





63rd All India Congress of Obstetrics and Gynaecology

29th Jan - 2nd Feb 2020
Smriti Upvan, Lucknow
We Pledge for Women's Health

Manual of

Basket of Beginners

Start Right, Shine Bright

Editors
Jayam Kanan
Jyothika Desai

Co-Editors
Shipra Kunwar
Shaily Agarwal





Contents

1. **Wise Words on Ethical Practice 1**
   Pankaj D Desai

2. **Uterus Holds the Fetus 7**
   Jayam Kanan, P Prashitha

3. **Vaginal Birth-unseen Challenge: Uterus Inverts 19**
   Upma Saxena, Archana Mishra

4. **Stubborn Placenta 26**
   Charmila Ayyavoo

5. **Medical Nutrition Therapy in Gestational Diabetes Mellitus 31**
   Sanjay Gupte, Arati Shah

6. **Insulin Therapy in the Management of Diabetes in Pregnancy 38**
   Sunil Gupta

7. **Transfer of Critically Ill Patients 47**
   Shipra Kunwar, Shaily Agarwal

8. **Abdominal Wall Closure and Failed Abdominal Wall Closure 51**
   Sandeep Kumar, Praveen Kumar

9. **Abdominal Wall Closure Techniques 60**
   Deepti Singh, Anurag Srivastava

2

CHAPTER

Uterus Holds the Fetus

Jayam Kanan, P Prashitha

INTRODUCTION

Uterus is the organ to hold the fetus for the first 280 days of its life. Thereafter uterus has to allow the fetus to go out as a newborn. If the uterus pushes out the fetus earlier than expected, or refuse to release it out, after the due time, the baby faces problems. we are presently discussing the problem of refusal to let the baby out by abdominal delivery, rather keeping it captured.

The percentage of second stage cesarean sections is on the rise. The delivery of a deeply engaged head in the second stage by cesarean section is an experience feared by most consultants. various techniques are described for delivering the fetus in difficult situations. The Royal College of Obstetricians and Gynaecologists (RCOG) agreed that there is little formal training in delivery of a deeply engaged head and is considering recommending trainees complete two OSATS (Objective Structured Assessment Tools) in this area.

CAUSES OF DIFFICULT DELIVERY OF THE FETUS IN ABDOMINAL DELIVERY

- Undetected abnormal presentations such as brow, face
- Extended breech
- Complicated occipitoposterior position
- Deep transverse arrest.
- Severe oligohydramnios
- Preterm delivery
- Floating head.

WHAT IS A NORMAL CESAREAN SECTION PROCEDURE?

Skin incision under regional analgesia and entry into abdominal cavity is achieved best by the modified Cohen's incision. The lower segment transverse incision has stood the test of time and remains the best way to enter the uterus. After the delivery of the fetus, placental delivery should be by controlled cord traction after confirming spontaneous expulsion. Closure of the uterus done respecting the uterine anatomy with special care as not to

JAYPEE BROTHERS

include the endometriumis done. Parietal layers of the peritoneum closure no longer seem to be necessary. Obliteration of space in the subcutaneous layer, has shown to reduce sepsis.

Prophylactic antibiotic is mandatory in preventing postoperative morbidity. All of the above-mentioned steps have been tested in many randomized trials. Further studies are continuing to examine a wide range of questions arising from many queries, e.g. best position of the patient, exteriorization of the uterus, use of agents to relax the uterus in difficult deliveries and best suture materials and other measures to reduce wound disruption.

