Tips & Tricks in
Operative Obstetrics & Gynecology

System requirement:
- Operating System – Windows Vista or above
- Web Browser – Google Chrome, Mozilla Firefox, Internet Explorer 9 and above
- Essential plugins – Java & Flash player
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  - If videos don’t show up – it may be the system requires Flash player or need to manage flash setting. To learn more about flash setting click on the link in the help section.
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Case 1: Cervical Cancer
Case 2: Dysfunctional Uterine Bleeding
Case 3: Endometrial Cancer
Case 4: Ovarian Cancer
Case 5: Ectopic Pregnancy
Case 6: Infertility
Case 7: Congenital Malformations of the Uterus
Case 8: Forceps Delivery
Case 9: Ventouse Delivery
Case 10: Previous Cesarean Section
Case 11: Postpartum Hemorrhage
Case 12: Shoulder Dystocia
Case 13: Antenatal Screening
Case 14: Recurrent Miscarriage
Case 15: Missed Abortion
Case 16: Fibroid Uterus
Case 17: Cervical Intraepithelial Neoplasia
Case 18: Chronic Pelvic Pain
Case 19: Prolapse Uterus
Case 20: Genitourinary Fistula
Tips & Tricks in
Operative Obstetrics & Gynecology

Second Edition

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Dedicated to
My mother Mrs Bharati Saxena
For being my good luck charm
“I love my mother as the trees love water and sunshine—she helps me grow, prosper, and reach great heights.”
—Terri Guillemets
Preface to the Second Edition

The second edition of “Tips & Tricks in Operative Obstetrics & Gynecology” has been inspired by the tremendous success of the first edition. The concept of the book remains the same as the previous edition, “spreading valuable knowledge”. There are many extensive textbooks available in the market, which give elaborate details about each surgery. The aim of this book belonging to the “Tips and Tricks series” is to acquaint the reader with different types of obstetric and gynecological surgical procedures used in the clinical practice. The second edition maintains the basic format of text presented in the first edition. Each chapter has a unique style of presentation in form of a template containing headings such as introduction, indications, preoperative preparation, surgical steps, postoperative care, advantages, disadvantages, complications, discussion, conclusion, etc. These headings are set in form of amber-colored arrowheads. This pattern has been followed for all the chapters of Section 2 (Operative Obstetrics) and Section 3 (Operative Gynecology) and would help the reader focus on specific aspects of surgery.

The book provides succinct details about various obstetric and gynecological surgeries, which will be very useful for the postgraduates, intellectual undergraduates, fellow gynecologists and residents in training, obstetric and gynecologic consultants and practitioners. This book would not serve as a textbook, rather as a ready source of reference for the obstetricians and gynecologists to quickly grasp the basic facts related to various obstetric and gynecological surgeries.

The book contains an accompanying CD, which provides 20 interesting case studies. Several new case studies have been added in this edition. This would help in ensuring that the book chapters do not become too theoretical and a definite correlation with clinical practice is maintained. In the second edition, the textual matter has been extensively reconstructed with several current developments, which have taken place in obstetrics and gynecology since the publication of first edition (e.g. revised updated guidelines for screening of cervical cancer, 2012; new nontherapeutic modalities for the treatment of postpartum hemorrhage, etc.). The second edition also encompasses new chapters on labor room procedures and various gynecological surgeries related to the treatment of endometriosis and urinary incontinence. To further simplify the surgeries, the text has been illustrated with the help of newly added beautiful, self-explanatory, multicolor pictures, tables and flow charts. The second edition also describes recent advances in gynecological laparoscopic surgery (especially robotic surgery, laparoendoscopic single site surgery (LESS), natural orifice transluminal surgery (NOTES), hand-assisted laparoscopic surgery (HALS), etc.), fetal surgery and surgeries related to assisted reproductive techniques.

Writing a book is a colossal task. It can never be completed without His divine intervention and approval. I would like to thank the Almighty for helping me in completing this giant project. I believe that writing a book involves a continuous learning process. Though extreme care has been taken to maintain accuracy while writing this book, constructive criticism would be greatly appreciated. Please e-mail me your comments at the email address: richa@drrichasaxena.com. Also, please feel free to visit my website www.drrichasaxena.com for obtaining information related to various other books written by me and to make use of the free resources available for the medical students.

Simultaneously, I would like to extend my thanks and appreciation to all the related authors and publishers whose references have been used in this book. Book creation is teamwork, and I acknowledge the way the entire staff of M/s Jaypee Brothers Medical Publishers (P) Ltd., New Delhi, India, worked hard on this manuscript to give it a final shape. I would like to thank Mr Jitendar P Vij (Group Chairman), Jaypee Brothers Medical Publishers, for being the guiding beacon, and source of inspiration and motivation behind this book. I would also like to thank Mr Ankit Vij (President) and Mr Tarun Duneja (Director-Publishing). Last but not the least, I would also like to thank the entire staff of Jaypee Brothers, especially Mr Amit Rai and Mr Nitish Kumar Dubey (Medical Editors) for editing the manuscript and coordinating the process of publication; Mr Rakesh Kumar (DTP Operator) for typesetting the book; Mr Sumit Kumar (Senior Graphic Designer) and Mr Gopal Singh Kirola (Graphic Designer) for making beautiful Illustrations; and Mrs Seema Dogra for designing the cover page. May God bless them all!

