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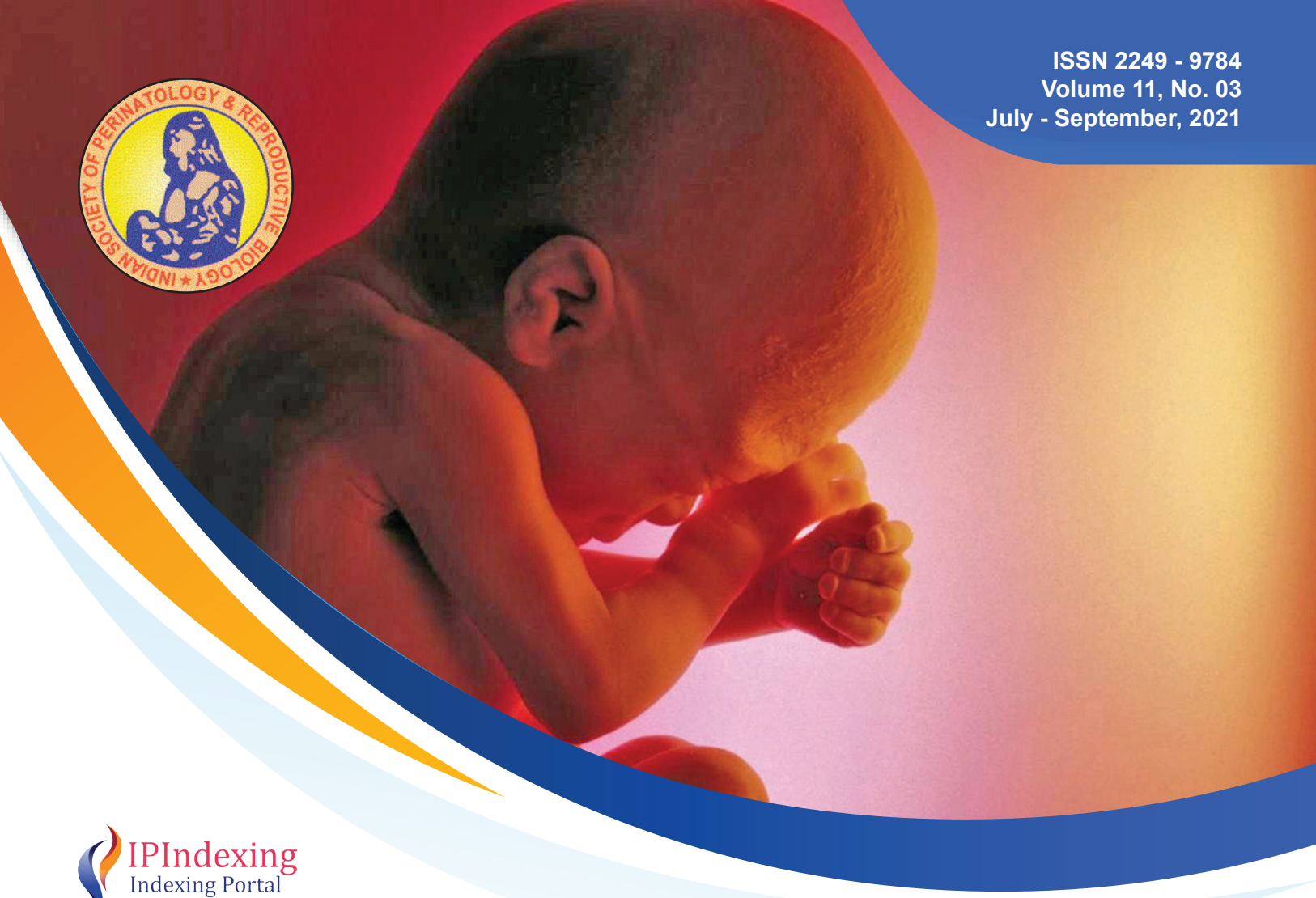

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Editor's Choice

Present Status of MTP Act of India after Amendment 2021

Arup Kumar Majhi

Introduction

The MTP Act, 1971 is an act to provide termination of certain pregnancies by registered medical practitioners and for the matters related with that.

MTP bill was passed by both the houses of Parliament and got the assent of President on 10-8-1971. MTP Act 1971 came into force in India from1st April 1972 except in Jammu and Kashmir where it became effective from 1st November 1976. Rules and regulations were framed in 1975.The act has been amended in 2002 as "MTP (amendment)Act,2002". This has been further amended in 2003 under the title "Medical Termination of Pregnancy Rules 2003" and "Medical Termination of Pregnancy Regulations 2003" where medical method of abortion was also included under the purview of the Act.

The Rajya Sabha had passed the Medical Termination of Pregnancy (Amendment) Bill, 2021 to amend the Medical Termination of Pregnancy Act, 1971 ("MTP Act") on 17th March, 2021 and Parliament received the assent of the President on 25th March, 2021 and is published in Gazette for general information on 25th March, 2021. Central Government has made the Medical Termination of pregnancy (amendment) rules, 2021 by amending MTP rules,2003. They came into force on the date of their publication in the official gazette by Ministry of health and family welfare notification in 12th October, 2021.

After fifty years there have been some significant amendments realising the remarkable developments of medical technologies, social demand and for better quality of live.

In this article latest information about the Act has been provided in comprehensive and simplified form highlighting the recent amendments. This article is written for academic purpose only not for the medicolegal purpose for which one must consult the original documents and the authority appropriate for this purpose.

Parameters of discussion

- Indication of MTPs
- Period of gestation up to when MTP is allowed
- Eligibility of service providers
- Approval of place

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- Documentation and Forms
- Information to higher authority
- MTP in minor
- Sonography
- Key features of the amendment

Indications of MTP- Grounds for MTP

In the recent amendment the upper gestation age has been extended with varying indications. Table 1 shows Indications of MTP according to length of pregnancy.

Table 1: Indications of MTP according to the length of pregnancy

Upto 20 weeks- [Like MTP Act 1971]	Beyond 20 weeks till 24 weeks [MTP (Amendment) Bill, 2021]	Beyond 24 weeks onwards** [MTP (Amendment) Bill, 2021]
There is no amendment except the eligibility of woman irrespective of marital status 1) Therapeutic 2) Eugenic 3) Humanitarian 4) Social grounds **Therapeutic:** Continution of pregnancy endangers the life of woman or may result grave injury to physical or mental health **Eugenic:** the risk of the child to be born with serious physical or mental abnormalities **Humanitarian:** caused by rape **Social reasons:** it encompasses contraceptive failure used by any woman or her partner that may likely cause serious mental injury, or social or economic environment can injure the women's health. In the amendment 2021 any woman* irrespective of marital status is eligible for MTP on ground of contraceptive failure	Following categories of women shall be considered (a) Survivors of sexual assault or rape or incest (b) Minors (c) Change of marital status during the ongoing pregnancy (widowhood and divorce) (d) Women with physical disabilities [major disability as per criteria laid down under the Rights of Persons with Disabilities Act, 2016 (49 of 2016)] (e) Mentally ill women including mental retardation (f) The foetal malformation that has substantial risk of being incompatible with life or if the child is born it may suffer from such physical or mental abnormalities to be seriously handicapped (g) Women with pregnancy in humanitarian settings or disaster or emergency situations as declared by Government	The foetal malformation has substantial risk of it being incompatible with life or if the child is born it may suffer from such physical or mental abnormalities to be seriously handicapped as decided by the medical board only after due consideration and ensuring that the procedure would be safe for the woman at that gestation age

* Where the length of the pregnancy does not exceed twenty weeks, where any pregnancy occurs as a result of failure of any device or method used by any woman or her partner for the purpose of limiting the number of children or preventing pregnancy, the anguish caused by such pregnancy may be presumed to constitute a grave injury to the mental health of the pregnant woman (amendment 2021).