TIPS FOR AN EASY DELIVERY

- Position yourself (Operating Surgeon), so that your upper trunk, arm, and hand move as a unit to elevate the head.
- Elevate the fetal head to the level of the uterine incision, rather than bringing the incision down to the head.
- Rotate the occiput anteriorly to present the shortest fetal head diameters to the incision.
- Reduce the lower lip of the uterine incision beneath the fetal head, as you would reduce a posterior cervical lip at a vaginal delivery.
- Begin the procedure by identifying the fetal position; if it is occiput posterior, you may keep a disposable vacuum extractor available. Then stand so that your dominant hand is closest to the patient's pelvis.
- When making the abdominal incision, consider fetal size and maternal body habitus. Be sure all layers of the incision are long enough to permit manipulation and delivery—kindly avoid surgical pride force you to struggle with an inadequate Pfannenstiel incision. Be prepared to identify and extend any layer of the incision that gives considerable resistance at the time of delivery.
- Before proceeding to the uterine incision, make sure there is adequate rectus separation. Check the clearance by separating the right and left bodies of the rectus muscle with manual traction. If more room is needed, create a "partial Maylard incision" by cutting bilateral transverse incisions with Mayo scissors across the medial third of each body. This gives the fetus more room while avoiding damage to the inferior epigastric vessels.
- The uterine incision should be as wide as the mean fetal head diameter—usually the same 10 cm that we expect of the fully dilated cervix at term. In patients with an undeveloped lower uterine segment, varices, adhesions, or leiomyomata, there may be insufficient width for a low-transverse incision. In these cases, you may need to convert to a U-shaped, J-shaped, or vertical incision.
- Take advantage of a well-developed lower uterine segment and avoid tight U- or V-shaped transverse incisions. Identify the uterine vessels with

JAYPEE BROTHERS

adequate retraction, and incise laterally right up to them. An alternate technique would be to extend the initial incision by pulling apart the ends with your index fingers, laterally and cephalad (towards the mother's axillae). Blunt dissection may cause less bleeding from the uterine vessels

PROBLEMS AND SOLUTIONS

Appearance of lower segment in difficult situations:

- On opening the abdominal cavity, bladder may be found stretched over the lower uterine segment.
- Lower uterine segment is distended.
- Chances of risking cervical or vaginal incision are plenty.
- Fetal shoulder may be visible on opening the cavity of the uterus (*shoulder sign*).
- Fetal head may be significantly deflexed and/or molded.

The surgeon's ability to minimize the "delivering cephalic diameter" by intentional flexion may be limited by splinting of the fetal spine within a contracted uterus. Faced with this challenging context, the surgeon must rapidly elect an efficient and effective delivery technique

SAFE DELIVERY METHODS

- Push method (ERR Technique)
- Pull method
- Bimanual push method
- Patwardhan technique
- Disimpaction system
- Use of instruments.

Push Method

For cephalic presentation, this has been the favored technique since the 1980s. In this method, the woman is placed in a modified lithotomy position with knees flexed and thighs abducted. An assistant in sterile gloves, inserts a hand into the vagina and gently replaces the fetal head superiorly into the pelvis with cupped fingers as the surgeon applies traction to the fetal shoulders or attempts to flex and elevate the head into the hysterotomy. This is known as ERR (Elevate, Rotate, Reduce) technique.

Details of ERR Technique

"Do not break the wrist" is a classic admonition, familiar to generations of obstetricians. It warns against a practice that begins by reaching for the head with extended wrist, not elevating the head enough, and delivering the head from whatever position it presents in. The head is delivered with firm wrist

JAYPEE BROTHERS

flexion (breaking, cocking, or levering the wrist) and anterior traction. This puts caudal leverage upon the lower edge of the uterine incision, which may cause an extension down to the bladder or into the cervix. The ERR technique corrects these errors and minimizes strain on the incision.

- *Elevate*: The first goal of ERR is to elevate the fetal vertex to the lower edge of the uterine incision. Bringing the incision down to the presenting part may strain it. Start by holding the fingers of your dominant hand together, with the thumb tucked against the lateral base safe delivery of the fetal head during cesarean section of the index finger and the fingers extended straight. Next, insert your fingertips into the uterine incision and advance them around the fetal head—but not while standing erect with your wrist extended. Such a posture would cause two problems: First, you would have insufficient leverage and strength to advance your fingers deep into the pelvis. Second, the angle of your wrist would be obstructed by the uterine incision, the lower edge of the abdominal incision, and the pubis. Try one of the following two approaches—the first option is to extend your arm in a straight line from shoulder to fingertip, keeping it almost parallel to the patient's longitudinal axis. This is accomplished by flexing forward at the waist while facing cross-table, and abducting your arm out from your shoulder. Another option is to turn and face the head of the table, flex at the waist, and extend your arm behind you while pronating your hand. Both of these positions keep your wrist angle neutral and allow you to use the strength and leverage of your entire upper trunk to move your hand.
  In order to elevate the head, your fingers need to achieve at least a quarter-circle grip around the vertex **(Fig. 1)**. If the head is so deep or tightly applied that you cannot achieve this in one continuous movement,