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Preface to the First Edition

A colossal task like writing a book cannot ever take place without His divine permission and intervention. Therefore before writing anything else I would like to offer a word of thanks to the Almighty with the belief that God understands our prayers even when we can’t find the words to say them...

“Knowledge always desires increase; it is like fire, which must first be kindled by some external agent, but which will afterwards propagate itself.”

A perfect stranger once complimented by saying, “When doctors are in clinical practice, they treat one patient, but when they write, they are disseminating knowledge to a large number of doctors and thereby indirectly treating millions of people at the same time. This book has been written keeping this concept of “spreading valuable knowledge” in mind. There are many extensive textbooks available in the market, which give elaborate details about each surgery. The aim of this book belonging to the “Tips and Tricks series” is to acquaint the reader with different types of obstetric and gynecological surgical procedures used in the clinical practice. Old surgical procedures as well as the new ones are concisely described, which will be very practical and handy for the readers. This book is mainly targeted towards the postgraduates and consultant doctors to help them brush up their knowledge and acquire knowledge regarding the various new evolving surgical techniques. This book would prove useful to the postgraduate students, fellow gynecologists in training as well as obstetric and gynecologic consultants and practitioners. An intellectual undergraduate may also find this book as a useful read.

In order to ensure that the readers do not get carried away into the world of theoretical knowledge, an accompanying CD which provides some interesting case studies has been included with the book. This helps in establishing a liaison between clinical practice and academic knowledge. An important feature of this book is its unique style of presentation in the form of a template. There are three sections: general surgical considerations, operative obstetrics and operative gynecology of which all the chapters of sections 2 and 3 have been arranged in the form of a set template. The text has been illustrated with help of beautiful, self-explanatory, four-colored pictures.

Richa Saxena
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INTRODUCTION

It is of prime importance for the obstetricians and gynecologists to be acquainted with the surgical procedures performed in the labor room. These may not be the major surgical procedures because most major surgical procedures would be performed in the operating room under general anesthesia. Most of the common labor room procedures have been described in individual chapters, e.g., forceps delivery (Chapter 7), vacuum delivery (Chapter 8), medical termination of pregnancy (Chapter 11), McDonald’s procedure for cervical incompetence (Chapter 12), surgical interventions for control of postpartum hemorrhage (Chapter 13), repair of perineal injuries (Chapter 14), manual removal of placenta (Chapter 15), shoulder dystocia (Chapter 16), etc. “Episiotomy” and “induction of labor” are the labor room procedures that are discussed in this chapter.

EPISIOTOMY

An episiotomy is a surgical incision given through the perineum (Fig. 9.1) in order to enlarge the vaginal introitus for assisting the process of childbirth. Episiotomy is one of the most commonly performed surgical procedures in the United States. In general, episiotomy is less common in Europe than in the United States. However, the prevalence of episiotomy has reduced gradually over the past few years. This is primarily due to the controversy related to the efficacy and safety of the procedure. Although episiotomy is commonly performed in our setup, there is no strong medical evidence supporting its use. Episiotomy can be considered as one of the most controversial operations in obstetric practice. Giving an episiotomy is one of the ways of preventing the pelvic floor muscles against the harm caused by the genital tract trauma during the process of childbirth. The muscles of the pelvic floor form the major support system on which the uterus and vagina rest, related anteriorly to bladder and urethra, and posteriorly to rectum and anal canal. As a result, pelvic floor dysfunction can result in problems such as uterine organ prolapse, urinary incontinence, bowel incontinence, sexual dissatisfaction, etc.

Overview of Surgery

Episiotomy is a surgical incision, which is believed to guard the muscles of the pelvic floor by protecting them against stretching related to childbirth and delivery. Seven different types of episiotomies depending upon the direction of the surgical incisions have been described in the literature (Fig. 9.2): (1) the midline episiotomy, (2) modified median episiotomy, (3) “J”-shaped episiotomy, (4) mediolateral...
episiotomy, (5) lateral episiotomy, (6) radical lateral (Schuchardt incision), and (7) anterior episiotomy. However, out of these only midline, mediolateral or lateral episiotomies are commonly used in the clinical practice. The midline episiotomy extends medially in the midline, directly from the lowermost edge of the vaginal opening towards the anus and is most commonly performed type of incision in the United States and Canada. The mediolateral episiotomy, on the other hand, begins in the midline and is directed laterally, either towards the right or the left. While repairing the episiotomy incision, utmost importance must be given towards the maintenance of hemostasis and anatomical restoration without excessive suturing. Different types of episiotomies and their characteristics are described in Table 9.1.

### Aims of Surgery
Episiotomy is believed to confer protection to the woman by substituting a ragged laceration with a straight surgical incision, thereby protecting the pelvic floor against trauma and injury related to childbirth. However, presently the evidence regarding the benefits of episiotomy in protecting the integrity of pelvic muscles as riddled with conflicting results. Despite this, episiotomy is one of the most commonly performed procedures in the obstetric practice.

