencing medical treatment.

Can endometriosis recur after surgery?

Endometriosis can recur after surgery and medical treatment. The chances of recurrence are higher if an inexperienced surgeon performs the surgery and if most of the endometriotic lesions are not excised. If the patient is not contemplating pregnancy immediately after the surgery, continuing medical therapy is essential to suppress any endometriotic lesion that has not been excised. The cheapest treatment is Oral Contraceptive Pills.



Fact 3.1

Use of oral contraceptive pills in young unmarried women

Many young unmarried girls/women and their parents are worried when oral contraceptive pills (OCPs) are prescribed for endometriosis. Many have this fear that taking OCPs will lead to the inability to conceive in the future. This concept is wrong. The aim of prescribing OCPs in women who have undergone laparoscopic surgery for endometriosis, is to reduce the chances of a recurrence of the endometriosis. Endometriosis leads to infertility and by preventing its recurrence; OCPs actually increase the chances of pregnancy in the future

Summary

Endometriosis is a common gynaecological problem

It usually presents with pelvic pain especially during menses and during sexual intercourse. It also causes infertility

It can be suspected by taking a good medical history, performing a pelvic examination and a pelvic ultrasound scan.

Laparoscopy is the gold standard for the diagnosis and treatment of endometriosis.

Laparoscopic surgery for endometriosis can be difficult because endometriosis frequently involves vital structures such as the bowel, bladder and ureter. It is important for laparoscopic surgery to be performed by an experienced laparoscopic surgeon.

There are many medical treatments that can be prescribed after laparoscopic surgery to prevent the recurrence of the disease.

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Watch Video 3.1

Endometriosis

<https://vimeo.com/149606168>

Chapter 15

Overview of laparoscopic surgery in gynaecology

Chapter 15: Overview of Laparoscopic Surgery in Gynaecology

Generally, there are two ways of performing gynaecological surgery: laparotomy and laparoscopy. Laparotomy is the conventional open surgery, where an incision of several inches long is required. Two of the most common incisions for laparotomy in gynaecology are the lower midline incision, a vertical incision below the umbilicus; and the Pfannenstiel incision, a transverse incision just above the pubis.



Figure 15.1. Low midline incision



Figure 15.2. Transverse Incision
(Pfannenstiel incision)



Figure 15.3. Incisions for laparoscopic surgery

Laparoscopy, on the other hand, is performed through several small “keyhole” incisions in the abdomen, where instruments like a laparoscope (a thin telescope-like instrument), scissors and graspers are inserted to perform the surgery.

When is laparoscopy needed?

Laparoscopy is performed either for diagnostic or operative purposes. Diagnostic laparoscopy is a procedure that allows the doctor to directly view the pelvic organs to investigate pelvic pain, infertility, suspected ectopic pregnancy, endometriosis and other diseases. It is usually recommended when the cause or symptom of a disease cannot be confirmed via other diagnostic tests, such as ordinary enquiring about the symptoms, physical examination, ultrasound or radiological (X-ray) examinations. Operative laparoscopy allows a doctor to perform gynaecological surgeries in a minimally invasive manner.

How is Laparoscopic Surgery Performed?

Laparoscopic surgery is performed under general anaesthesia. Prior to the laparoscopy, a tube (catheter) may be inserted into the bladder to drain urine during the surgery. A 10 mm incision is made in the umbilicus and a Veress needle is inserted into the abdomen. The Veress needle is then connected to a carbon dioxide (CO₂) insufflation tubing. Gas is passed into the abdominal cavity to distend the abdomen, so as to allow the doctor to see the pelvic organs and to perform the surgery easily. A 10 mm trocar (g) is placed in the umbilicus, followed by several 5 mm trocars, which are placed at the lower abdomen.

A laparoscope attached to a video camera, is passed through the 10 mm port. Video images captured by the video camera are immediately displayed on a video monitor. A powerful light source is channeled into the abdominal cavity for the purpose of illumination. Instruments like laparoscopic scissors and graspers are inserted through the other 5mm ports to perform the surgery. At the end of the surgery, all the instruments are removed and the CO₂ gas is released. The incisions are either sutured or taped. In some patients, a drainage tube is left in the pelvis to drain out any fluid that may accumulate after the surgery.

Figure 15.4 series of photos showing how laparoscopic surgery is performed. (a) A 10mm incision made in the umbilicus (b) Veress needle placed through this incision (c) Trocar inserted into this umbilical incision and laparoscope placed in the trocar (d) 3 other 5mm trocars are inserted (e) this is how the wounds look after the surgery