** For terminations beyond 24-week gestations no other indication is considered except substantial foetal abnormalities. Even if it is by rape there is no provision for termination in this amendment, only way is to writ petition to court.

Period of gestation up to when MTP is allowed

Upto 20 weeks MTP IS allowed in all indications. Beyond 20 weeks till 24 weeks it is allowed in some special situations. Beyond 24 weeks onwards, no upper limit of gestation is specified only in foetal malformation decided by medical board. Table 2 shows the period of gestation.

Table 2: Period of gestation up to when MTP is allowed

Period of gestation	**Allowed or not**
Upto 20 weeks	Allowed in all indications
Beyond 20 weeks till 24 weeks	Allowed in some special indications
Beyond 24 weeks onwards, no upper limit of gestation specified	Only foetal malformation with substantial risk as decided by the medical board

Basic differences between MTP Act 1971 and MTP (Amendment) Bill, 2021

Table 3 shows the differences

Table 3 : Basic differences between MTP Act 1971 and MTP (Amendment) Bill, 2021 with regards to period of gestation and opinion of number of practitioner/ practitioners

Period of gestation	MTP Act 1971	MTP (Amendment) Bill, 2021
Upto 12 weeks	Advice of one doctor	Advice of one doctor
12-20 weeks	Advice of two doctors	Advice of one doctor
20-24 weeks	Not allowed	Advice of two doctors for some categories of pregnant women
Beyond 24 weeks	Not allowed	Two practitioners will perform the termination based on the decision of Medical Board in case of substantial foetal abnormality irrespective of the length of pregnancy
Any time during pregnancy	One doctor if termination is immediately necessary to save the pregnant woman's life (MTP Act 1971 under section 5. Here section 3&4 are not applied. Section 3 deals with length of pregnancy and criteria of RMP and section 4 specifies the place where MTP can be done)	

Who can perform MTP (Eligibility of service providers)?

The practitioners are categorised in five groups e.g (a), (b), (c), (ca), (d) .

(a) In case of a medical practitioner who was registered in a state medical register immediately before the date of commencement of the Acts – he or she had experience in the practice of gynaecology and obstetrics for a period of not less than three years.

(b) In the case of a medical practitioner who was registered in a state medical register on or after the date of commencement of the Act, either
   (i) He or she has completed six months of house surgency in gynaecology and obstetrics; or
   (ii) He or she had experience at any hospital for a period of not less than 1 year in the practice of obstetrics and gynaecology or

(c) He or she has assisted a registered medical practitioner in at least twenty five cases of MTP of which at least five have been performed independently in a hospital established or maintained, or a training institute approved for this purpose, by the Government
   (i) This training would enable the Registered Medical Practitioner (RMP) to do only 1st Trimester terminations (up to 12 weeks of gestation).
   (ii) For terminations up to twenty four weeks the experience or training as prescribed under sub rules (a), (b) and (d) shall apply "

(ca) A Registered Medical Practitioner shall have the following experience and training for conducting termination of pregnancy upto nine weeks of gestation period by medical methods of abortion, (incorporated in amendmend 2021) namely: -
   (i) experience at any hospital for a period of not less than three months in the practice of obstetrics and gynaecology; or
   (ii) has independently performed ten cases of pregnancy termination by medical methods of abortion under the supervision of a Registered Medical Practitioner in a hospital established or maintained, or a training institute approved for this purpose, by the Government.".

(d) in case of a medical practitioner who has been registered in a State Medical Register and who holds a postgraduate degree or diploma in gynaecology and obstetrics.

For medical termination of pregnancy beyond twenty-four weeks gestation period the opinion shall be given by a Medical Board duly constituted by the respective State Government or Union territory Administration at approved facilities and two Registered Medical Practitioners eligible under clauses (a), (b) and (d) shall perform the termination of pregnancy based on the decision of such Medical Board.

Categories of doctors as per revised MTP rules 2021

Table 4 shows the criteria of registered medical practitioners with degree and experiences. Table 5 shows period of gestation, category and number of Registered Medical Pactitioners needed for particular case.

Table 4: Categories of doctors as per revised MTP rules 2021

Categories	Criteria
(a)	In case of a medical practitioner who was registered in a state medical register immediately before the date of commencement of the Acts – he or she had experience in the practice of gynaecology and obstetrics for a period of not less than three years.
(b)	In the case of a medical practitioner who was registered in a state medical register on or after the date of commencement of the Act, either (i) He or she has completed six months of house surgency in gynaecology and obstetrics; or (ii) He or she had experience at any hospital for a period of not less than 1 year in the practice of obstetrics and gynaecology or
(c)	He or she has assisted a registered medical practitioner in at least twenty five cases of MTP of which at least five have been performed independently in a hospital established or maintained, or a training institute approved for this purpose, by the Government
(ca) (incorporated in amendmend 2021)	A Registered Medical Practitioner shall have the following experience and training for conducting termination of pregnancy upto nine weeks of gestation period by medical methods of abortion, namely: (i) experience at any hospital for a period of not less than three months in the practice of obstetrics and gynaecology; or (ii) has independently performed ten cases of pregnancy termination by medical methods of abortion under the supervision of a Registered Medical Practitioner in a hospital established or maintained, or a training institute approved for this purpose, by the Government."
(d)	In case of a medical practitioner who has been registered in a State Medical Register and who holds a postgraduate degree or diploma in gynaecology and obstetrics.

Table 5: Period of gestation, Category and Number of Registered Medical Pactitioners

Period of gestation	Category of practitioners	Number of practioners
Upto nine weeks of gestation period by medical methods of abortion	(a), (b), (c), (ca), (d)	One
Till twelve weeks of gestation, by surgical method	(a), (b), (c), (d)	One
Beyond twelve weeks to twenty weeks	(a), (b), (d)	One
Beyond twenty weeks to twenty four weeks	(a), (b), (d)	Two (Form E)
Beyond twenty eight weeks	(a), (b), (d)	Two practitioners will perform the termination based on the decision of Medical Board

Practitioners of (c) category can perform MTP only upto 12 weeks gestation and practitioners of (ca) category only upto 9 weeks.

Medical board

Medical Board's opinion is needed for the purposes of termination of pregnancy beyond twenty four weeks of gestation for foetal malformation.

Every State Government or Union territory shall, by notification in the Official Gazette, constitute a Board to be called a Medical Board for the purposes of termination of pregnancy beyond twenty four weeks of gestation for foetal malformation.

The Medical Board shall consist of the followings

(a) a Gynecologist;
(b) a Pediatrician;
(c) a Radiologist or Sonologist; and
(d) such other number of members as may be notified in the Official Gazette by the State Government or Union territory.