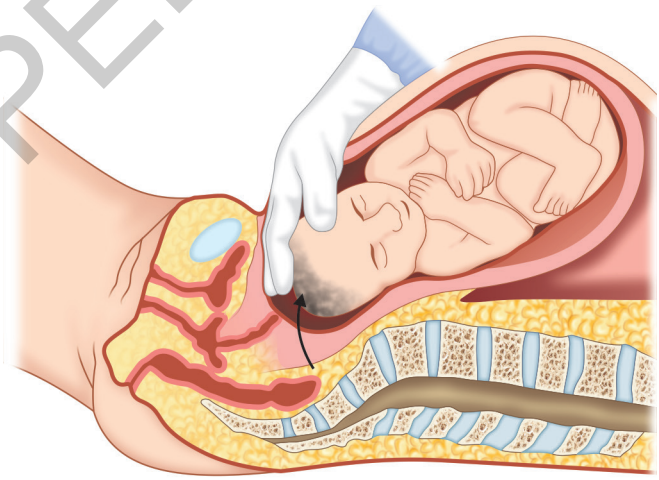


Fig. 1: *The ERR sequence—Elevate:* Lock the fingers into a quarter-circle around the vertex. Apply traction out of the pelvis with the hand and the entire extended arm.

JAYPEE BROTHERS

proceed in stages. First, have an assistant apply transvaginal digital pressure to elevate the head from below. Then, advance your fingers as far as you can around the fetal head while flexing and extending the fingers in a worm-like wiggling movement. Flex and lock your fingers against the fetal cranium, and lean your entire upper trunk and arm away from the maternal pelvis. This generally elevates the head by roughly a centimeter, enough to advance your fingers a little further. Repeat these motions until your fingers have achieved the desired quarter-circle, at which point your assistant may withdraw from below.

Now lock your arm from shoulder to fingertip, and lean out of the patient's pelvis one more time. You may note the sensation and sound of breaking suction as the fetal head escapes the pelvic grip. Maintain this steady traction for several seconds. When the vertex has reached the level of the lower margin of the uterine incision, you can rotate the fetus.

- *Rotate*: Before you begin rotation, confirm the fetal position (the fetal ears are useful as a landmark). If the head is not already in occiput anterior, grasp it and rotate the occiput into the incision **(Fig. 2)**. As in vaginal delivery, this presents the shortest fetal-head diameters to the birth orifice. If the head has been markedly molded by labor, rotation will bring the narrow end of a dilating cone into the uterine incision. This helps direct the head anteriorly, rather than back into the pelvis, when fundal pressure is applied.
- *Reduce*: Using your hand like a pair of forceps may cause uterine extensions or lacerations if the uterine incision is not large enough to accommodate both your hand and the fetal head. Instead, use four fingers in shoehorn fashion to guide the head out of the incision. First, however, there is

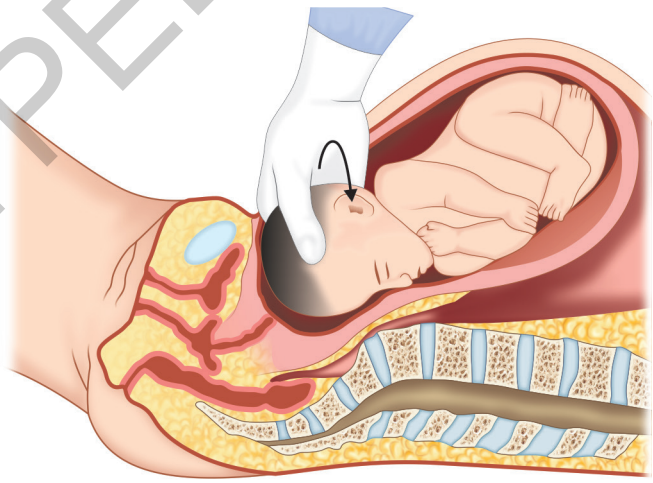


Fig. 2: *The ERR sequence—Reduce*: Push the lower edge of the uterine incision down until it is posterior to the fetal head.