Scan Me

Watch Video 15.1

Laparoscopic Surgery in
Gynaecology an overview

<https://vimeo.com/149733613>

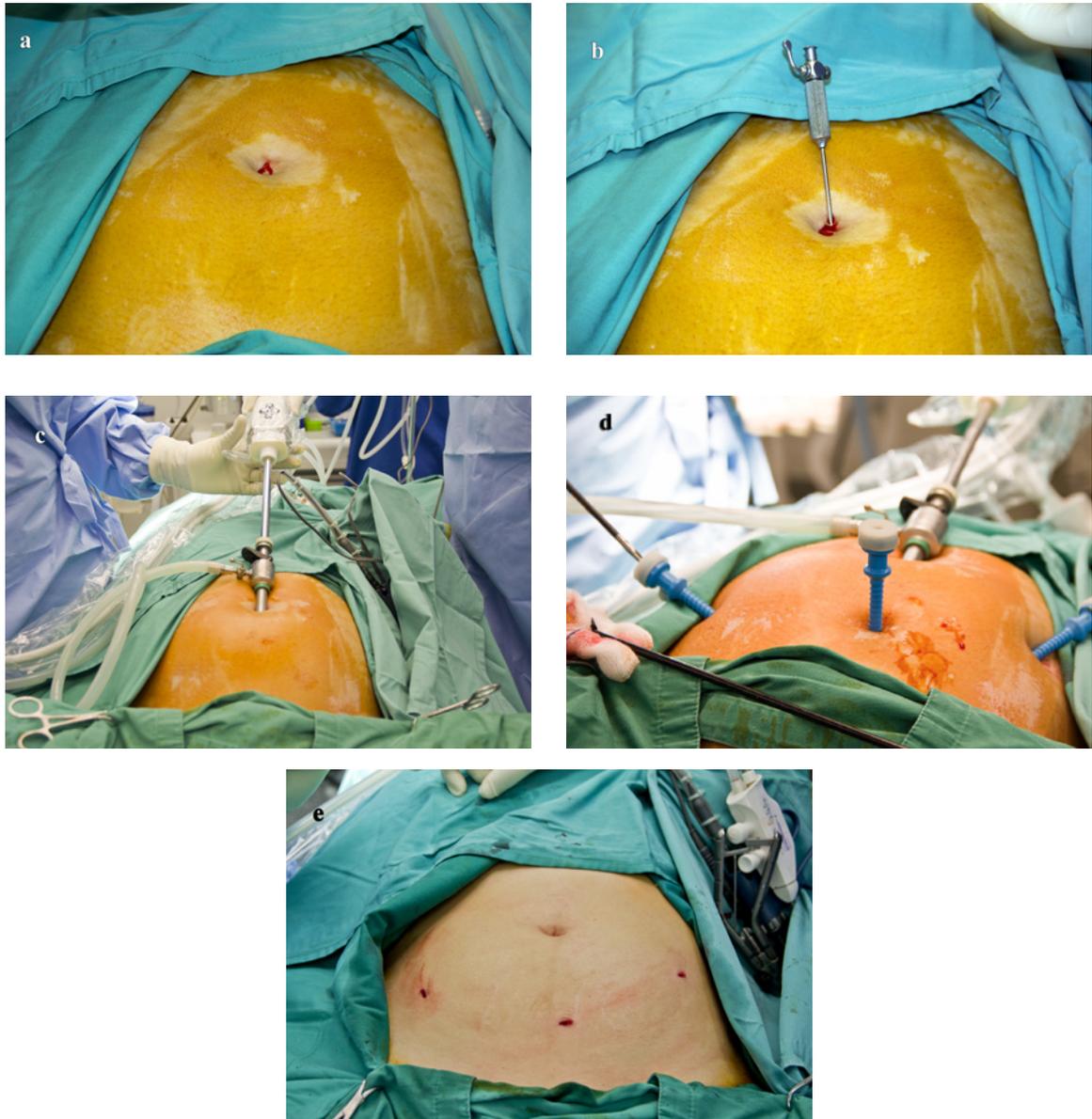


Figure 15.4

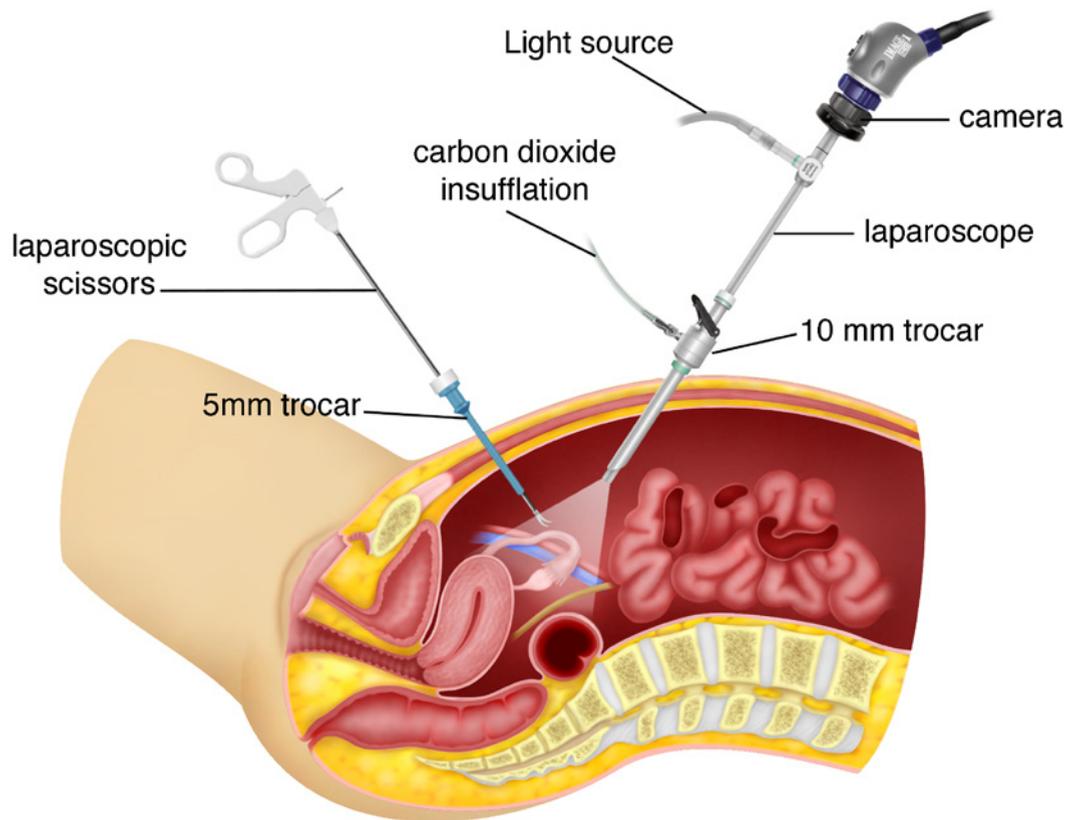


Figure15.5 How is laparoscopic surgery performed

Advantages of Laparoscopic Surgery

- 1) Less postoperative pain. In laparotomy, a large incision is usually made and layers of the abdomen are separated in order to access the abdominal and pelvic organs. These layers are then sutured one by one on closure of the abdomen. In laparoscopic surgery, however, only small punctures (keyholes) are made. Thus, postoperative pain as a result of wound healing is far less in laparoscopy compared to laparotomy.
- 2) Quicker return of bowel function. Due to the fact that the bowel is manipulated less in laparoscopy, the return of bowel function is faster.
- 3) Quicker return to solid food.
- 4) Quicker return to daily activities.
- 5) Reduced chance of scar formation in the abdomen. In laparoscopy only fine instruments are used to perform the surgery whereas in laparotomy, the surgeon places his hands into the abdomen and pelvis to perform the surgery. Therefore, laparotomy has a higher likelihood of developing adhesions (scar tissue in the abdomen) than laparoscopy. This is especially important for patients who want to conceive because adhesions in the area of fallopian tubes and ovaries may lead to difficulty in conceiving.
- 6) Reduced infection rate because the small incisions do not expose the internal organs to air in the operating room.
- 7) Reduced bleeding during surgery.
- 9) Smaller scars on the skin.
- 10) Video magnification offers the surgeon a better view of the diseased organs and its surrounding vessels and nerves.

Possible Postoperative Effects of Laparoscopic Surgery

- 1) Aching of muscles.
- 2) Discomfort and tiredness for up to five days.
- 3) Increased urge to urinate because the CO₂ insufflated during the surgery can apply pressure on the bladder.
- 4) Nausea
- 5) Pain at the incision sites. Medication is usually prescribed to alleviate this.
- 6) Period-like pain and a few days of vaginal bleeding or discharge.
- 7) Shoulder pain for a few days because the CO₂ insufflated can irritate the diaphragm, which shares the same nerves as the shoulder (predominantly the phrenic nerve).