Powers of Medical Board

(i) to allow or deny termination of pregnancy beyond twenty-four weeks of gestation period only after due consideration and ensuring that the procedure would be safe for the woman at that gestation age and whether the foetal malformation has substantial risk of it being incompatible with life or if the child is born it may suffer from such physical or mental abnormalities to be seriously handicapped;
(ii) co-opt other specialists in the Board and ask for any additional investigations if required, for deciding on the termination of pregnancy;

Functions of the Medical Board

(i) to examine the woman and her reports, who may approach for medical termination of pregnancy
(ii) provide the opinion of Medical Board in Form D with regard to the termination of pregnancy or rejection of request for termination within three days of receiving the request for medical termination of pregnancy
(iii) to ensure that the termination procedure, when advised by the Medical Board, is carried out with all safety precautions along with appropriate counselling within five days of the receipt of the request for medical termination of pregnancy

Time limit in relation to termination of pregnancy beyond twenty-four weeks of gestation period

- Medical Board will give decision to allow or deny in Form D within three days of receiving the request for MTP
- Termination procedure, when advised is to be carried out within five days of the receipt of the request for MTP

Approval of place

There are few changes in the amendment over the rule 5 of MTP rules 2003 so far as logistics are concerned

- In case of second trimester, that is, up to 24 weeks of pregnancy (instead of 20 weeks,but logistics same as below)

(a) an operation table and instruments for performing abdominal or gynaecological surgery;
(b) anaesthetic equipment, resuscitation equipment and sterilization equipment;
(c) drugs and parental fluids for emergency use, notified by central government from time to time (the words "the Central government" has substituted the term" Government of India").

- In case of termination beyond twenty-four weeks of pregnancy:-

In addition to (a) to (c) additional point (d) is added in the amendment as below

(d) facilities for procedure under ultrasound guidance.

That said, there should be facility of ultrasound guidance in termination beyond 24 weeks

Documentations and FORMS

FORM A - Form of application for the approval of a place (edited with 24 weeks)

FORM B - Certificate of approval (no change)

FORM C - Consent of woman (no change)

FROM D - Report of the Medical Board for Pregnancy Termination Beyond 24 weeks- new form after amendment

FROM E - Opinion Form of Registered Medical Practitioners (For gestation age beyond twenty weeks till twenty-four weeks)- New form after amendment

FORM I - Form of certifying opinion or opinions - Every registered medical practitioner who terminates any pregnancy shall, within three hours from the termination of the pregnancy certify such termination in Form I

FORM II - Monthly statement of cases - Every head of the hospital or owner of the approved place shall send to the Chief Medical Officer of the Sate, in form II a monthly statement of cases where medical termination of pregnancy has been done (change)

FORM III - ADMISSION REGISTER (To be destroyed on the expiry of five years from the date of the last entry in the Register). Admission Register shall be a secret document and the information contained therein as to the name and other particulars of the pregnant woman shall not be disclosed to any person (change)

Steps of procedure in sequential manner

- Approach by the woman for termination
- History and assessment of the genuine indication, Physical examination – general and gynaecological. Investigations – Hb%, urine for albumin and sugar and blood group. Anti-D gamma globulin should be administered to Rh negative woman
- Counselling – regarding procedures and potential complication
- Filling up FORM C-Consent of woman and other FORMs as mentioned
- Certifying opinion or opinions of practitioner/practitioners- FORM I or FROM E
- Routine consent for anaesthesia
- Completion of procedure (MTP)
- Case sheet written for completion of procedure, anaesthetic note, postoperative advice
- Form C and Form B and intimation of termination are placed in envelop, sealed and marked as secret. The serial number of patients as in admission registrar and name of practitioner/ practitioners are written on every envelop
- Envelop is sent to the head of the hospital or owner of the approved place. Till it is submitted it is kept under custody of the practitioner/ practitioners
- Every head of the hospital or owner of the approved place shall arrange to keep the same in safe custody and send only the monthly statement before 5th of every month in form II to the Chief Medical Officer or health ministry in case of cities.

Protection of privacy of a woman (amendment 2021)

(1) No registered medical practitioner shall reveal the name and other particulars of a woman whose pregnancy has been terminated under this Act except to a person authorised by any law for the time being in force.
(2) Whoever contravenes the provisions as above shall be punishable with imprisonment which may extend to one year, or with fine, or with both (amendment 2021).

MTP in minor

Consent from appropriate person is to be taken in case of MTP in minor girls with age less than 18 years. In case of minor POCSO Act to be taken into consideration.

Routine sonography before MTP

There is no such directive of routine sonography before MTP in the amendment bill - do or not to do. However, there are several advantages of doing USG before any MTP. Attempts of medical method and first trimester surgical method in undiagnosed ectopic pregnancy / scar ectopic pregnancy may result serious catastrophic event and it is not uncommon in clinical practice.

Key features of the MTP (amendment) bill 2021

- MTP is allowed up to 20 weeks on the opinion of just one medical practitioner.
- To terminate pregnancies between 20 and 24 weeks, the opinion of not less than two practitioners are needed only for special categories of women as specified.
- Terminations beyond 24-week gestations can be done two Registered Medical Practitioners only in case of substantial risk of foetal abnormalities based on the decision of Medical Board duly constructed by the state government or union territory. In that case there is no upper limit of period of gestation
- For terminations beyond 24-week gestations no other indication is considered except substantial foetal abnormalities. Even if it is by rape there is no provision for termination in this amendment, only way is to writ petition to court.
- Registered medical practitioners only with experience and training in gynaecology/obstetrics can perform MTP.
- The medical methods of abortion (MMA) have been allowed up to 9 weeks (from previous 7 weeks). MTP by medical method up to 9 weeks is also allowed by the medical practitioners who have undergone 3 months training in O&G or have done 10 cases MMA under supervision of registered medical practitioners in a hospital or training institute approved for this purpose in addition to other categories of practitioners.
- In the amendment 2021, failure of contraceptive failure used by any woman or her partner as a cause of MTP is not restricted to married woman only, it is any woman irrespective to marital status
- No registered medical practitioner shall reveal the name and other particulars of a woman whose pregnancy has been terminated under this Act except to a person authorised (appropriate authority) by any law for the time being in force and whoever contravenes the provisions as above shall be punishable with imprisonment which may extend to one year, or with fine, or with both(amendment).

Conclusion

Medical Termination of Pregnancy (Amendment) Bill, 2021 has widened the scope of MTP especially in case of grossly malformed fetus and some special situations and provides access to unmarried women. There are few grey areas hopefully which will be cleared in subsequent days. Till the date, no suit for other legal proceedings shall lie against any registered medical practitioner for any damage caused likely to be caused by anything which is in good faith done or intended to be done under the MTP Act,1971 and the procedure is done with strict adherence to the MTP rules and regulations.

Sources:

1. The Medical Termination of Pregnancy Act,1971(Act 34 of 1971) dt.10.8.1971
2. The Medical Termination of Pregnancy Rules,2003[GSR No.485(E)] dt 13-6-2003
3. The Medical Termination of Pregnancy Regulations,2003[GSR No.486(E)] dt 13-6-2003
4. The Medical Termination of Pregnancy (Amendment) Act,2021(No. 8 of 2021) 25th March 2021
5. The Medical Termination of Pregnancy (Amendment) Rules,2021[GSR 730(E)] 12th October, 2021
6. POCSO Act 2012 (no 32 of 2012) 19th June 2012

Transvaginal Cervical Length and Amniotic Fluid Index to Predict Delivery Latency following Preterm Premature Rupture of Membranes

Bodla Laxmi Harshitha[1], Gangadhar Sahoo[2], Sujata P[3]

Introduction

'Preterm Prelabour rupture of membranes' (PPROM) is defined as rupture of foetal membranes before 37 weeks of gestation.[1] It affects almost 3% of all pregnancies and is responsible for about one-third of all premature births.[2] PPROM is amongst the commonest causes of preterm birth, and it can cause significant perinatal morbidity and mortality.[3] As per Statistics PPROM birth costs are eight times more than that of uncomplicated births.[4]

Preterm births accounted for 12% of all births in 2006, a 36% rise since 1981. For an individual patient, forecasting the timing of birth (latency) is challenging, resulting in uncertainty about the same for both the patient and the health care provider. Thus the ability to predict the timing of delivery is beneficial for both the patient and the physician. Interventions such as steroid administration, magnesium sulphate for neuroprotection, or the in-utero transfer to a tertiary centre can be optimized with the help of this information.[5] Thus it could be especially useful in counselling women who refuse hospital care or leave against medical advice. In women with PPROM, expectant management improves neonatal survival rate by about 2% for each additional day of intrauterine maturation, with the greatest benefit between 28 and 36 weeks.