### INDUCTION OF LABOR
Induction of labor can be defined as commencement of uterine contractions before the spontaneous onset of labor with or without ruptured membranes. It is indicated when the benefits of delivery to the mother or fetus outweigh the benefits of continuing the pregnancy. Induction of labor comprises of cervical ripening (in case of an unfavorable cervix) and labor augmentation. While cervical ripening aims at making the cervix soft and pliable, augmentation refers to stimulation of spontaneous contractions which may be considered inadequate due to failed cervical dilation or fetal descent. Dilatation and effacement of cervix associated with cervical ripening and labor augmentation ultimately results in delivery of the baby. Cervical ripening is a complex process, primarily occurring under the influence

### Table 9.1: Different types of episiotomies

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Type of Episiotomy</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Median (midline, medial) episiotomy</td>
<td>The incision begins at the posterior fourchette and runs along the midline through the central tendon of the perineum. The incision extends to nearly half of the length of the perineum.</td>
</tr>
<tr>
<td>2.</td>
<td>Modified median episiotomy (inverted “T” shaped incision)</td>
<td>This incision is similar to the median episiotomy incision, except the addition of two transverse incisions in opposite directions just above the expected location of the anal sphincter. The two transverse incisions are perpendicular to the midline and measure about 2.5 cm in total length. The use of this modification is claimed to reduce the occurrence of injuries to the anal sphincters.</td>
</tr>
<tr>
<td>3.</td>
<td>“J”-shaped episiotomy</td>
<td>This episiotomy begins with a midline incision and is then gently curved in a lateral direction to avoid the anus.</td>
</tr>
<tr>
<td>4.</td>
<td>Mediolateral episiotomy</td>
<td>This is the most frequently used type of episiotomy in Europe. This incision begins in the midline and is directed laterally and downwards away from the rectum.</td>
</tr>
<tr>
<td>5.</td>
<td>Lateral episiotomy</td>
<td>This incision begins in the vaginal introitus 1 or 2 cm lateral to the midline and is directed downwards towards the ischial tuberosity.</td>
</tr>
<tr>
<td>6.</td>
<td>Radical lateral (Schuchardt incision)</td>
<td>Radical lateral episiotomy is often considered to be a nonobstetrical incision because it is usually performed at the beginning of radical vaginal hysterectomy or trachelectomy to allow easy access to the parametrium or to facilitate the extraction of a neglected vaginal pessary. Very rarely, this incision may be used to facilitate childbirth in case of complicated deliveries (large head, difficult breech or for correction of shoulder dystocia). This is a fully extended episiotomy, which begins as a deep incision into one vaginal sulcus and is curved downwards and laterally away and around the rectum.</td>
</tr>
<tr>
<td>7.</td>
<td>Anterior episiotomy</td>
<td>The anterior episiotomy or deinfibulation involves incision of the scar associated with some degrees of female genital mutilation. This incision is usually performed during delivery on women who have had female infibulation performed previously.</td>
</tr>
</tbody>
</table>

Source: Adapted from Reference 2
of prostaglandins whereby prostaglandins cause the breakdown of the cervical proteoglycan ground substance, scattering of the collagen fibers, an increase in the content of substances such as elastase, glycosaminoglycan, dermanatan sulfate and hyaluronic acid levels in the cervix. Induction of labor must be considered only when vaginal delivery appears to be an appropriate route of delivery and no contraindications for the vaginal route are present.

**INDICATIONS**

**EPISIOTOMY**

Previously, it was believed that an episiotomy must routinely be performed at the time of vaginal delivery, especially in the primigravidas. However, according to the current recommendations by the American Congress of Obstetricians and Gynecologists (ACOG, 2006), an episiotomy must only be performed in the situations where it is required. Some of the conditions in which an episiotomy is indicated are as follows:

- As a prophylactic method to spare the strain on the pelvic floor muscles when it becomes apparent that natural vaginal delivery may cause straining of the pelvic floor muscles resulting in second- or third-degree perineal tears.
- Rigidity of perineal muscles, which is responsible for causing an arrest in the natural progress of labor. An episiotomy must be performed if, at the time of normal vaginal delivery, the tissues around the vaginal opening begin to tear or do not seem to be stretching enough to allow the baby to be delivered.
- Prevention of neonatal injuries in case of premature infant, having a soft cranium or macrosomic infant, which may be at a risk of shoulder dystocia.
- To prevent complete perineal tears in cases where the perineum is short.
- In cases where instrumental vaginal delivery is indicated.
- Shoulder dystocia: Although the performance of episiotomy does not resolve the problem of shoulder dystocia, it does allow the operator more room to perform maneuvers to free shoulder from the pelvis.
- Breech vaginal delivery.
- In cases where a woman has undergone female genital mutilation, a midline or a mediolateral episiotomy may be indicated.
- When the patient is actively pushing, but rapid delivery is still required due to fetal distress (prolonged late decelerations or fetal bradycardia).
- Episiotomy may also be at times given in cases of extremely premature babies in order to prevent compression of fetal head.
- Episiotomy may be given in cases of high-risk pregnancy to shorten the duration of the second stage of labor.