Gynaecological surgeries that can be performed by Laparoscopy

Tubal ligation

- 1) Tubal ligation
- 2) Ectopic pregnancy
- 3) Investigation of infertility
- 4) Removal of uterus (hysterectomy)
- 5) Removal of fibroids (myomectomy)
- 6) Endometriosis surgery
- 7) Prolapse of the uterus
- 8) Removal of the ovarian cysts
- 9) Cancer of the endometrium
- 10) Cancer of the cervix

Conditions that may be difficult to perform Laparoscopic Surgery

Patients with the following conditions may not be suitable to undergo laparoscopic surgery:

- 1) History of bleeding. Laparoscopic surgery may not be suitable for patients who suffer from bleeding disorders, as it may increase their risk of profuse bleeding during the surgery.
- 2) History of laparotomy. Patients who previously had a laparotomy may not be suitable for laparoscopic surgery because laparotomy can lead to scarring which may cause the pelvic and abdominal organs to adhere to the abdominal wall. Separation of these scar tissues may lead to complications. However, an experienced surgeon can still perform laparoscopic surgery on patients with such condition.
- 3) Pregnancy. Due to the enlarged uterus, inadvertent uterine injuries from trocar placement may occur. The other possible problem is that, due to CO₂ insufflation, acid-base imbalance from CO₂ absorption may lead to hypercarbia (excessive carbon dioxide in the bloodstream), which may compromise the foetus. However, with adequate precautions, laparoscopic surgery can still be performed on pregnant women especially during the early stages of pregnancy.
- 4) Large uterus. Uterus may be enlarged because of fibroids or adenomyosis. When the uterus is large, there may be less space for the surgeon to perform a laparoscopic surgery. It may be difficult for a surgeon to visualise all the structures via a laparoscope.

All in all, a doctor's own skills and experience are crucial in determining whether he can perform the surgery laparoscopically. Doctors, who have only received basic laparoscopy training, could not perform more advanced and complicated laparoscopic surgeries.



Fact 15.1

Why many gynaecologist do not perform laparoscopic surgery?

Traditionally, all gynaecologist are taught to perform surgery by laparotomy. During a laparotomy, the surgeon looks directly at the area he is operating on and uses his hands to perform the surgery. It is easy for a gynaecologist to learn the art of performing surgery by laparotomy. However, laparoscopic surgery is performed by looking at a monitor. The images transmitted on the monitor are in 2 dimension (3D cameras are now available). Surgery is also performed using fine instruments passed through a trocar. As such, he has to learn to coordinate his hands to what he sees on the monitor (hand-eye coordination). It takes a longer time to learn laparoscopic surgery and the learning curve is steeper than in laparotomy. Due to time constrain, many gynaecologists are not willing to master the skills required to perform good laparoscopic surgery because it is time consuming.

Summary

- 1) In laparoscopic surgery, 1 to 4 small incisions are made to perform the surgery.
- 2) Many gynaecological surgeries can be performed by laparoscopy.
- 3) There are many advantages of laparoscopic surgery compared to surgery by laparotomy.
- 4) The type of surgery that can be performed by laparoscopy will depend on the skill of the surgeon

Chapter 33

Laparoscopic Hysterectomy (removal of the uterus)

Chapter 33 : Laparoscopic Hysterectomy (removal of the uterus)

What is Laparoscopic Hysterectomy?

Hysterectomy is the surgical removal of all or part of the uterus. There are many reasons for removal of the uterus. These include cancer (of the uterus, cervix, ovaries), fibroids, endometriosis, heavy and prolonged menses and prolapse of the uterus. Traditionally, hysterectomy is performed either via an open surgery (laparotomy) or via the vagina (Vaginal Hysterectomy). In Laparoscopic Hysterectomy, the surgery is performed with the assistance of a laparoscope and with two or three other small incisions. The technique of how Laparoscopy is performed is described in Chapter 4.

What are types of Laparoscopic Hysterectomy?

There are several types of laparoscopic hysterectomy that can be performed. They are:

1) Total laparoscopic hysterectomy

In this technique, the whole procedure is performed laparoscopically.

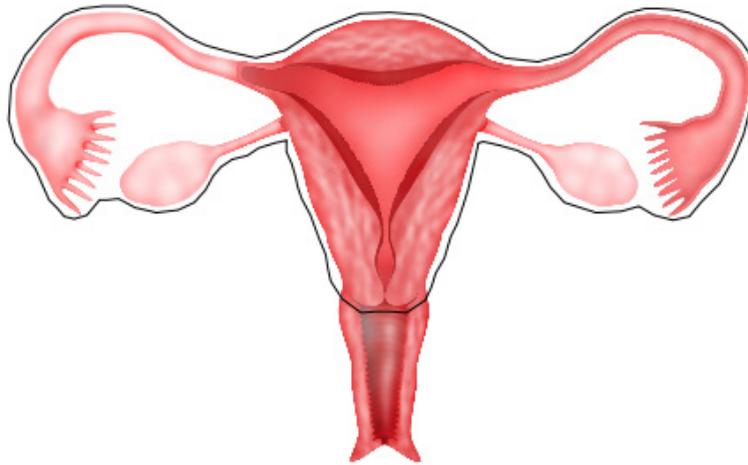


Figure 33.1 Total hysterectomy and bilateral salpingoophorectomy where the uterus, cervix and both ovaries are removed

2) Laparoscopic Assisted Vaginal Hysterectomy

In this technique, parts of the surgery are performed laparoscopically while others are performed vaginally, like in a Vaginal Hysterectomy. This is a much easier surgery to perform especially by surgeons who, may have not yet acquired advanced surgical skills such as laparoscopic suturing.

3) Laparoscopic Subtotal Hysterectomy

In this technique, the body of the uterus is removed, but the cervix is retained. Some surgeons believe that retaining the cervix will retain the pelvic support thus reducing the incidence of future prolapse. Retaining the cervix is also believed to retain normal sexual function. However, the disadvantage of leaving the cervix behind is the worry that diseases of the cervix such as cancer of the cervix may occur in the future. Diseases such as endometriosis and fibroid may grow from the cervix as well.

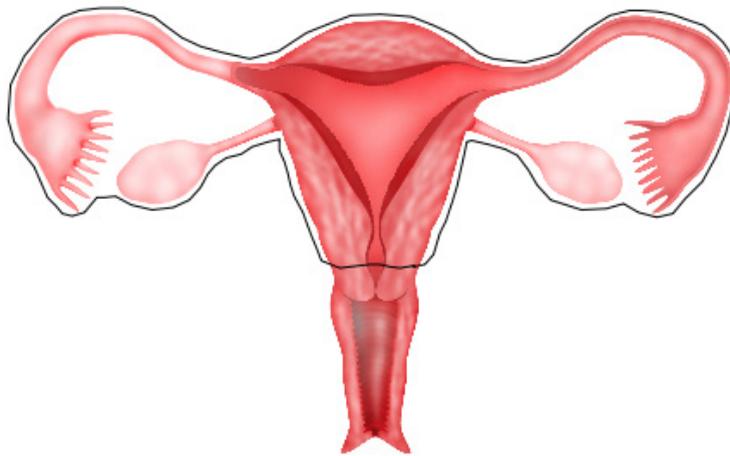


Figure 33.2 Subtotal Hysterectomy and Bilateral Salpingoophorectomy : the body of the uterus and both ovaries are removed. The cervix is retained

4) Single Incision Laparoscopic Hysterectomy

In this technique, the surgery is performed via just one incision of about 2.5 cm in the umbilicus. All the procedures in performing the hysterectomy (as described below) are done through this incision. It is a more skillful surgery and is described in detail in Chapter 19.