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Prediction of Delivery Latency in PPROM

Prediction of the latency period is crucial when delivery is planned in a hospital with tertiary-level facilities. Few studies have been conducted to identify factors that predict the latency from membrane rupture to delivery. Gestational age, cervical length or dilatation at admission, amniotic fluid index, and parity are some of the suggested influencing factors. PPROM patients are frequently admitted to the hospital for intensive monitoring. Foetal heart rate, uterine contractions, ultrasonography (for estimating foetal growth and obtaining biophysical profile), and any signs of infection are monitored.

The methods employed for sonographic cervical assessment are: transabdominal (TAUS), trans-perineal (TPUS, also known as trans-labial), and Transvaginal ultrasound (TVU). The cervix can be imaged with Transvaginal sonography, which is a safe procedure.[6] In both singleton and twin pregnancies, it has been found helpful to predict the probability of premature delivery with intact membranes.[7,8,9,10] TVUS-measured cervical length (CL) predicts preterm birth (PTB) better than other methods. As a result, its application in predicting the time to delivery in PPROM women is valuable.[6] The sensitivity of TAUS in detecting a short cervix ≤25 mm (confirmed by TVU) ranges from 44.7 percent

to 96.1 percent.[11,12] Because of its high accuracy, it is regarded as the "gold standard" for the detection of a short cervix during pregnancy.[11] Serial TVU has been found to be safe in women with PPROM, with no increased risk of endometritis, chorioamnionitis, or newborn infection.[13,14] Previously TVU was avoided in the presence of ruptured membranes, therefore its use in the management of PPROM has been studied infrequently. Studies by Carlan et al[13] showed the safety of transvaginal sonography (TVS) and proved that there was no increase in peripartum infection or reduction in latency period when compared to women who did not undergo TVS. According to some studies15 either TAUS or Trans - labial ultrasound cannot reliably reproduce accurate CL measurements. The latency period following PPROM was not found to be associated with CL by trans-labial ultrasound.16 TVS can be safely performed with a low interobserver variance rate of 5-10% when performed by trained operators.[17,18]

Compared to TAUS , TVS is less affected by maternal obesity, position of cervix, and shadowing from the foetal presenting part[19,20,21,22] American college of obstetricians and Gynaecologists(ACOG) and Society for maternal-fetal medicine consult series(SMFM) recommend routine transvaginal ultrasound screening for women with a history of prior preterm birth with a singleton pregnancy currently (GRADE1A).[23]

Throughout the pregnancy, TVS has been used extensively to document the appearance of the cervix. The cervical length has a bell-shaped distribution in a normal pregnancy, with a majority of women maintaining a cervical length between 30 and 40mm throughout the pregnancy. PTB is more likely in pregnancies with a cervical length less than 20 mm, according to sonographic measurements. A mid-pregnancy cervical length is a useful tool for identifying women who are at high risk of PTB.[9,24,25] According to various studies;[19] a short cervix can be used to predict preterm birth. It has been recommended as a valuable tool in predicting intra-amniotic infections or inflammation in preterm labour.[26,27] Increased bacterial ascent into the lower pole of the uterus is associated with the shorter cervical length and maternal and foetal response to the release of inflammatory mediators, resulting in preterm parturition.[27]

Although it has been shown that sonographic measurement of cervical length in patients with PPROM does not increase the risk of infection, it is not routinely performed, and the importance of a short cervix in PPROM is not well understood in asymptomatic women or women in preterm labour.[13,14] According to some studies, a short cervix has been a predictor of an impending delivery in PPROM.[14,28,29,30]

Short cervix and Intra-amniotic infection/ inflammation are associated with an increased risk of preterm delivery in PPROM, but there is a paucity of data on the relationship between this inflammatory process and short cervix. Furthermore, it is unknown whether the increased risk of impending preterm delivery in PPROM, associated with a short cervix, is a result of these inflammatory processes or not. These issues are crucial since assessing cervical length with a non-invasive and quick method allows for early detection of such conditions during the initial evaluation of PPROM patients.[31]

Many studies[9,29,32] have showed that a short CL is significantly associated with premature delivery after PPROM, by using TVS to assess the posterior cervical angle. This is a useful tool in determining the latency period in women with PPROM. These findings were supported by Kathir et al.[33] This could aid in patient counselling and planning their prompt referrals to centres with neonatal facilities.

Several studies postulated a relationship between cervical length and delivery latency. Cervical length ≤ 2cms is associated with delivery within 7days among 60% of pregnancies between 24 -32 weeks of gestation in several studies.[28,29,34] A similar study done by Kathir et al[33] found a relationship between the posterior angle of the cervix but not with the length of the cervix. Some studies showed no relationship between them. The main benefit of measuring the cervical length is its significant negative predictive value. On the other hand, the prognostic value of cervical length as a single measure is relative low.[35]

In a study[36] conducted in 80 singleton pregnancies with PPROM between 24-32 weeks of gestation, it was found that when the cut-off value was 2 cm, the sensitivity was 52.6%, specificity was 69%, positive predictive value (PPV) was 60.6%, negative predictive value (NPV) was 61.7%, and the accuracy

was 61.25%. In 33 of the 80 pregnancies, the CL was 2cm, and delivery occurred in 20 of the pregnancies within 7 days, accounting for 60% of the pregnancies.

In a prediction study conducted by Suwan Mehra et al,[28] a cervical length of 2 cm was found in 40% of women in women with PPROM with gestational age ranging from 23weeks +5days to 33weeks +6 days. The predictive value was 62% for delivery within 7 days for a cervical length of 2cm. The study's sensitivity was 51%, specificity was 71% and negative predictive value was 61%.

Another study[34] was conducted on pregnant women between 24 and 32 weeks of gestation with PPROM. In 58/101 cases, pregnant women delivered within 7 days of presentation (57%). Logistic regression analysis revealed that cervical length (odds ratio (OR) = 0.91, 95 percent CI 0.86-0.96, P = 0.001), gestation at presentation (OR = 1.35, 95 percent CI 1.14-1.59, P = 0.001), and the presence of contractions (OR = 3.07, 95 percent CI 1.05-8.92, P = 0.039) made significant independent contributions in the prediction of delivery within 7 days without any significant independent contributions from ethnicity, maternal age, BMI, parity, previous history of preterm delivery, cigarette smoking, vaginal bleeding, or the use of tocolytics, antibiotics, or steroids.