JAYPEE BROTHERS

usually another obstacle to overcome—fundal pressure may merely force the head back toward the pelvis. Your fingers cannot present a shallow enough angle to direct the head anteriorly, unless your hand is in so deep that your palm fills the uterine incision.

You may substitute instruments for the guiding fingers, using the Murless head extractor, the Torpin vectis blade, or 1 blade of a short-shank Simpson forceps. However, a lack of availability may limit your choices. Although you may use a disposable vacuum extractor system, consider saving that expense with this alternative: Using your fingertips, reduce the lower lip of the uterine incision beneath the fetal head, as you would reduce a posterior cervical lip at a vaginal delivery **(Fig. 3)**. The reduced lip tends to extend the head anteriorly and direct it away from the pelvis. Withdraw your hand so only your fingertips remain to guide the head, while the back of your fingers retracts the lower abdominal wall. With fundal pressure the head should move anteriorly out of the abdomen.

A head in the occiput-posterior position may resist attempts to rotate to occiput anterior. Should this occur, try following the incision reduction with direct manual flexion of the head out of the abdomen. If reduction flexion puts excess strain on the incision, abandon the attempt. Instead, use a disposable vacuum extractor cup—placed on the fetal brow as close to the vertex as possible—to flex the head out of the incision. Should this fail as well, extend the low-transverse uterine incision cranially into a generous U-incision, and repeat the vacuum procedure.

This technique for delivering the fetal head offers minimal risk of uterine laceration and lends itself to instruction and recollection. ERR technique has not been evaluated by clinical trial, due to absence of a

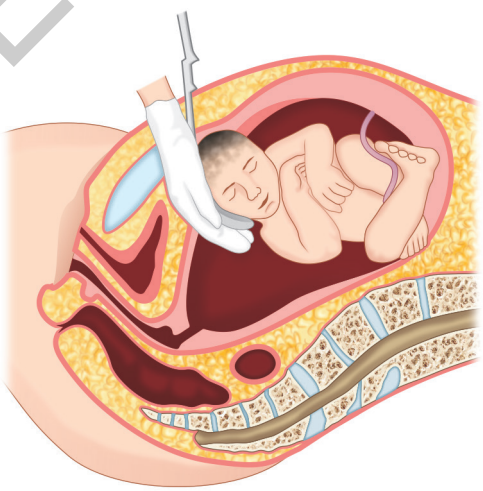


Fig. 3: Guiding the head into position.

JAYPEE BROTHERS

gold-standard technique for the control group and ERR has yielded satisfactory outcomes in the last 40 years.

Pull Method (Reverse Breech Extraction Technique)

This has been described by Fong and Arulkumaran, studied increasingly over the last decade in several developing countries where obstructed labor is more common. In this method, following uterine incision, the surgeon reaches toward the upper uterine segment, grasps one or both fetal legs, applies gentle traction until the second leg appears, and gently delivers the fetus by both legs, as with a combination of internal podalic version and footling breech delivery. Breech delivery may be accomplished through a low transverse incision; however, utilization of a low vertical or low transverse uterine incision with possible extension into an inverse T- or J-shaped to maximize space has also been described.

Although both methods may cause serious maternal and neonatal complications, many favors the pulling method and better outcome seems to depend on adequate uterine relaxation, the patient's position during operation, and special attention to the uterine incision.

Patwardhan Method

Patwardhan technique is a unique technique which was introduced by Dr Patwardhan in 1957 to ease the delivery of deeply impacted head in second stage cesarean sections and having less maternal and fetal morbidities, but still not very popular among obstetricians.