Scan Me



Video 19.6

Single Incision Total
Laparoscopic Hysterectomy

<http://vimeo.com/149741719>

How is Laparoscopic Hysterectomy performed?

The technique of how laparoscopic surgery is performed is described in chapter 15. In hysterectomy, the round ligaments are first coagulated (using an electric current to stop any bleeding of tissue) and then cut. The peritoneum overlying the cervix is then cut and the bladder is pushed downwards away from the cervix. If the ovaries are to be removed, the ligament containing the blood supply to the ovaries (infundibulopelvic ligaments) are coagulated and cut. If the ovaries are to be preserved, then the ligament connecting the ovary to the uterus (ovarian ligament) is coagulated and cut. The fallopian tubes are also coagulated and cut and the ovaries are detached from the uterus. The broad ligament (the membranous structure attaching the ovaries to the pelvis) is released. The ascending branches of the uterine arteries are sutured, coagulated and cut. An incision is then made on the vagina and this incision is then extended around the vagina to detach the vagina from the cervix. The uterus is then detached and removed from the pelvis via the vagina. The vaginal vault is then sutured with absorbable sutures.

Scan Me



Video 33.1

Total Laparoscopic Hysterectomy

<http://vimeo.com/150079694>

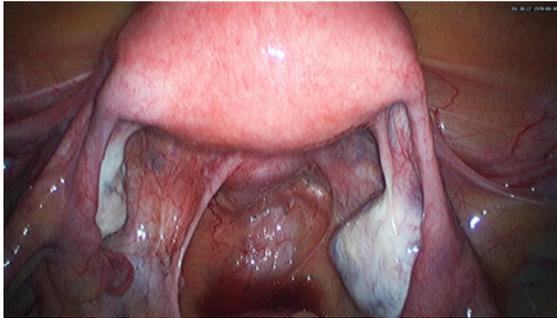


Figure 33.3 Uterus, fallopian tubes and ovaries before a total laparoscopic hysterectomy

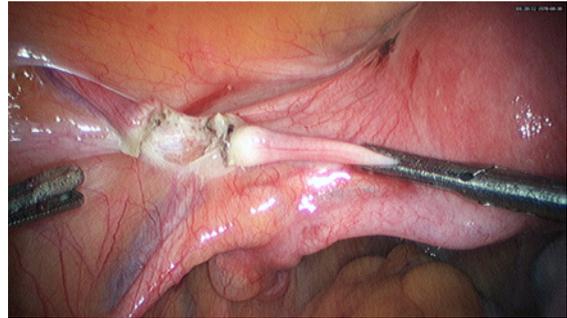


Figure 33.4 The right round ligament is coagulated and cut

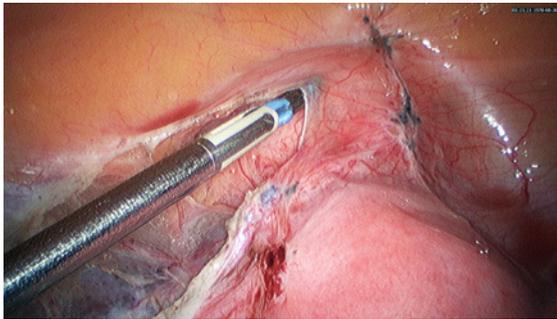


Figure 33.5 The peritoneum overlying the bladder is opened and cut (note the darkish areas are spots of endometriosis)

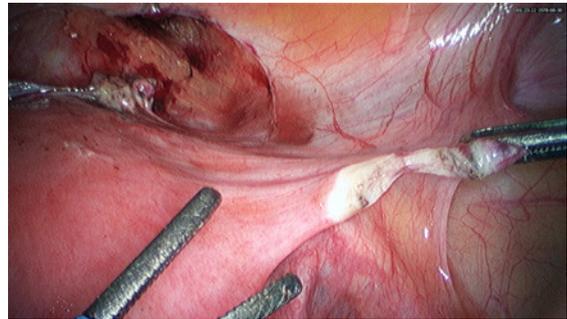


Figure 33.6 The left round ligament is coagulated and cut

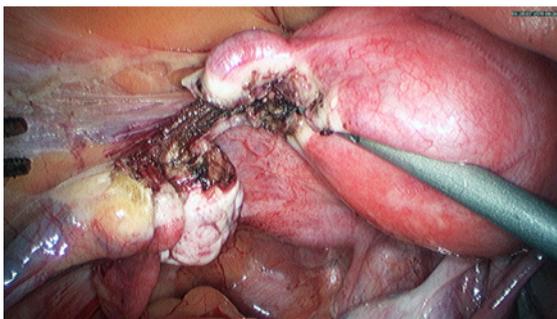


Figure 33.7 the left ovarian ligament and fallopian tube is coagulated and cut

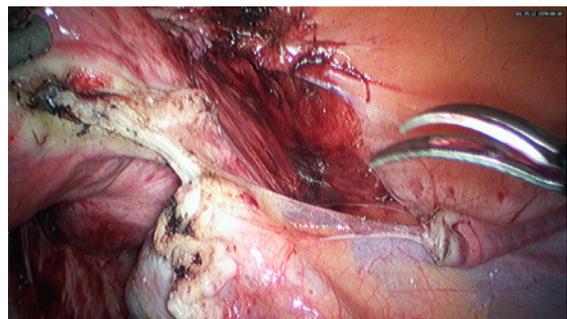


Figure 33.8 The right ovarian ligament and fallopian tube is coagulated and cut

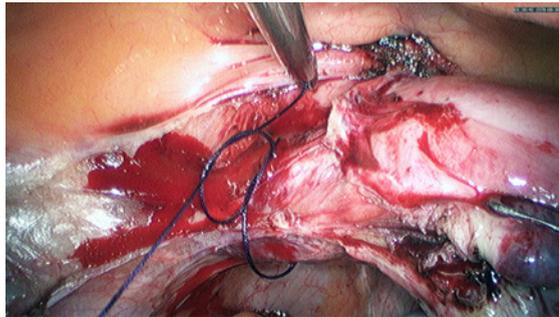


Figure 33.9 Then left ascending branch of the uterine artery is sutured

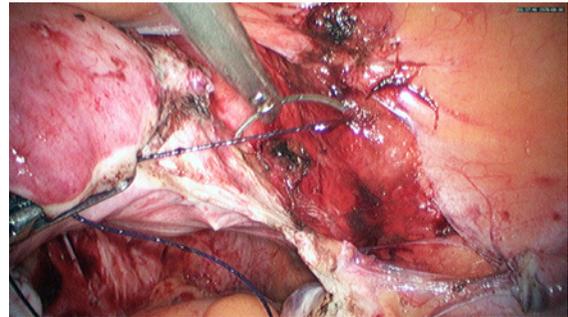


Figure 33.10 The right ascending branch of the uterine artery is sutured



Figure 33.11 The left ascending branch of the uterine artery is coagulated and cut