Another study conducted by Rizzo et al[29] found that TVS evaluation of the cervical length (CL) is predictive of PTB in women between 24 and 32 weeks of gestation with PPROM, with a value of 15 mm identifying approximately 70% of symptomatic women who will deliver within one week. Biomarkers in the cervico-vaginal fluids (fetal fibronectin, phosphorylated insulin-like growth factor protein-1, placental alpha-microglobulin-1, and cytokines) and other ultrasonographic cervical variables (posterior cervical angle, elastography) aid in identifying women at risk with a CL between 15 and 30 mm, presence of a short cervical length.[37]

In a study conducted by Kathir et al[33] between 28 and 32 weeks of gestation, the mean time interval was 96.9 hours between membrane rupture and delivery. The majority of the women (63.8% (n = 51)) gave birth within 48 hours. TVCL was not found to be related to the latency period (p =.559). The latency interval was found to be significantly associated with the posterior cervical angle (hazard ratio 1.03, 95 percent CI: 1.01–1.06; p =.003).

The mean gestational age presenting with PPROM was 29.7 +/- 2.8 weeks in a study conducted by Fischer et al16. The median latency period was 10 days, and the mean trans-labial cervical length was 2.8 +/- 1.1 cm (interquartile range 4-15 days). Cervical length and latency period had no statistically significant relationship (r=0.15, p=0.28). Furthermore, cervical length cut-offs of 2.5 cm or 1.5 cm, as well as the presence of cervical funnelling, was not associated with latency periods spanning less than seven days. Similarly, neither chorioamnionitis nor postpartum endometritis was associated with the development of these criteria.

There were no significant differences in the incidences of chorioamnionitis (28% and 20%), endometritis (6% and 9%), or neonatal infections in a randomized study conducted by Carlan[13] (17% and 20%). The average latency period in women who went into spontaneous labour and had an initial cervical length of 3.0 cm or less was 9.4 days, as compared to 11.0 days if the cervix was longer than 3.0 cm, showing a non-significant difference.

The amniotic fluid index is another important factor in determining delivery latency. Most examiners use an AFI <5 cm as the threshold for oligohydramnios.[37] Intrauterine Growth Restriction (IUGR) was found to be more common in women, whose AFI was close to the cut-off point. Also, they have more prenatal consequences.[38] The cut-off-point of the amniotic fluid index has been defined in different ways. Luo et al.[39] defined it to be between 5-8 cm; Banks and Miller[40] stated it to be between 5.1 and 9.9 cm; Phelan et al.41 defined it in the range of 5-8 cm in their research.

In PPROM amniotic fluid index (AFI) ≤ 5cm has been associated with a shorter latency period and higher rates of delivery within 7 days in comparison to women with normal AFI.[28] Amniotic fluid volumes have been suggested as useful adjuncts in identifying patients at risk of PPROM, Studies have noted increased perinatal morbidity and mortality in presence of oligohydramnios.[37,42,43] Several studies[44,45] have linked oligohydramnios to perinatal infection, fetal distress, caesarean delivery, and neonatal death in patients with preterm premature rupture of

membranes. Oligohydramnios has been associated with a reduction in latency period. There could be several reasons for this but the most widely accepted is that there is a redistribution of blood flow in these foetuses because of inflammatory response syndrome in the foetus.[44]

In a study done by Raina et al,[46] an analysis was made of the factors affecting the duration of latency period in patients with preterm premature rupture of membranes in a tertiary care centre. Among 51 pregnancies, AFI ≤5 was observed in 21 pregnancies and 14 pregnancies delivered within 48 hours. In this study, Oligohydramnios was significantly more common in subjects with latency less than 48 hours compared to subjects with latency more than > 48 hours (p-value = 0.040). In another study by Borna et al,[47] after PPROM, AFI ≤ 5 was significantly associated with an increased risk of chorioamnionitis; on the other hand, the patients in the AFI ≤ 5 groups did not have a shorter latency period. Hence no evidence was found between the association between the development of chorioamnionitis and latency interval in patients with ruptured membranes (P=0/783) in this study as the latency period was not significantly different between the two groups.

In the Park et al study,[48] patients having an amniotic fluid index of ≤ 5 cm had a significantly shorter latency interval-to-delivery when compared to patients with an amniotic fluid index of ≥ 5 cm (median, 38 hours; range, 0.2-1310 hours; vs median, 100 hours; range, 0.1-2917 hours; P.01). A Cox proportional hazards model analysis revealed that an amniotic fluid index of ≤ 5 cm was a significant predictor of pregnancy duration (odds ratio, 2.4; 95 percent confidence interval, 1.4-3.9; P.001).

Vermillion et al.[49] demonstrated that an AFI of ≤5 cm after PPROM between 24 and 32 weeks of gestation was associated with a shorter latency period before delivery. This finding has been supported by several authors,[48,50] who showed that the presence of oligohydramnios in PPROM is associated with a shorter latency period when compared to PPROM without oligohydramnios.

The latency period in days from PPROM was significantly lower in women in the group with AFI ≤5 cm (P0.05) in a study of 114 pregnancies conducted by JuanPiazze.[50] AFI ≤5 cm was found to be associated with 66% of pregnancies complicated by chorioamnionitis (8/12) and in 70% of neonates with RDS (19/27) at birth).

Several studies[48,49,50] hypothesized a relationship between AFI and delivery latency in PPROM and found a significant relationship between AFI ≤5 cm and delivery latency. In the above studies, in cases where the amniotic fluid index was less than or equal to 5, delivery occurred within 48 hours in the majority of cases, which is statistically significant. Along with delivery latency, low AFI explained the association with chorioamnionitis, neonatal death, and RDS.

According to Morris et al.,[44] AFI of ≤ 5 was positively correlated with asphyxia, Caesarean section, low Apgar score, and a pH 7 of the umbilical cord blood and found a positive correlation between AFI of ≤5 and prolonged latency. Therefore they suggested AFI for predicting prenatal problems.

Other factors that can predict the delivery latency, in addition to the cervical length and amniotic fluid index, are gestational age, parity, and associated chorioamnionitis. Lower delivery latency is associated with Elderly females and higher parity. Chorioamnionitis is a common indication for labour induction in PPROM patients. Specific signs of chorioamnionitis, such as fever, maternal or foetal tachycardia, abdominal pain, or an offensive odour of the amniotic fluid, indicating that the baby should be delivered right away.[51]

Prediction of Latency with Combined Cervical Length and Amniotic Fluid Index (AFI):

Many Studies[50,52,53,54] found there is a shorter latency interval and high rate of delivery within 7 days, with AFI of ≤5 cm in PPROM when compared to women with a normal AFI. Many studies[55] reported that combining both AFI and TVCL was more accurate in predicting delivery latency than using single parameters. Megha et al[6] in their study found an increase in Positive predictive value (PPV) when AFI <5 cms and CL <2 cms were combined, with a 78.98 % risk of delivery within 7 days after PPROM. Mubarak et al36found an increase in PPV to 86.4 % when combined AFI <5 cms, and TVCL <2 cms were used to predict delivery latency within 7days. Lee et al.[55] concluded in their study that by

combining the sum of AFI and TVCL to 8.57, the latency period is reduced to 1.6 days. Mehra et al[28] found that a combination of TVCL >2 cm and AFI >5 cm increased the likelihood of remaining undelivered 7 days after PPROM.

Conclusion

Prediction of the latency period is crucial when delivery is planned in a hospital with tertiary-level facilities. Serial TVU has been found to be safe in women with PPROM, with no increased risk of endometritis, chorioamnionitis, or newborn infection. Previously TVU was avoided in the presence of ruptured membranes; therefore its use in the management of PPROM has been studied infrequently. Compared to transabdominal ultrasonography, transvaginal ultrasonography is less affected by maternal obesity, position of cervix, and shadowing from the foetal presenting part.