In case of occipitoanterior and transverse positions with the head deeply impacted in the pelvis, incision is made in the lower uterine segment, shoulders are present usually at incision level in deeply engaged head ,the anterior shoulder is delivered out by hooking the arm first by hooking the arm. With gentle traction on this shoulder, the posterior shoulder is also delivered out. Next, the surgeon holds the trunk of baby gently with both thumbs parallel to spine and with fundal pressure given by assistant the buttocks are delivered followed by legs. Now the baby's head which is the only part of the fetus which is still inside the uterus, is gently lifted out of the pelvis by making an arc.

Modified Patwardhan Technique

In case of occipitoposterior position with the head deeply impacted in the pelvis, incision is made in the lower uterine segment, shoulders are present usually at incision level in deeply engaged head, the anterior shoulder is delivered out by hooking the arm first by hooking the arm followed by delivering the same side leg. The other side leg is then delivered gently followed by same side arm. Buttocks and the trunk of baby and are delivered by gently pulling baby legs. Lastly the baby head is delivered.

JAYPEE BROTHERS

Bimanual Push Method

Bimanual push method is a technique in which the surgeon, rather than an assistant, elevates the fetal head with a hand from below while simultaneously elevating the head with their uterine hand.

Fetal Disimpaction System

Fetal disimpaction system (*Fetal Pillow*) was described, which uses a saline balloon placed inside the vagina to elevate the fetal head up to 3 cm. The device was successful in disengaging the fetal head in all reported cases without any maternal or fetal injuries.

Alternative Delivery Techniques

"Shazly's step" (or abdominal disimpaction with lower uterine segment support) in a series of 15 women. Of the 15 cases, there was only one lower segment extension of less than 2 cm, one case requiring blood transfusion, and no fetal injuries. Both series used a low transverse incision. If the fetal head is deflexed, applying pressure in the wrong direction may worsen deflexion and impaction, making abdominal delivery even more difficult.

Extremely Low Birth Weight Baby Delivery

Premature or growth restricted fetus present many challenges at cesarean delivery. The lower uterine segment is less well-developed with thicker myometrium and smaller area. The uterine incision is deeper bloodier and an adequate transverse incision to allow the atraumatic extraction of the fetus may not be possible. Fetus gets lacerations inadvertently more so in the setting of premature rupture of membranes, if the deepest layers of myometrium are not incised carefully. As the uterus is small maternal intestines frequently descend down which need careful handling.

Floating Head

Head might not be engaged with a poorly formed and highly vascular segment. Here the fetus should be manipulated in longitudinal lie and steadied with lateral support. After rupturing the membranes all the liquor should be allowed to drain. This will facilitate descent of the head. Applying fundal pressure alone may be inadequate and can push the head laterally rather than towards the uterine incision. In these situations facilitation by an instrument with which the surgeon is familiar is be used.

JAYPEE BROTHERS

Algorithm for managing a uterus holding the fetus.
"ALERT" pneumonic for the management at the time of cesarean delivery:
- *A:* Alert the multidisciplinary team early if an impacted fetal head is suspected
- *L:* Lower the operating table to facilitate maneuvers. Consider Trendelenburg position (maternal head down)
- *E:* Extend the skin, fascial, or uterine incisions if needed after assessment
- *R:* Relax the uterus. Administer uterine relaxants or incise Bandl ring if present
- *T:* Techniques for delivery. Consider the *Push method* (one useful technique in planning a cesarean in the second stage of labor or when an impacted fetal head anticipated is to disengage the fetal head vaginally prior to skin incision) or the *Pull method*.