This may help prevent undue bearing down efforts on the part of the mother in cases where she is suffering from medical disorders such as preeclampsia, heart disease, etc.

**INDUCTION OF LABOR**

Induction of labor is indicated only in those situations where it becomes apparent that both the mother and the fetus would be associated with a higher likelihood of better outcome if the fetal birth is expedited. Before taking the decision for induction of labor, the obstetrician must weigh the benefits of labor induction against the potential maternal and fetal risks. Though there are no absolute indications for induction of labor, some common clinical indications for the induction of labor are discussed below.

**Maternal Indications**

**Indications Specific to Pregnancy**

- Oligohydramnios
- Polyhydramnios
- Ruptured membranes with preeclampsia or eclampsia or nonreassuring fetal heart status
- Abruptio placentae
- Chorioamnionitis
- Rh isoimmunization.

**Maternal Diseases**

- Diabetes mellitus
- Renal disease
- Chronic pulmonary disease
- Chronic hypertension.

**Fetal Indications**

- Postmaturity
- Intrauterine growth restriction
- Premature rupture of membranes (PROM)
- Fetus with congenital anomalies
- Intrauterine fetal death.

**PREOPERATIVE PREPARATION**

**EPISIOTOMY**

Under all aseptic precautions after cleaning and draping the perineum, the proposed site of repair is infiltrated with 10 mL of 1% lignocaine solution (Figs 9.3A and B).

Anesthesia in the form of nerve blocks or local injections of anesthetic drug is given if the patient has not received regional anesthesia (e.g. epidural anesthesia) for the delivery. If proper visualization of lower genital tract does not appear to be possible, it may be necessary to take the woman to theater for examination under anesthesia.
While performing the repair of the episiotomy incision, vaginal or cervical tears, the patient must be placed in lithotomy position, with a good source of light from behind. The obstetrician must ensure that adequate assistance and instruments are also available in order to provide adequate exposure of the genital tract.

INDUCTION OF LABOR

Prior to the induction of labor, following steps must be performed:

- **Patient counseling:** Before induction of labor is undertaken, the patient must be carefully counseled. She should be explained about the reason for induction, end points of the process, requirement for lower segment cesarean section (LSCS) in case the induction fails, options of mode of delivery, neonatal outcomes and complications, etc. All relevant information should be made available to the woman and she should be helped to be able to make an informed choice regarding her care or treatment plan.

- **Evaluation of the state of cervix:** This is done by calculation of the Bishop’s score (Table 9.2). A maximum score of 13 is possible with this scoring system. Labor is most likely to commence spontaneously with a score of 9 or more, whereas lower scores (especially those < 5) may require cervical ripening and/or augmentation with oxytocin.11

- **Ultrasound assessment of gestational age:** This would help to prevent induction in premature babies.

- **Assessment of fetal lung maturity:** This may not be required in case where induction is medically indicated and the risk of continuing the pregnancy is greater than the risk of delivering a baby before lung maturity has been attained.

SURGICAL STEPS

REPAIR OF AN EPISIOTOMY

- The steps of surgery while performing a mediolateral episiotomy or a midline episiotomy are illustrated in Figures 9.4 and 9.5. Two fingers of the clinician’s left hand are placed between the fetal presenting part and the posterior vaginal wall.

- The incision is made using a curved scissors at the point when the woman is experiencing uterine contractions; the perineum is being stretched by the maternal presenting part and is at its thinnest.

- The cut should be made starting from the center of fourchette extending laterally either to the right or left. This type of episiotomy is known as the mediolateral type of episiotomy which is most commonly performed in our setup. In many centers, a median episiotomy is performed extending from the center of fourchette towards the anus.
SECTION 2: Operative Obstetrics

Operative Obstetrics

Episiotomy or vaginal lacerations (tears) is performed in three layers (Figs 9.6A to C): the first layer comprising of the vaginal mucosa and submucosal tissues; the second layer comprising of the perineal muscles and the third layer comprising of the skin and subcutaneous tissues. The vaginal mucosa is repaired using continuous sutures with 2-0 or 3-0 chromic catgut sutures. The first vaginal suture is placed just above or at the apex of the incision. After closing the vaginal incision and reapproximating the cut margins of the hymenal ring, the sutures are tied and cut. Next, the fascia and the muscles of incised perineum are reapproximated with interrupted sutures of 2-0 or 3-0 chromic catgut sutures. Lastly, the skin is closed using interrupted stitches with silk or subcuticular stitches.