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Original Article: Obstetrics

Study of Clinical and Etiological Profile and Outcome of Cerebral Venous Thrombosis in Pregnancy and Puerperium in a Tertiary Care Hospital in Eastern India

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Abstract

Background: Cerebral venous thrombosis (CVT) is not uncommon in pregnancy and puerperium. We conducted a prospective study of 35 patients of CVT admitted in our department for a period of 1 year.

Results: Headache was the most common symptoms. 25 (71.43%) patients presented with headache. Hemiparesis was presenting symptoms in 6 (17.14%) cases. Seizure and diplopia were present in 5 (14.23%) patients each. Altered sensorium was observed in 4 (11.42%) cases. The predisposing factors were predominantly non-infective and included inherited thrombophilias like anemia, protein C and S deficiencies, hyperhomocystinemia.

Investigations: MR venography is the most definitive imaging modality and revealed lack of flow due to thrombosis in venous sinuses most notably in superior saggital sinus. CT Scans revealed delta sign, cord signs in few cases.

Treatment: Anticoagulation is the cornerstone of treatment. LMW Heparin was given in all patients for 14 days and was followed by oral anticoagulant.

Outcome: In our study the mortality was 5.7 % due to better obstetric care, advent of newer imaging techniques and increased sensitization towards diagnosis.

Key words: cerebral venous thrombosis; venography.

Introduction

Cerebral venous thrombosis (CVT) is any thrombosis occurring in intracranial veins and sinuses, which is a rare disorder affecting 5 persons per million per year with huge regional variation. Puerperal CVT is more common in India than western world. The prevalence is 4.5/1000 obstetric admission. Pregnancy and puerperium are the most prevalent prothrombotic states leading to cerebral venous thrombosis. The first description of CVT, appearing in the French literature in 1825, was by Ribes, in a 45 year old man who died after a 6 month history of severe headache, epilepsy, and delirium.[1] In 1957, Padmavati et al., for

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the first time from India, reported 15 cases of CVT in puerperium in an epidemiological study evaluating the causes of hemiplegia in 44 women.[2]

Aims & Objectives

GENERAL OBJECTIVES: To document demographic profile of antenatal and puerperal patients of CVT and document various modes of presentations of CVT in pregnancy.

SPECIFIC OBJECTIVES: To identify specific etiology, if possible and record outcomes during hospital stay in this group of patients and assess the neurological status of the study group before and after specific treatment both clinically and radiologically.

Materials & Methods

STUDY SETTING: Obstetrics & Gynecology in-patient department, IPGME&R and SSKM Hospital, Kolkata and Neuromedicine in-patient department, Bangur Institute of Neurology, Kolkata

STUDY DESIGN: This was a descriptive observational study done between March, 2018 and August, 2019 involving a short period (3 months) of longitudinal follow-up. Total 35 cases were included based on purposive sampling.

DEFINITION OF THE PROBLEM: Cerebral venous thrombosis (CVT), also called cerebral venous sinus thrombosis (CVST), is a cerebrovascular disease with diverse clinical manifestations that often affects women of childbearing age and prevalent in antepartum and puerperal period. It's most common clinical manifestations are headache, seizures, altered consciousness, and neurological focal signs on physical examination. CVT is treatable and has a good outcome, if detected early.

DEFINITION OF POPULATION: All antenatal and puerperial mothers having evidence of cerebral venous sinus thrombosis. CVT was confirmed by neuroimaging (CT head or MRV brain) and authenticated by radiologist.

STUDY VARIABLES: Women aged ≥ 18 years presented in antenatal or puerperial period who fulfilled the following inclusion and exclusion criteria and gave written consent to participate in this study.

Inclusion criteria: Antenatal or postnatal patients admitted with complaints of headache, impaired consciousness, seizures and focal neurological deficit.

Exclusion criteria: Known epileptic mothers, diagnosed case of eclampsia and pre-eclampsia, CNS infection, head injury.

Treatment: All patients were treated as per instruction of neurologist. Low molecular heparin was used in most of the cases. We used unfractionated heparin in complicated and critical cases. After 10-14 days of therapy, oral anticoagulants were started under guidance of neurologist. Patients were put on long term oral anticoagulation as per their etiology. Dabigatran or warfarin was used in most of the cases to prevent recurrence. Dabigatran has a specific benefit. Routine measurement of PT, INR is not required for Dabigatran.

Results:

Total 35 patients were included in our study.

Demographic profile:

Age: The mean age of presentation was 28.29 years of age with a standard deviation of 5.824. Minimum age was 19 years and maximum age was 40 years.

If we divide the population in subgroups, maximum patients were in the age group of 20-30 years. Total 22 (62.85%) patients were in this age group. 12 (34.29%) were in the age group of 31-40 years and 1 patient was <20 years age group.

Residence: Among our study population, 21 (60%) were from rural back ground and 14 (40%) were from urban background.

Obstetric parameters:

Parity: In our study population, 12 (34.3%) patients were multipara, 19 (54.3%) patients were primipara and 4 (11.4%) patients were primigravida.

Status of current pregnancy: During hospital admission for cerebral venous thrombosis, 30 (85.7%) patients were in puerperal stage and 4 (11.4%) patients were in 3rd trimester of pregnancy and one patient was in 1st trimester of pregnancy. Among the puerperal group, 22 (62.9%) patients presented within 1 week of delivery, 4 (11.4%) patients presented within 1-2 weeks and 2-3 weeks of delivery, each.

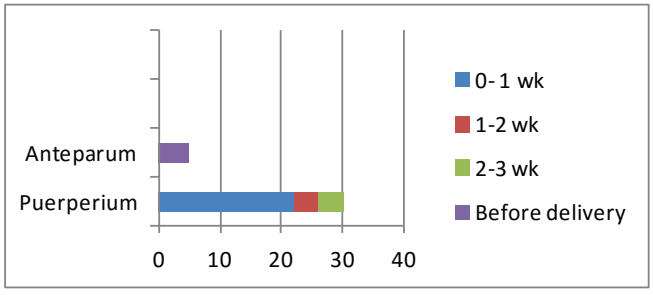

Figure 1: Onset of CVT

Mode of delivery: Among the 30 puerperal patients, 25 (71.4%) patients delivered normally through vaginal route and 8 (22.9%) patients had cesarean section. Out of the 5 ante-partum patients, one patient had cesarean section, 3 patients had normal vaginal delivery and one patient has not delivered yet. 33 patients were un-booked and 2 patients were booked.

Place of delivery: Among the 30 puerperal patients, 5 (14.3%) patients delivered at home and rest 25 (71.4%) patients delivered at hospital. Among the 5 ante-partum patients, 4 patients delivered at hospital and one patient yet to deliver.

Drug history: In our study population, 27 (77.1%) patients did not give history of OCP intake, but 8 (22.9%) patients had history of OCP intake during their lifetime.

Clinical presentation: Patients who were included in our study had various presenting symptoms. Headache was the most common symptoms. 25 (71.43%) patients presented with headache. Hemiparesis was presenting symptoms in 6 (17.14%) cases. Seizure and diplopia were present in 5 (14.23%) patients each. Altered sensorium was observed in 4 (11.42%) cases.