Elevating the fetal head prior to skin incision offers three major advantages:

1. It avoids the embarrassing situation of having the fetus deliver vaginally before it can be pulled out through the abdominal incision. Although rare, this has been known to happen, because the dense regional anesthesia further relaxes the pelvic floor musculature, leading to flexion and rotation of the fetal head, which then descends and delivers. Performing a final bimanual examination in the operating room after the establishment of surgical level anesthesia and immediately prior to skin incision will avoid this situation.
2. It elevates the fetal head, thereby creating additional space between the bony pelvis and fetal presenting part for the provider's hand to fit. This helps minimize injury to the fetus and to the maternal soft tissues at the time of cesarean.
3. Lastly, it provides additional information about the extent to which the fetal head is impacted in the pelvis and may influence decision making around the time of cesarean. For example, if the fetal head were deeply impacted in the pelvis and could not be disimpacted vaginally, the surgeon may choose to make a different uterine incision (such as a low vertical hysterotomy), administer a uterine relaxant (an inhaled anesthetic agent or nitric oxide), ask for additional instrumentation, and/or ask an assistant to be ready to elevate the fetal head vaginally should this be necessary.

Use of Instruments during Cesarean Section

Vacuum Extractors

Murless fetal head extractor (an instrument with a hinged shaft and sliding collar lock), the C-Snorkel impacted fetal head release device (the device's tip contains ventilation ports to facilitate airflow and release of the vacuum/suction created by the impacted fetal head), and the Fetal Pillow (a balloon device inserted in the vagina and inflated with sterile saline to disimpact an engaged fetal head before cesarean delivery).

JAYPEE BROTHERS

While all of these techniques can cause injury to the mother and the fetus, available many studies favor use of the reverse breech extraction (pull) technique, since it is associated with fewer maternal risks, including lower rates of uterine incision extension, infection, and postpartum hemorrhage and a shorter operative time

While the rate of complications caused by vacuum extraction of the fetal head at cesarean is not known, injuries have been reported. As such, routine use of vacuum extraction at the time of cesarean delivery cannot be recommended.

Barton's Forceps

Barton's forceps, an effective aid in cesarean deliveries, designed for use in vaginal deliveries, the forceps may be used in cesarean section when the fetal head is in the high transverse position or for clinicians who are small statured or lack upper body strength.

The forceps have two fenestrated blades with a sliding lock. The posterior blade has a deep cephalic curve and the anterior blade has a hinge that extends the blade from the shank at about a 50° angle when in use **(Fig. 4)**.

Once the hysterotomy has been performed and the membranes are ruptured, the operator confirms the transverse position of the head. We recommend first placing the fixed posterior blade. This is in contrast to the procedure described for vaginal delivery in which the anterior (hinged) blade is wandered into position first.

To facilitate placement of the posterior blade, the operator places one hand under the head and slides the curved blade between the operator's fingers, moving the fetal head into position **(Figs. 5 and 6)**.

The anterior blade then is applied directly to the correct position on the cheek in front of the anterior ear. To achieve direct access, either the operator or the assistant inserts a finger into the upper open part of the hysterotomy, lifting gently to facilitate sliding the blade into place. This is easier to do if the blade is introduced from the patient's left side so that the shanks will lock without crossing. Once the shanks are locked, the deeper blade in the uterus is pulled back to the standard locked position.

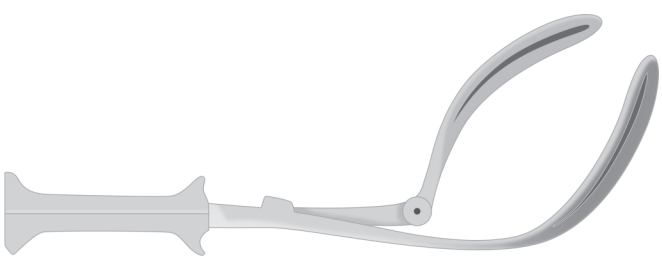


Fig. 4: Barton's forceps.

JAYPEE BROTHERS

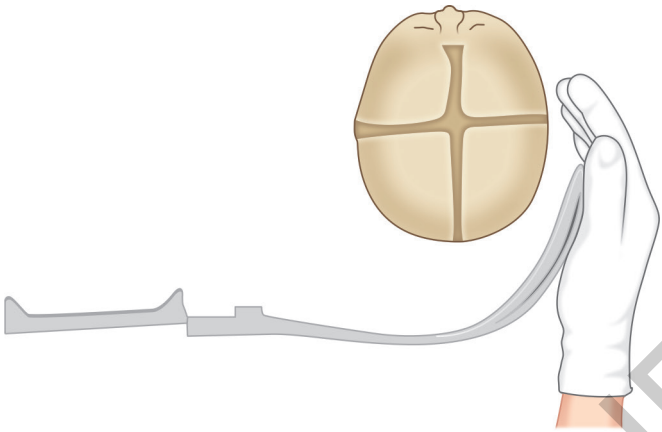


Fig. 5: Orienting the posterior blade relative to the fetal head.