Methods for induction of labor comprise of both methods for cervical ripening as well as augmentation of labor. Methods of cervical ripening include pharmacological

Figs 9.4A to C: (A) The procedure of giving a mediolateral episiotomy; (B) Cut in the skin after giving a mediolateral episiotomy; (C) Cut in the perineal muscles after giving a mediolateral episiotomy

Figs 9.5A and B: The procedure of performing a midline episiotomy: (A) Performing a midline episiotomy; (B) Distention of the perineum by fetal head after performing a midline episiotomy

- The structures which are cut while performing the episiotomy include: posterior vaginal wall; superficial and deep transverse perineal muscles; bulbospongious and part of levator ani muscle; fascia covering these muscles; transverse perineal branches of pudendal nerves and vessels and subcutaneous tissues and skin.
- Following the delivery of the baby after the placenta has been expelled, the episiotomy incision is repaired. In case of presence of vaginal tears or lacerations, their repair is also performed essentially in the same manner as that of the episiotomy in order to achieve hemostasis and to obliterate the dead space.
- Prior to the repair of an episiotomy incision or a perineal or a cervical tear, the patient is placed in a lithotomy position with a good source of light, illuminating the area of incision. The area to be repaired must be cleaned with an antiseptic solution. The surgeon must examine the cervix, the vaginal walls, the vulvar outlet and paraurethral areas for any suspected injuries or tears, which also need to be repaired. The repair of an episiotomy or vaginal lacerations (tears) is performed in three layers (Figs 9.6A to C): the first layer comprising of the vaginal mucosa and submucosal tissues; the second layer comprising of the perineal muscles and the third layer comprising of the skin and subcutaneous tissues. The vaginal mucosa is repaired using continuous sutures with 2-0 or 3-0 chromic catgut sutures. The first vaginal suture is placed just above or at the apex of the incision. After closing the vaginal incision and reapproximating the cut margins of the hymenal ring, the sutures are tied and cut. Next, the fascia and the muscles of incised perineum are reapproximated with interrupted sutures of 2-0 or 3-0 chromic catgut. Lastly, the skin is closed using interrupted stitches with silk or subcuticular stitches.

INDUCTION OF LABOR
Methods for induction of labor comprise of both methods for cervical ripening as well as augmentation of labor. Methods of cervical ripening include pharmacological
methods, nonpharmacological methods and use of mechanical cervical dilators.12

**Pharmacological Methods**

Medical methods for labor induction commonly comprise of prostaglandins [dinoprostone (PGE2), or misoprostol (PGE1)] and/or oxytocin.

**Dinoprostone**

Dinoprostone helps in cervical ripening and is available in the form of gel (Prepidil or Cerviprime) or a vaginal insert (Cervidil). Prepidil comprises of 0.5 mg of dinoprostone in a 2.5 mL syringe.13 The gel is injected intracervically every 6 hours for up to three doses in a 24-hour period. Cervidil, on the other hand, is a vaginal insert containing 10 mg of dinoprostone. The main advantage of Cervidil is that it can be immediately removed in case it causes hyperstimulation.

**Misoprostol**

Misoprostol (Cytotec) is a synthetic PGE1 analog. This drug has not been currently approved by the United States Food and Drug Administration (US FDA) for cervical ripening or induction of labor. Misoprostol, however, has been approved for the prevention of peptic ulcers. Use of misoprostol for cervical ripening is an off-label use, which is still considered controversial by some clinicians. However, its use is recommended by the ACOG. A dose of 25 mg is placed transvaginally at every 3 hourly intervals for a maximum of 4 doses or it may be prescribed in the oral dosage of 50 mg orally at every 4 hourly intervals.14 Also, presently the available evidence supports the intravaginal or oral use of 25–50 μg of PGE1 for cervical ripening/induction of labor. The same dosage can be repeated after 4–6 hours, if required.

**Oxytocin**

Oxytocin is a uterotonic agent which stimulates uterine contractions and is used for both induction and augmentation of labor. It can be started in low dosage regimens of 0.5–1.5 mU/minute or the high dosage regimen of 4.5–6.0 mU/minute, with incremental increases of 1.0–2.0 mU/minute at every 15–40 minutes.15 If an intravaginal pressure catheter is in place, measurement of intravaginal pressure ranging between 180 Montevideo units/period and 200 Montevideo units/period is an indicator of adequate oxytocin dosing.

**Other Pharmacological Methods for Induction of Labor**

Mifepristone (Mifeprex) is an antiprogesterone agent, which is able to stimulate the uterine contractions.16 Isosorbide mononitrate is another agent which can be used for cervical ripening without stimulating uterine activity.

Breast massage and nipple stimulation is a nonpharmacologic method which is thought to stimulate uterine contractions by facilitating the release of oxytocin from the posterior pituitary gland.
The most commonly used technique involves gentle massage of the breasts or application of warm compresses to the breasts for 1 hour, three times a day.

**Surgical Management**

Various nonpharmacological methods for labor induction comprise of the following:
- Low rupture of membranes (ROM)
- Stripping of membranes.

**Low Rupture of Membranes**

Artificial rupture of membranes (ARM) is used as a method of induction only in the patients where the cervix is favorable. ARM induces labor by causing the release of prostaglandins.17

**Procedure for Rupture of Membranes**
- Before proceeding with ARM, the fetal heart rate (FHR) must be checked
- After placing the woman in lithotomy position, under all aseptic precautions, two fingers smeared with antiseptic ointment are introduced inside the vagina
- The index finger is passed through the cervical canal beyond the internal cervical os
- Using the index and the middle fingers, the fetal membranes are swept free from the lower uterine segment as far as can be reached with fingers
- While the fingers are still in the cervical canal, with the palmar surface upward, a long Kocher’s forceps with closed blades is introduced along the palmar aspect of the fingers up to the membranes
- The blades of the Kocher’s forceps are opened to grasp the membranes and tear it using twisting movements (Fig. 9.7)
- When the membranes rupture, there is a visible gush of amniotic fluid
- The color of the escaping liquor must be noted. Meconium-stained liquor is suggestive of fetal distress
- If the head is not engaged, an assistant must push the head to fix it to the brim in order to prevent cord prolapse.