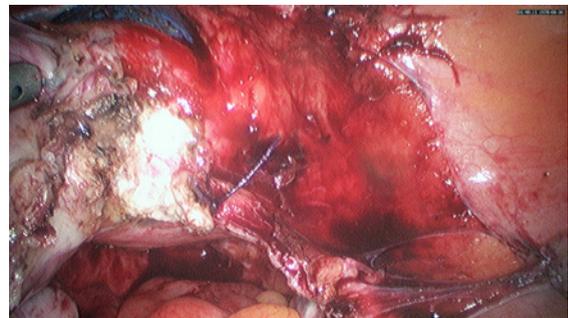


Figure 33.12 The ascending branch of the right uterine artery is coagulated and cut

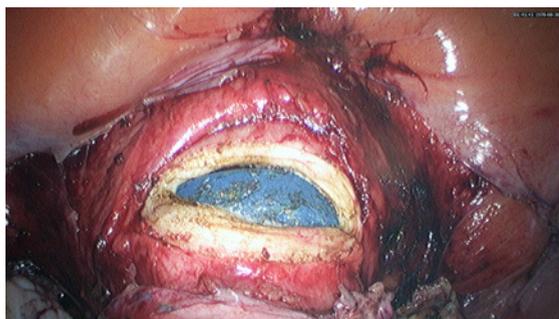


Figure 33.13 The vagina is opened anteriorly on a Koh cup



Figure 33.14 The uterus is detached from the vagina

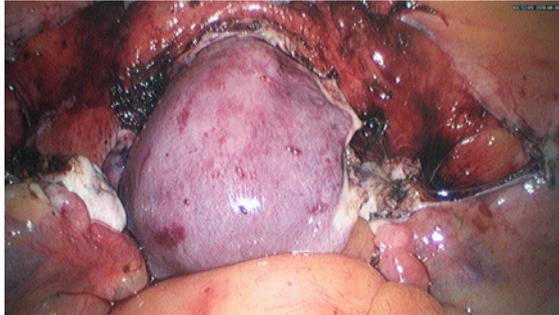


Figure 33.15 the uterus is pushed into the vagina



Figure 33.16 The uterus is removed from the vagina

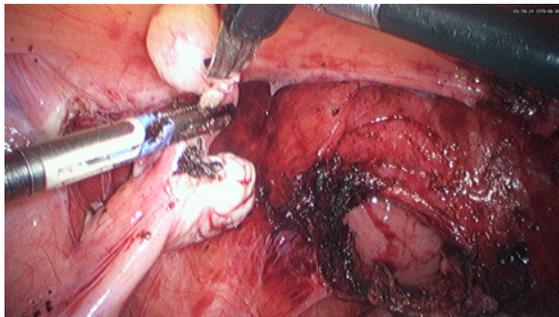


Figure 33.17 The fallopian tubes are removed

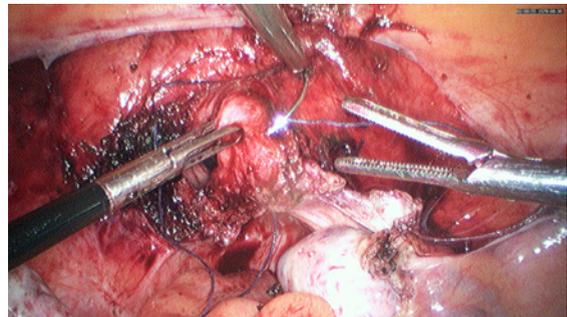


Figure 33.18 the vaginal vault is sutured



Figure 33.19 This is at the end of the surgery when the vaginal vault is closed

What are the advantages of Laparoscopic Hysterectomy?

The advantages of laparoscopic surgery are the same as the advantages described in chapter 15.

What are the dangers of Laparoscopic Hysterectomy?

Laparoscopic Hysterectomy involves the detachment of the uterus from the pelvis. There are certain important structures that are nearby or attached to the uterus that may be accidentally injured during the surgery. These structures include the ureters, bladder and the bowel. If injury is recognized during the surgery, repair can be done. The injury is sometimes only noted after the surgery and a second surgery may be necessary to repair the injured structure such as a ureter.

The Bladder is located in front of (anterior to) the uterus and cervix. Due to diseases such as endometriosis or a previous Caesarean section, the bladder sometimes may be adherent to the uterus. In such situations, injury to the bladder may occur. Repair of the bladder may be necessary either laparoscopically or by a laparotomy.

In diseases such as endometriosis, the bowel may be densely adherent (g) to the uterus, posteriorly. The bowel (rectum and sigmoid) may have to be released from the uterus and cervix before the hysterectomy can be performed. Accidental injury to the bowel may occur and the bowel will have to be repaired. If detected during surgery, the repair may be performed at the same time. However, if the injury is detected postoperatively then a second surgery may be necessary.

Again, the more experienced and skillful the surgeon is, the lesser the chances of developing complications.

Who are the candidates not suitable for Laparoscopic Hysterectomy?

Not all women can benefit from a hysterectomy performed laparoscopically. The ability to perform a laparoscopic hysterectomy will depend on the skill of the surgeon. The more skillful the surgeon, the better his performance in complex laparoscopic cases, laparoscopically. It may be difficult to perform a surgery laparoscopically, in the following situations:

1) Large uterus

A uterus may be enlarged because of fibroids or adenomyosis. When the uterus is large, there may be less space for the surgeon to perform a Laparoscopic Hysterectomy. It may be difficult for a surgeon to visualize all the structures via a laparoscope. Sometimes, a GnRH (g) analogue injection may be given to shrink the fibroid before performing Laparoscopic Hysterectomy.

2) Multiple previous surgeries

Women who have undergone previous multiple open surgeries may have scar tissue (g) (adhesions) formed in the abdomen. These adhesions may cause the bowel to be adherent to each other and the uterus and the abdominal wall. It may be difficult to release these adhesions laparoscopically. Previous open surgeries are not an absolute contraindication for laparoscopic surgery. A skillful surgeon can place a laparoscope in the abdomen to see whether there are adhesions before deciding whether to proceed with the surgery laparoscopically or to convert to a laparotomy. Not all patients who have undergone previous surgeries may have scar tissue in the abdomen.

3) Severe adhesions as a result of endometriosis

Some patients with severe endometriosis may have severe adhesions of the uterus, ovaries and fallopian tubes to the pelvis. In such situations, the surgeon must be very skillful in dissecting away the adherent structures (ureters, bowel or bladder) from the uterus and pelvis before proceeding with the hysterectomy. Injury to these structures may require repair, which is easier to be performed by open surgery than by laparoscopy.



Fact 33.1

Should the ovaries be removed during hysterectomy?

Removal of both ovaries will lead to immediate menopause. Removal of one ovary and retaining the other will not lead to menopause. Women with diseases of the ovaries such as ovarian cyst, ovarian cancer, endometriosis and so on may need one or both ovaries to be removed. In women who do not have any disease of the ovaries, removal of the ovaries is not recommended. In women who are postmenopausal, removal of both the ovaries is controversial. There have been studies suggesting that ovaries produce some useful hormones even in postmenopausal women. . The disadvantage of not removing both the ovaries from a postmenopausal woman is the risk of developing cysts or even ovarian cancer. This risk is very small. That is why it is essential for women who retain one or both ovaries after a hysterectomy to undergo regular transvaginal ultrasound to ensure that there are no cysts in the ovaries.