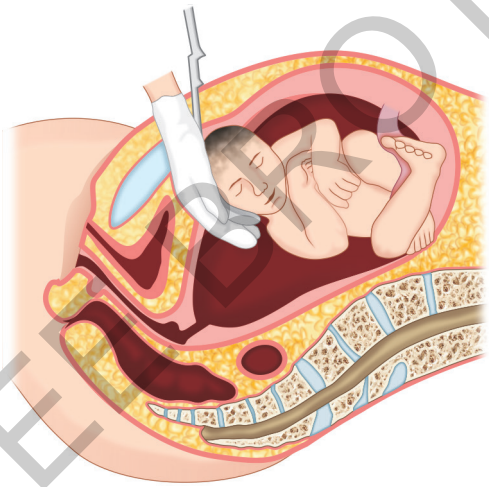


Fig. 6: Guiding the head into position.

JAYPEE BROTHERS

At this point, the operator palpates the position of the forceps on the head to confirm that the sagittal suture is oriented transversely between the blades. Traction now is applied, without rotation, along the long axis of the mother. Extraction of the fetus is assisted by fundal pressure. While guiding the head out of the incision, the vertex may be flexed by digital pressure on the bones converging at the posterior fontanel.

Use of Other Head Elevators

Fetal head elevators or obstetrical spoons are available in several variations including Coyne spoon, Sellheim spoon, and Murless head extractor. All of

them essentially function as obstetrical "shoe horns". They take less space than the obstetrician's hand, thus they are easier to get around a tightly impacted head.

KEY POINTS

- Emergency cesarean sections performed in the second stage are increasing.
- Emergency cesarean section carries a greater risk of complications for the mother and the baby than elective cesarean section or a cesarean section earlier in labor.
- Complications are usually related to manipulations required to deliver the baby.
- Presently, there is no national guidance on what techniques to employ for management of an impacted fetal head at cesarean section (MIDAS).
- The rising incidence of cesarean section deliveries and the associated reduction in rotational and mid-forceps deliveries, techniques to disengage an impacted fetal head have an increasingly important role in the Obstetrician's Armamentarium.
- To learn successful methods, therefore, physicians are forced to rely on observation, anecdotal experience, and—least desirably—trial and error.

BIBLIOGRAPHY

1. Bansiwal R, Anand HP, Jindal M. Safety of Patwardhan technique in deeply engaged head. Int J Reprod Contracept Obstet Gynecol 2016;5:1562-5.
2. Fong YF, Arulkumaran S. Breech Extraction: an alternative method of delivering a deeply engaged head at cesarean section. Int J of Gyneacol Obstet. 1997;56:184-4.
3. Lenz F, Kimmich N, Zimmermann R, Kreft M. Maternal and neonatal outcome of reverse breech extraction of an impacted fetal head during cesarean section in advanced stage of labour: a retrospective cohort study. BMC Pregnancy Childbirth. 2019;19(1):98.
4. Patwardhan BD, Motashaw ND. Cesarean Section. J Obstet Gynecol India. 1957;8:1-15.
5. Sethuram R, Jamjute P, Kevelighan E. Delivery of the deeply engaged head: a lacuna in training. J Obstet Gynaecol. 2010;30(6):545-9.
6. Shazly SA, Elsayed AH, Badran SM, et al. Abdominal disimpaction with lower uterine segment support as a novel technique to minimize fetal and maternal morbidities during caesarean section for obstructed labor: a case series. Am J Perinatol. 2013;30:695-8.

JAYPEE BROTHERS

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



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

Join us on facebook.com/JaypeeMedicalPublishers

Shelving Recommendation
OBSTETRICS & GYNECOLOGY