**Stripping of Membranes**

As the name implies, the process involves stripping of membranes by inserting the examining finger through the internal cervical os and moving it in a circular direction to detach the inferior pole of the membranes from the lower uterine segment. The process is thought to augment labor by causing the release of prostaglandins (PGF 2α) and phospholipase A2.

**Mechanical Methods**

This may include natural osmotic dilators (e.g. laminaria tents) and synthetic osmotic dilators. The natural dilators are hygroscopic in nature and are capable of absorbing endocervical and local tissue fluids, which cause the device to enlarge within the endocervical canal, thereby exerting controlled mechanical pressure. Balloon devices such as 24/26-French Foley’s balloon can also be used to provide mechanical pressure directly in the cervix as the balloon is inflated.

**POSTOPERATIVE CARE**

**CARE OF AN EPISIOTOMY**
- If infection is suspected, combinations of broad spectrum antibiotics can be administered
- Application of an ice-pack over the stitches may help in reducing inflammation in the area, thereby reducing pain and swelling
- Regular use of warm sitz bath is also helpful in reducing pain and inflammation over the site of incision.
- The patient must be advised to ambulate around as much as possible and regularly perform the pelvic floor exercises in order to stimulate circulation and speed up the process of healing.
- Use of pain killers, such as paracetamol, may help in providing pain relief.

**INDUCTION OF LABOR**
- Color of liquor and cervical status following ROM is observed
- The clinician must detect cord prolapse, if present
- Quality of FHR must be assessed following ROM. In case the FHR is less than 100 beats/min or more than 180 beats/min, fetal distress must be suspected
- Fetal electrode may be applied in high-risk cases in order to assess the fetal heart status
- A sterile vulvar pad is applied
- Prophylactic antibiotics may be administered in case delivery is not anticipated within 18 hours
- If good labor is not established 1 hour after ARM, oxytocin infusion must be started. In case of the presence of severe maternal disease (e.g. sepsis, eclampsia, etc.), oxytocin infusion must begin at the same time as ARM.
Chapter 9: Normal Labor Room Procedures

Advantages

Episiotomy

Episiotomy is performed with the intention of conferring many advantages. Some of these advantages are enumerated below.

However, presently there is no strong medical evidence in support of any of these benefits. In fact, it is now believed that in many of the cases, episiotomies can actually cause harm.

- It helps in decreasing the amount of effort mother has to put while bearing down.
- It also considerably helps in reducing trauma to the vaginal tissues, thereby decreasing the occurrence of genital tract injuries such as perineal tears and lacerations.
- It helps in expediting the delivery of the baby in cases such as fetal distress.
- Surgeons who favor performing an episiotomy argue that a surgical incision is easier to repair and heal in comparison to a spontaneous irregular or extensive tear.
- An episiotomy is likely to be associated with fewer complications in comparison to a laceration or vaginal tear.
- An episiotomy by preventing undue stretching of the pelvic floor muscles is thought to provide protection against pelvic floor relaxation, which could predispose to the development of future cystoceles, rectoceles, uterine prolapse, urinary incontinence, etc.

Induction of Labor

Advantages of amniotomy or ROM are as follows:

- The process of ARM by providing extensive contact between the fetal presenting part and the cervix, encourages release of endogenous prostaglandins, thereby augmenting labor and shortening its duration.
- The escape of liquor at the time of ARM provides the opportunity for early detection of meconium-stained liquor amnii and the possibility of fetal distress, thereby instigating closer observation of fetal well-being.

Disadvantages

Induction of Labor

Contraindications to induction of labor are similar to that for spontaneous labor and vaginal delivery. Some of the absolute contraindications for induction of labor include:

- Transverse lie
- Vasa previa, placenta previa
- Previous cesarean delivery/scarred uterus (especially with the involvement of uterine cavity).
- Certain relative contraindications for induction of labor are as follows:
  - Previous LSCS
- Breech presentation
- Multiple pregnancy
- Maternal heart disease.

Episiotomy

Episiotomy can be associated with extensions or tears into the muscle of the rectum or even the rectum itself. Some of the complications, which are likely to occur as a result of an episiotomy, are as follows:

- Bleeding
- Infection
- Pain: While a slight amount of pain which gets relieved on taking pain killers is a common occurrence with an episiotomy, persistent severe pain at the episiotomy site could be an indicator of the presence of a large vulvar, paravaginal or ischiorectal hematoma, thereby necessitating a thorough exploration in these cases.
- Extension of the episiotomy into third- and fourth-degree vaginal lacerations
- Longer healing times
- Increased discomfort/sexual dysfunction when intercourse is resumed
- Swelling
- Unsatisfactory anatomic results (e.g. skin tags, asymmetric introitus, fistula formation, narrowing of introitus, etc.)
- Possible increased risk of development of perineal lacerations in the subsequent deliveries.