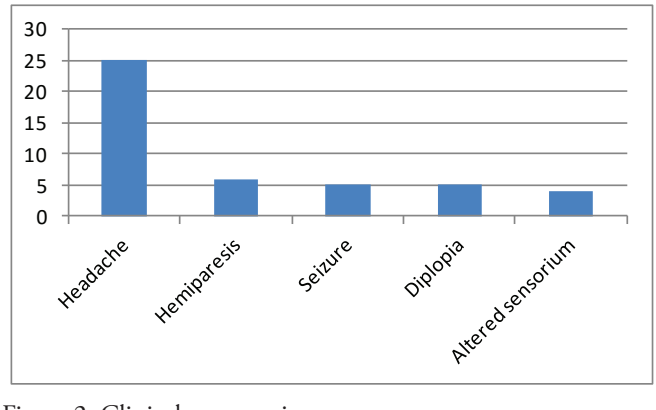

Figure 2: Clinical presentation

Clinical examination revealed the following findings. Papilledema was seen in 12 (34.2%) cases. Hemiparesis was seen in 7 (20%) cases, coma in 2 (5.7%) cases, 3rd nerve palsy in 6 (17.1%) cases, 6th nerve palsy in 2 (5.7%) cases and normal in 7 (20%) cases. We measured the functional status of the patient by modified Rankin scale. 7 patients had mRS 1, 16 patients had mRS 2, 7 patients had mRS 3, 3 patients had mRS 4 and 2 patients had mRS 5 status.

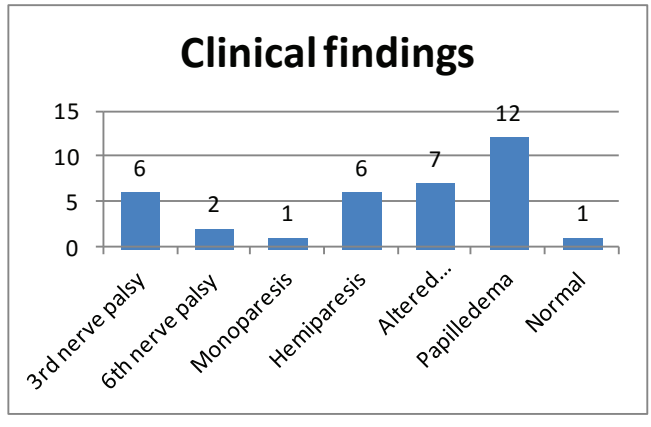

Figure 3: Clinical findings

Laboratory investigation: Complete hemogram analysis revealed normal analysis in 1 6 (45.7%) patients and anemia was detected in 12 (34.3%) patients. Anti-phospholipid antibody was present in 4 (11.4%) patients. Hyperhomocystenemia was detected in 7 (20%) patients and protein S deficiency was detected in 2 (5.7%) patients.

Radiological investigation: Among the study population, superior sagittal sinus (SSS) thrombosis was detected in 15 (42.9%) cases, transverse sinus (TS) thrombosis in 12 (34.3%) cases and cortical vein thrombosis was detected in 8 (22.9%) cases.

Contrast CT scan was done in all puerperal cases. Antepartum cases were excluded from CT scan. Haemorrhagic infarct was detected in 15 (51.4%) cases. Non- haemorrhagic infarct was detected in 8 (22.8%) cases. Delta sign was detected in 4 (11.4%) cases. CT scan was normal in 3 (8.6%) cases.

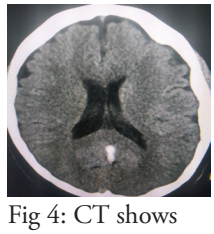

Fig 4: CT shows hyperdense venous sinus

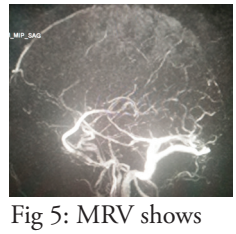

Fig 5: MRV shows thrombosed SSS

Treatment: Among our study population, 5 (14.3%) patients were treated with intravenous heparin due to their moribund state. All other, 30 (85.7%) patients were treated with low molecular weight heparin (LMWH).

Outcome: Out of the whole study population, 2 (5.7%) patients who presented during puerperium, died and 33 (94.3%) patients improved.

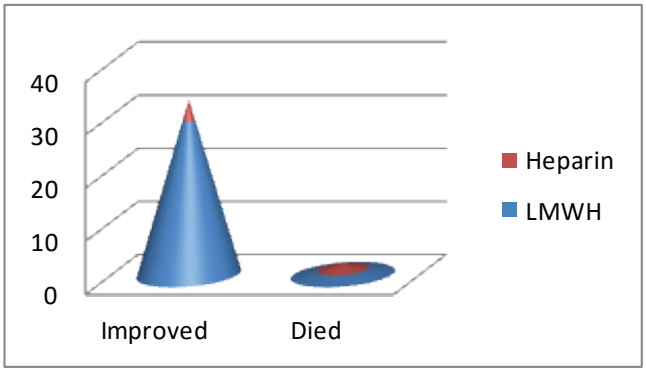

Figure 6: Treatment and outcome

We measured final outcome in modified Rankin scale at the end of 3 months. Total 31 (88.6%) patients had mRS 0-1, 2 (5.7%) patients had mRS 2 and 2(5.7%) patients died (mRS 6).

Relations between different parameters: There is no significant relation exists between various obstetric parameters and final outcome, but, significant relationship exists between presenting symptoms and clinical findings with outcome seen in our study. Paired sample T test between the functional status before and after therapy showed a statistically significant outcome (p value- 0.000).

Discussion

In the current study, majority of the cases (85.7%) were in the puerperal period, the results were consistent with the study conducted in India by Saroja AO.[3] Most of the affected patients (54.3%) were primipara, which is almost similar to other studies. The maximum occurrence of CVT, i.e. 74.3% was seen in the first two weeks of puerperium which is correlating with the series conducted by Srinivasan et al and Maru et al.4,5 Headache was the commonest symptom (71.43%) followed by seizures and altered sensorium.

In our study 6 patients presented with paralysis (17.14%). Similar results were seen in the studies by Pai et al and Narayan et al.[6,7] The incidence of coma in our study was only 5.7% compared to other case series from India that reported 43% to 93% of patients had an altered sensorium at presentation. The reason for this decrease is probably due to patients seeking medical help earlier in the recent times.

The fundus examination revealed normal fundus in 23 patients but 12 patients had signs of papilledema (34.2%). Papilledema may be seen in chronic cases or those with a delayed presentation but is less common in acute cases. All the above mentioned clinical profile correlated with the studies conducted by Srinivasan et al, Agostoni et al, Maru A et al.[4,5,8]

In our study, 34.3% cases of CVT had anemia. The association between anemia and CVT was explained by Coutinho J et al (2015) who suggested that iron deficiency anemia could result in thrombocytosis as a causal relationship.[9] Exaggerated hypercoagulable state of pregnancy, intravascular volume depletion due to edema, generalized endothelial injury and dysfunction favour thrombus formation. Anti-phospholipid antibody was present in 11.4% patients of our study population. Hyperhomocystenemia was detected in 20% patients and protein S deficiency was detected in 5.7% patients.

Physiological changes during pregnancy include increase in red cell mass and plasma volume with dilutional anemia. The plasma levels of protein S decline progressively during pregnancy while protein C levels remain unchanged. Antithrombin III levels are stable during pregnancy and rise after delivery. Acquired protein C resistance, high factor VIII, and factor V activity are found during pregnancy. Coagulation factors may be elevated during postpartum state up to 12 weeks, hence may not be reliable indicators of venous thrombosis. These changes during pregnancy and postpartum period confer a higher risk of venous thrombosis.