Fact 33.2

What is the difference between subtotal hysterectomy and total hysterectomy?

In subtotal hysterectomy, only the body of the uterus is removed and the cervix is retained. In total laparoscopic hysterectomy, the body of the uterus and the cervix are removed. Some believe that by retaining the cervix, the pelvic floor structure is intact and so there is a lesser chance of prolapse. There is also a suggestion that if the cervix is retained, sexual function will be better compared to if the cervix is removed. It is important to note that if the cervix is not removed, regular pap smears are a must. Some women may have monthly menstrual spotting from the cervix. There is a small risk of developing diseases such as fibroid and adenomyosis from the cervix.

Summary

Removal of the uterus (hysterectomy) can be performed via the laparoscopic route. The different types of laparoscopic hysterectomy are total laparoscopic hysterectomy, subtotal hysterectomy, laparoscopic assisted vaginal hysterectomy and single incision laparoscopic hysterectomy. Difficult laparoscopic hysterectomies involve women with large uterus, multiple previous surgeries and severe adhesions as a result of endometriosis.

Chapter 36

Overview of hysteroscopy

Chapter 36 : Overview of hysteroscopy

What is Hysteroscopy?

Hysteroscopy is a procedure whereby a narrow telescope (called a hysteroscope) attached to a camera is passed via the cervix into the uterus to visualize the inside of the uterus (endometrial cavity).

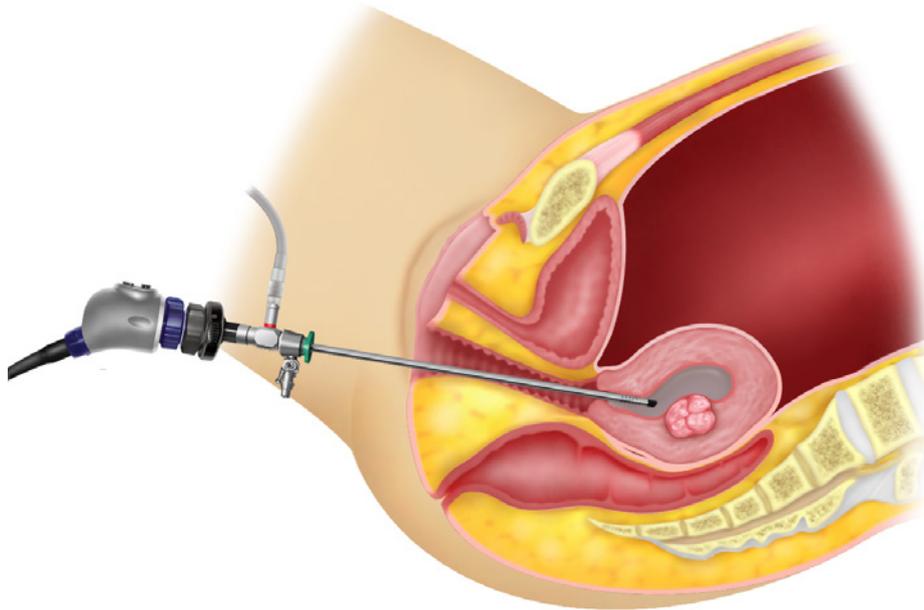


Figure 36.1 Diagnostic Hysteroscopy

Types of hysteroscopy

There are two reasons why hysteroscopy is performed.

- 1) **Diagnostic hysteroscopy** - to make a diagnosis of a symptom.
- 2) **Operative hysteroscopy** - to perform a surgery.

Indications for performing hysteroscopy

The reason for performing hysteroscopy will depend on whether it is for diagnosis or surgery. This is discussed in chapter 37 (diagnostic hysteroscopy) and chapter 38 (operative hysteroscopy).

The best time to perform a hysteroscopy

- 1) Just after menses (before ovulation) – the endometrium is thinnest just after menses and so the cavity can be seen well. This also removes the worry of performing a hysteroscopy during a pregnancy.
- 2) In post menopausal women, hysteroscopy can be performed at anytime
- 3) In patients who have irregular or prolonged bleeding, hormones should be given to stop the bleeding before hysteroscopy is performed. However, if bleeding persists, hysteroscopy should be performed despite the bleeding.

When is hysteroscopy not advisable?

- 1) During menses or per vaginal bleeding - It will be difficult to visualise the endometrial cavity during menses.
- 2) Pregnancy - If pregnancy is suspected hysteroscopy must be avoided because the procedure may injure the foetus.
- 3) Pelvic Inflammatory Disease (PID) - In patients who have PID or are suspected to have PID, hysteroscopy must be avoided to prevent the infection from flaring up.
- 4) Cancer of the cervix - In patients suspected of having cancer of the cervix hysteroscopy should not be done.
- 5) Acute herpes infection
- 6) Heavy vaginal discharge - this may be caused by sexually transmitted disease (eg trichomonas, gonorrhoea, chlamydia). A swab must be taken for culture and treatment must be given before the hysteroscopy.

Complications

Complications can occur during both diagnostic and operative hysteroscopy. Complications can be divided into :

- 1) intraoperative (occurring during the procedure)
- 2) postoperative (occurring after the procedure)

1) Intra-operative Complications

a) Pain

Diagnostic hysteroscopy is usually performed without anaesthesia. The internal Os (g) may be narrow and some pain or discomfort may be felt when the surgeon passes the hysteroscope through the internal Os (see Chapter 1). Some factors that may increase the chances of pain during office hysteroscopy include, nulliparity (patient has never delivered a baby), menopause, history of pelvic inflammatory disease and anxiety.



Figure 36.2 Narrow internal Os seen at diagnostic hysteroscopy

b) Vasovagal crisis

This is a sudden feeling of lightheadedness, nausea and fainting and this is related to pain that may occur when the hysteroscope is passed into the uterine cavity.

c) Perforation of the uterus

Perforation of the uterus may occur while performing hysteroscopy. This usually occurs when the cervical Os (see Chapter 1) is very tight and manipulation can cause perforation. Sometimes it may be due to the abnormal position of the uterus. When the uterus is acutely bent backwards (retroverted and retroflexed (Figure. 36.3)) or acutely bent forward (anteverted and anteflexed) (Figure. 36.4), a perforation may occur. When perforation occurs during a diagnostic hysteroscopy (Figure 36.5, 36.6 and 36.7), the procedure must be stopped and no further action is necessary. The patient will be asked to rest and be observed for a few hours to ensure that there is no internal bleeding. A perforation may also occur during an operative procedure (eg transcervical resection of a fibroid (see chapter 41) or excision of a uterine septum (see chapter 40) If this occurs, a laparoscopy may be necessary to ensure that the perforation has not injured any internal organ (eg bowel or blood vessels) and there is no internal bleeding. The perforation can be sutured laparoscopically.