Induction of Labor

Induction of labor, in general, can be associated with the following complications:

- Uterine hyperstimulation (with oxytocin and misoprostol), may result in uteroplacental hypoperfusion and FHR deceleration
- Prostaglandins may produce tachysystole, which may be controlled with terbutaline
- Maternal systemic effects, such as fever, vomiting and diarrhea, may be infrequently observed
- Failure of induction
- Uterine atony and postpartum hemorrhage
- Increased rate of cesarean delivery
- Chorioamnionitis
- Oxytocin may be responsible for producing water intoxication.

Complications associated with ARM are as follows:

- Reduction in amniotic fluid may result in cord compression and/or head compression
- The intensity of pains may increase to undesirable levels, adversely affecting the fetus

Jaypee Brothers
• There may be a danger of cord prolapse and/or limb prolapse
• Predisposition to a premature separation of the placenta
• The risk of ascending infection, which further increases with the passage of time
• The obstetrician is compelled to accomplish delivery within a reasonable period of time

Complications associated with sweeping and stretching of membranes include risk of infection, bleeding, accidental rupture of the membranes and discomfort to the patient.

DISCUSSION

EPISIOTOMY
Role of Episiotomy
In the past few years, especially in the 1970s, it was a common practice to give an episiotomy to almost all women, especially the primigravidas. However, the use of episiotomy has considerably decreased over the past few years. Initially, it was believed that the use of an episiotomy would be associated with reduced amount of postoperative pain and better healing in comparison to a laceration. This fact, however, proved wrong over a period of time. The present evidence regarding the safety and efficacy of episiotomy has presented with conflicting views. Another unproven benefit of episiotomy is that its use would be associated with reduced incidence of pelvic relaxation, cystocele, rectocele and urinary incontinence.

A systematic review by Hartman et al. does not support the fact that traditional use of routine episiotomy provides any maternal benefit against genital tract injuries. A few trials have shown that the routine use of episiotomy can result in an increased incidence of anal sphincter and rectal tears. There is increasing evidence that the median episiotomy is not effective for preventing pelvic relaxation and is associated with higher rates of obstetric anal sphincter injury.19–22

Surgical repair and postoperative healing of midline episiotomy is better in comparison to a mediolateral one. A midline episiotomy is also associated with better anatomical results, minimal postoperative pain, reduced blood loss and dyspareunia. Midline episiotomy is considered to be more superior to the mediolateral episiotomy except for the issue that it is more commonly associated with third- and fourth-degree extensions. Shiono et al. concluded from their study that a mediolateral episiotomy incision was preferable to a midline one as the latter was associated with an increased risk of lacerations, especially third- and fourth-degree lacerations, some of which may result in the development of rectovaginal fistula in the long run.23 This can result in significant morbidity. However, Sartore et al. have shown that even a mediolateral episiotomy does not protect against development of urinary and anal incontinence or genital prolapse, post delivery.24 They also observed that a mediolateral episiotomy was associated with lower pelvic floor muscle strength, more dyspareunia and perineal pain compared with the practice of giving no episiotomy. Also, even the mediolateral episiotomy incisions can be associated with other complications including increased pain, less satisfactory cosmetic result, painful intercourse, etc. Presently, the evidence regarding the choice between a midline or mediolateral episiotomy is rather limited.

In fact, outcomes with routine practice of episiotomy can be considered worse since some proportion of women who would otherwise have normal vaginal delivery without accompanying muscle damage or laceration, would instead have a surgical incision. Moreover, outcomes with episiotomy can be worse in some cases, resulting in complications like painful intercourse and extension of the episiotomy into the sphincter or rectum. Evidence regarding long-term sequel is fair to poor. There is limited data regarding the protective effect of episiotomy in prevention of fecal and urinary incontinence, pelvic floor relaxation or impaired sexual function. Fair to good evidence suggests that immediate maternal outcomes from routine episiotomy are not better than those from restrictive use; in fact they have been often observed to be worse.

From the above discussion, it appears that an episiotomy must not be routinely performed. The procedure must be used only for selective indications such as shoulder dystocia, breech delivery, instrumental delivery (forceps or vacuum extraction), occipitoposterior position and in cases where it appears obvious that failure to perform an episiotomy would result in extensive perineal tears and lacerations.

Timing of an Episiotomy
If performed too early, an episiotomy may result in considerable amount of bleeding. If performed too late, it may not be able to prevent the lacerations. The episiotomy must be performed when the fetal head distends the vaginal introitus by 3–4 cm. When used with forceps application, episiotomy must be performed following the application of the blades.

Episiotomy is performed with the intention of conferring protection to the woman’s genital tract by substituting a ragged laceration with a straight surgical incision, thereby protecting the pelvic floor against trauma and injury related to childbirth.

Prevention of an Episiotomy
Episiotomies are not always necessary, and some preventative measures can be practiced by the patient in order to reduce the risk related to the performance of an episiotomy incision.25–31 Some of these measures are as follows:

• Good nutrition, which would help in keeping the perineal skin healthy and supple. This is important because healthy skin is likely to stretch more easily at the time of fetal delivery
• Kegel exercises for the muscles of the pelvic floor
• Prenatal perineal massage
• Controlled pushing during the second stage of labor
• Warm compresses, perineal massage and support during delivery.