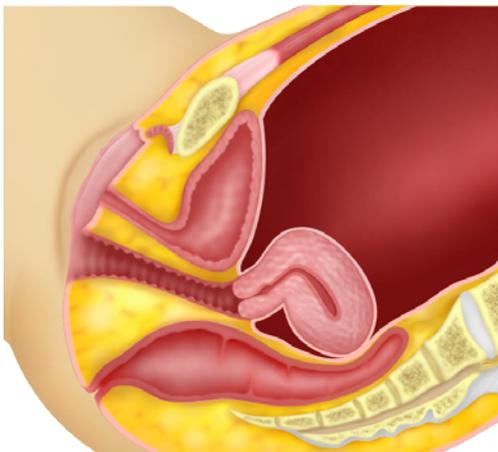


Figure 36.3 Acutely retroverted and retroflexed uterus

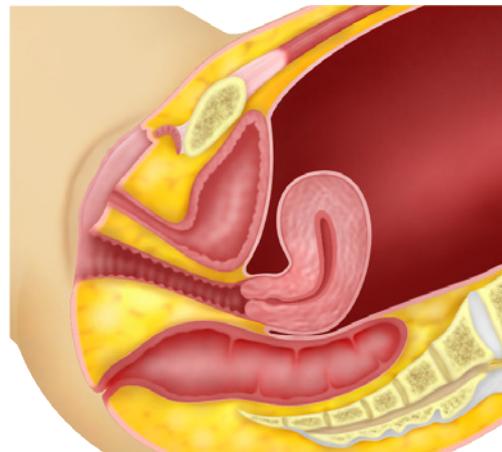


Figure 36.4 Acutely anteverted and anteflexed uterus

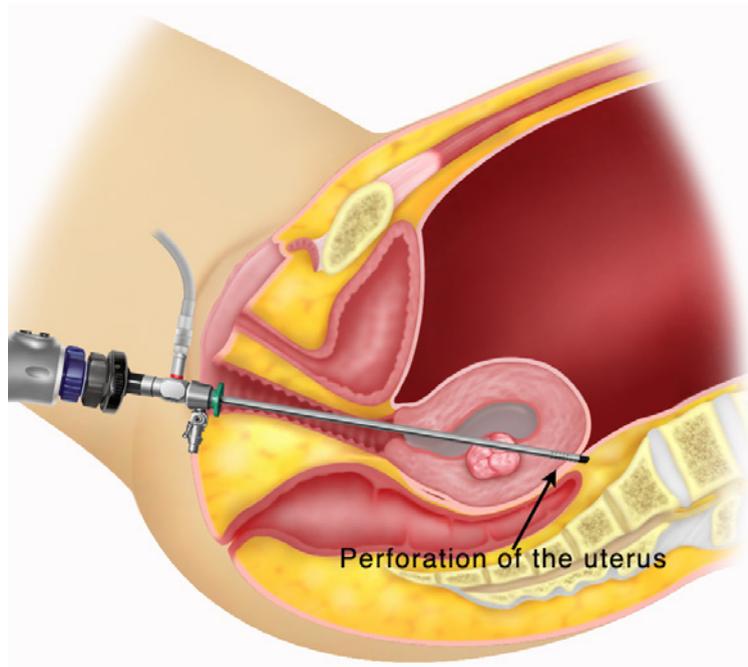


Figure 36.5 Hysteroscopy- perforation of the uterus

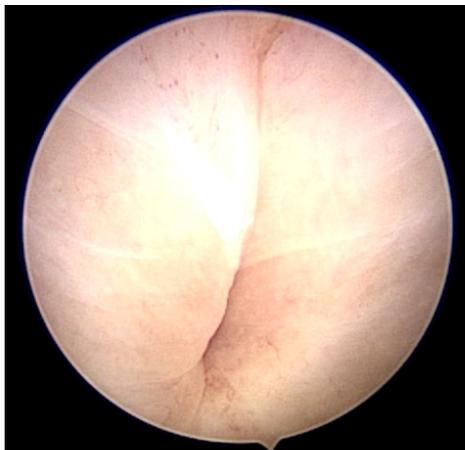


Figure 36.6 Hysteroscopic view of a perforated uterine cavity



Figure 36.7 Bowel seen after perforation of the uterus

d) Trauma to the cervix

A large hysteroscope is used during an operative hysteroscopy. Dilatation of the external and internal Os is necessary to pass the operative hysteroscope. The cervix is usually held with an instrument (eg tenaculum) when the internal Os is dilated. The cervix may be torn at this time. Such tears are usually sutured vaginally.

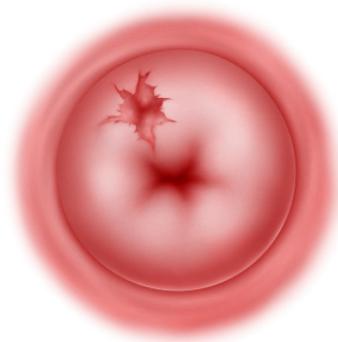


Figure 36.8 Cervical tear that may occur during hysteroscopy

e) Haemorrhage

During operative hysteroscopy (eg transcervical resection of a fibroid) bleeding may occur. This bleeding can sometimes be heavy. Such bleeding can be stopped by placing a catheter into the uterine cavity and distending it with saline so as to apply pressure to the endometrial cavity. The catheter is usually placed from 6 hours to 24 hours. Bleeding will usually stop and the catheter can be removed. However if bleeding persists, a hysterectomy may be necessary.

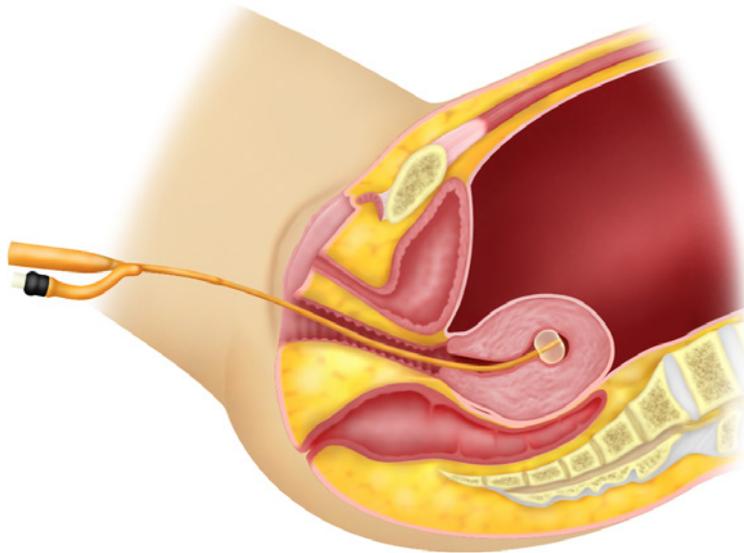


Figure 36.9 Catheter placed in the uterine cavity to control bleeding

f) Fluid overload

During operative hysteroscopy, glycine or saline is used to distend the uterus. This fluid can be absorbed by blood vessels that may be opened during the surgery. Too much absorption of this fluid, leads to fluid overload and the patient can become ill. She may become confused and puffy. This condition may require admission to the intensive care unit for observation. This is a very dangerous complication. When this complication is suspected, the surgery is stopped immediately and measures are taken to remove the extra fluid that has entered the body of the patient.

g) Gas embolism

This is a rare and very dangerous complication. Air may accidentally be drawn into the veins and this can go into the heart and lungs. This can be fatal.