INDUCTION OF LABOR
Oxytocin versus Prostaglandins for Induction of Labor

Oxytocin is the most commonly used drug all over the world to augment labor. Intracervical application of dinoprostone (PGE2, 0.5 mg gel), anyway had been the gold standard for cervical ripening. It still remains the gold standard for cervical ripening. Since 1975, prostaglandins (PGE2) have also been used for induction of labor. The labor induced by prostaglandins is likely to have a shorter interval between ROM and delivery in comparison to that induced with oxytocin and ROM, especially in cases where the cervix is ripe. However, in cases where the cervix is unripe, prostaglandins are more successful than oxytocin in inducing labor. The most commonly used prostaglandin regimen for induction of labor comprises of oral administration of two tablets of PGE2 (0.5 mg each) every hour until labor is established. This is followed by the administration of one tablet orally every hour to augment labor.

Misoprostol (PGE1) is also nowadays commonly being used for induction of labor. The most commonly followed regimen comprises of vaginal administration of 25 μg misoprostol every 4–6 hours. Vaginal route is more effective than the intracervical or oral route. Hundred micrograms of oral or 25 μg of vaginal misoprostol has been found to be similar in efficacy to intravenous oxytocin for labor induction. In comparison to the PGE2 analogs, PGE1 analogs are cheaper, can be stored at room temperature and are easy to administer. PGE1 is a more effective method of cervical ripening than either intravaginal or intracervical PGE2 or oxytocin. PGE1 in comparison to PGE2 has been found to be associated with an increased incidence of hyperstimulation. The safety issues concerning the use of vaginal misoprostol are presently unclear and it has yet not got FDA approval for its use as an inducing agent. Misoprostol overdosage, however, can be associated with complications such as tachysystole, uterine hyperstimulation, which may be associated with birth asphyxia and/or rupture uterus. Another complication, which may occur, is meconium-stained liquor (resulting in meconium aspiration).

Use of prostaglandins over oxytocin for induction of labor facilitates ambulation, the labor contractions are less painful and the risk of postpartum hemorrhage is lower in comparison with oxytocin. Moreover, there is no danger of fluid overload and neonatal jaundice as observed with oxytocin. However, it is possible to control the augmented labor while using oxytocin infusion with the help of continuous monitoring of the uterine activity and FHR. The rate of infusion is controlled by the healthcare provider and can be stopped, reduced or increased at any moment whenever the need arises. On the other hand, the induction of labor cannot be controlled while using prostaglandins. Once a prostaglandin tablet has been consumed orally or the prostaglandin gel has been instilled, the effect of the drug cannot be as reversed unlike in case of oxytocin.

Use of prostaglandins is favored over oxytocin in cases where labor is induced in either nulliparous or multiparous women with intact membranes, regardless of the fact whether the cervix is favorable or not. However, if the membranes have ruptured, both prostaglandins or oxytocin may be used as both of them are equally effective in such cases.

CONCLUSION

An obstetrician must be familiar with the two procedures commonly performed in the labor room: (1) administration of an episiotomy and (2) induction of labor. Although the procedure of episiotomy was originally invented to reduce the risk of the genital tract injuries and lacerations, the exact benefit of the procedure still remains controversial. According to the recommendations of ACOG (2006), an episiotomy should not be considered routine and only be performed if deemed necessary. An episiotomy does help in enlarging the size of the pelvic soft tissue outlet, which may help in facilitating the delivery of a macrosomic or breech infant. Also, in case fetal distress is suspected, administration of an episiotomy may help in reducing the time of fetal expulsion. If a shoulder dystocia is anticipated, it may be sensible to intentionally administer an episiotomy to generate more space for performing obstetric maneuvers required to relieve the dystocia. Therefore, presently the use of an episiotomy should be only restricted to the situations where there is likely to be a high risk of severe lacerations or there is a requirement for rapid delivery of the fetus. The women must be advised to exercise their pelvic muscles through Kegel exercises, which can help prevent the requirement for an episiotomy. Moreover, episiotomy is a controlled surgical incision which helps in preventing the occurrence of a spontaneous, large, irregular laceration of the perineum. It is usually easier to repair a controlled surgical incision in comparison to a spontaneous laceration. This is likely to result in the better restoration of surgical anatomy, thereby resulting in fewer long-term complications.

Induction of labor helps in expediting the process of vaginal delivery. Induction and augmentation of labor appear to be the two parts of the same continuum, merging imperceptibly into one another. Induced labors are associated with higher rates of operative interference and an increased demand for pain relief. It can be done by using both medical and surgical methods. However, any induced labor must be carefully monitored. It is especially
important for the obstetrician not to leave any patient with induced labor unattended. All induced labors must be monitored with the help of a partogram. Continuous electronic fetal monitoring is not essential. In case of suspected/pathological findings on cardiotocography, oxytocin infusion must be decreased or discontinued. In suspected or confirmed cases of acute fetal compromise, the delivery should be accomplished as soon as possible (preferably within 30 minutes).

REFERENCES