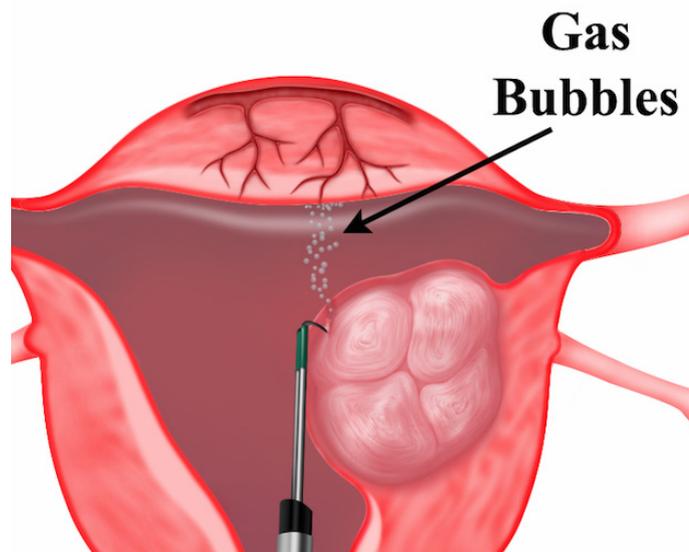


Figure 36.10 Gas bubbles can form during operative surgery



Case 36.1 Uterine perforation during office hysteroscopy

Madam ZF underwent a Diagnostic Hysteroscopy for the diagnostic evaluation of her infertility. The cervical Os was very tight and during manipulation to enter the cavity of the uterus a perforation of the uterine cavity was noted (Figure. 36.6 and Figure. 36.7). The hysteroscope was immediately removed. A transvaginal ultrasound was performed and fluid was seen in the Pouch of Douglas (g). The patient did not have much abdominal pain. She was rested for 2 hours and then re-evaluated. She did not have any abdominal pain and her vital signs were normal. She was allowed to go home and requested to return if she had any symptoms. She was seen again in a week and was well.

Discussion

In difficult cases especially when the uterus is acutely anteverted or retroverted, Diagnostic Hysteroscopy can be performed with the assistance of an abdominal ultrasound. If it is still difficult to enter the uterine cavity then the operation should be performed under general anaesthesia, while simultaneously a laparoscopy should be performed.

2) Post operative Complications

a) Haemorrhage

Patients who have been discharged can develop bleeding at home. This will require immediate admission and treatment.

b) Thermal damage to the bowel

During operative hysteroscopy using electric current (eg transcervical resection of a fibroid) an unknown thermal injury to the bowel may occur and this may not be noticed during the surgery. After several days, the patient may suffer from abdominal pain and fever. This may require another surgery (laparoscopy or laparotomy).

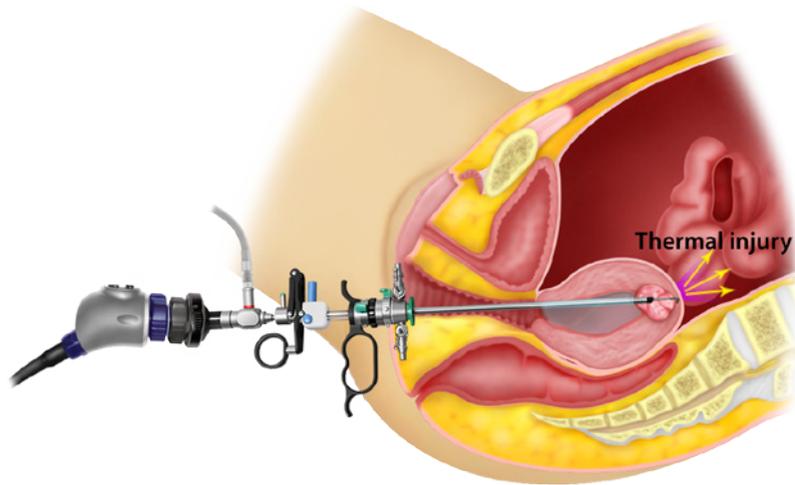


Figure 36.11 Accidental thermal injury during operative hysteroscopy

c) Infection

Infection of the endometrial cavity rarely occurs after the surgery. This can present as fever and pelvic pain, and can usually be resolved with antibiotics.

d) Intrauterine adhesions

After operative hysteroscopy, intrauterine adhesions can occur. This may lead to decrease in uterine bleeding and some times amenorrhoea (cessation of menses).

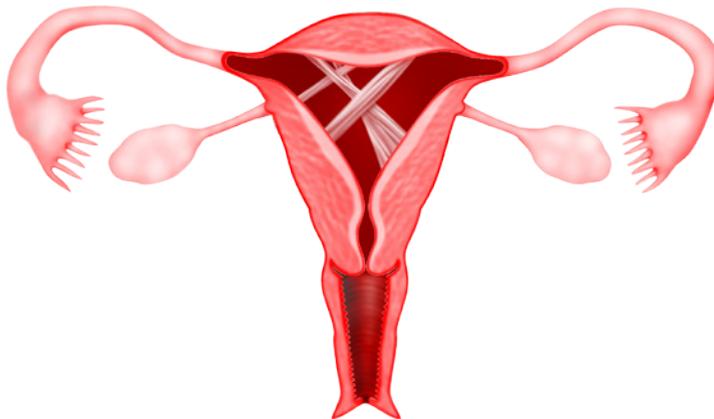


Figure 36.12 Intrauterine adhesions

Post operative advise

1. Some women may experience cramping similar to period pain after the procedure. There may be shoulder pain, which is caused by the fluid, or gas that is used to inflate the uterus. This pain will subside in a few days.
2. There may be some bleeding after the hysteroscopy especially when hysteroscopic surgery is performed. Bleeding usually subsides in a few days.
3. Sexual intercourse must be avoided till bleeding and vaginal discharge stop.
4. In patients who have a higher risk of pelvic infection (eg tubal block or hydrosalpinx) antibiotics may be given before and after the procedure.
5. Tampons should be avoided for at least a month after the hysteroscopy, to help reduce the risk of infection.
6. Severe lower abdominal pain, pain during urination, fever, vaginal discharge that is smelly or unpleasant and heavy bleeding are symptoms that will require the immediate attention of a doctor.

Scan Me



Video 36.1

Overview of Hysteroscopy

<http://vimeo.com/150239548>

Summary

Hysteroscopy is a technique whereby a fine telescope attached to a camera is inserted into the uterine cavity through the cervix to visualize the inner lining of the uterus. Hysteroscopy done for the purpose of investigation is called Diagnostic Hysteroscopy whereas that which is done for the purpose of surgery is called Operative Hysteroscopy. Hysteroscopy is usually performed just after menstruation. Just like any surgical procedure several complications can occur during and/or after the surgery.