Diagnosis of CVT can be made from CT scans. However, sensitivity of CT scan is poor and shows direct signs of CVT in less than half of the cases. In our study, CT scan revealed hemorrhagic infarct in 51.4% of cases.

The American heart association/American stroke association 2011 scientific statement recommended magnetic resonance with T2 weighted imaging and

MR venography as the imaging test of choice for evaluation of suspected CVT. In our study, head CT was normal in 8.6% of cases.[10] MR venography revealed cerebral venous thrombosis in those 8.6% cases. So, MRV is of great diagnostic utility and these cases could escape detection if CT alone is used as the only neuro imaging modality.

Management of obstetric CVT is not different from that of CVT unrelated to pregnancy. Hence it includes supportive care, seizure control, measures to lower intracranial pressure, search and treatment of possible infection. To prevent further thrombosis, anticoagulation is the preferred treatment, currently. Of the 35 cases, 30 patients were treated with low molecular weight heparin and rest 5 were treated with unfractionated heparin. Use of heparin reduces the mortality as proven by similar studies like Srinivasan et al, Bousser and Ferro et al.[4,11,12]

Compared to arterial stroke CVT has favourable outcome. Most of our patients have recovered completely. Out of the 35 cases in our study, 2 patients in puerperium died. These two patients presented with seizure and coma. In the past, CVT was diagnosed mainly at autopsy and was considered to be a lethal disease with a mortality ranging from 30-50%.

Most CVT patients have a good prognosis. Approximately 80% of patients have mRS of 0–1, but they usually have residual symptoms and are often unable to return to their previous work. In our study the mortality was 5.7 % due to better obstetric care, advent of newer imaging techniques and increased sensitization towards diagnosis.

Conclusion

Cerebral venous thrombosis is not uncommon during pregnancy and puerperium. Adequate clinical suspicion, timely recognition, early diagnosis and prompt treatment can provide better prognosis and decrease maternal mortality and morbidity.

It is more during 3rd trimester of pregnancy and puerperium. Most cases of puerperal CVT presented with in the second week. Apart from hypercoagulable state, anaemia is the major causative factors. Headache was the universal symptom, and usually occurred in association with other symptoms like seizures, visual disturbances and focal deficits.

Majority of patients had hemorrhagic venous infarct on head CT. MRI brain with venography plays distinct role in those cases where CT scan is negative.

Low molecular heparin is effective in treating CVT in pregnancy and puerperium. Outcome is good if treatment starts early. Outcome also depends on the initial presentation. Mortality was low (5.7%) and most cases had excellent recovery.

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Case Report: Obstetrics

A Case of Live Birth after Delayed Interval Delivery of Second Twin: An Unusual Case Scenario

Saumya Saumya[1], Meena Samant[2], Parul Gupta[3], Nidhi Vardhan[4]

Abstract

Delayed interval delivery in multifetal pregnancy is infrequent. It can be beneficial for the second twin but at the same time critical for the mother and challenging for obstetrician. This case report is about the latency interval of 10 days after delivery of the first twin. The case high lights the feasibility of this option to prolong pregnancy duration for 2nd twin with careful monitoring.

Key word: Delayed Delivery, Interval, Monitoring, Second twin.

Introduction

Rates of multifetal pregnancies are increasing notably due to the shoot up in cases of in vitro fertilization. Multifetal pregnancies are often at risk for spontaneous preterm delivery, leading to extreme prematurity in newborns and causing increase in morbidity and mortality. Usually, delivery of a second fetus occurs shortly after preterm delivery of the presenting fetus. Delayed interval delivery is characterized by unusually postponing labor after the birth of the first fetus allowing the remaining fetus to stay in utero until reaching viability. This improves survival and reduces morbidity.[1,2] For the prolongation of delivery interval that is critical for the improvement of perinatal outcome of second twin, there is still study going on whether cervical cerclage or other conservative approach is the superior method of treatment.[2] There are several case studies for delayed interval delivery of the second twin, but data form previous studies are conflicting and there is no widely accepted protocol available so far. In addition, it is also not clear if this interval delivery is associated with an improved long-term outcome of the second twin.

The purpose of reporting this case is to keep the option of delayed interval delivery open in selected cases to improve the maturity of the fetus.

Case report

25 year old primigravida with 25 weeks 1 day gestation, IVF conceived twin pregnancy came with complaints of lower abdomen pain and backache for one day. She had h/o 3 embryo transferred in IVF cycle due to male factor infertility. Subsequently she underwent fetal reduction to di-chorionic di-amniotic twin at 11 week of gestation (fig 1).

She came as an unbooked case to the hospital in emergency. At admission she was normotensive, afebrile and in early labour. Her Hb was 10.5 gm/

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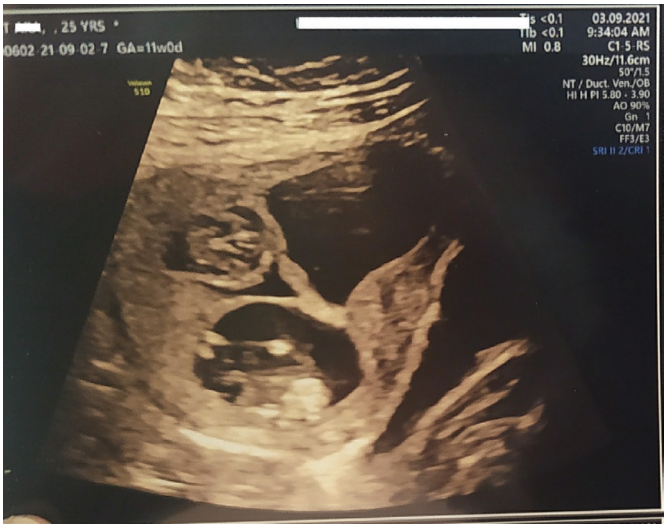

Figure. 1: USG after fetal reduction and before preterm delivery

dl, TLC 16300/mm3, viral markers and coagulation profile were normal, SGPT 153 U/L, RBS 129 mg%, covid 19 rapid antigen test was negative and blood group was B Positive. She had spontaneous expulsion of a dead 250 grams male fetus within 2 hours of admission. She was observed for delivery of 2nd twin, but uterine contraction had ceased, placenta was retained in utero, cervical os retracted. Cord was tied high up in the cervix. Urgent scan was done which revealed a single alive fetus of 25 weeks 6 days in breech presentation with adequate liquor, with baby weight 858 grams (fig 2). She was planned for expectant management.

High vaginal swab and urine culture were sent. She was started on intravenous Ceftriaxone & Metronidazole. She was counseled regarding the risk of complications such as sepsis and thromboembolism. She was well explained about preterm labor, PPROM, risk of prematurity. After taking consent, conservative treatment was started with corticosteroids for lung maturity, MgSO4 for neuroprotection. Injection hydroxyprogesterone caproate and dydrogesterone was given. Patient was followed up through clinical assessment, lab tests, daily fetal kick count and weekly USG.

Her leukocyte counts after 48 hours of antibiotics were 10,700/mm3. Her urine culture showed E.coli (ESBL). Treatment was initiated. USG was repeated after a week which showed a single viable fetus of 26 week 2 days in breech presentation, cervical os was partially open with cervical length 3.8 cm. She complained of backache & vaginal discharge on Day 9. On the 10th day she had onset of spontaneous preterm labor. She was explained the risk benefit of vaginal versus cesarean delivery. Assisted breech

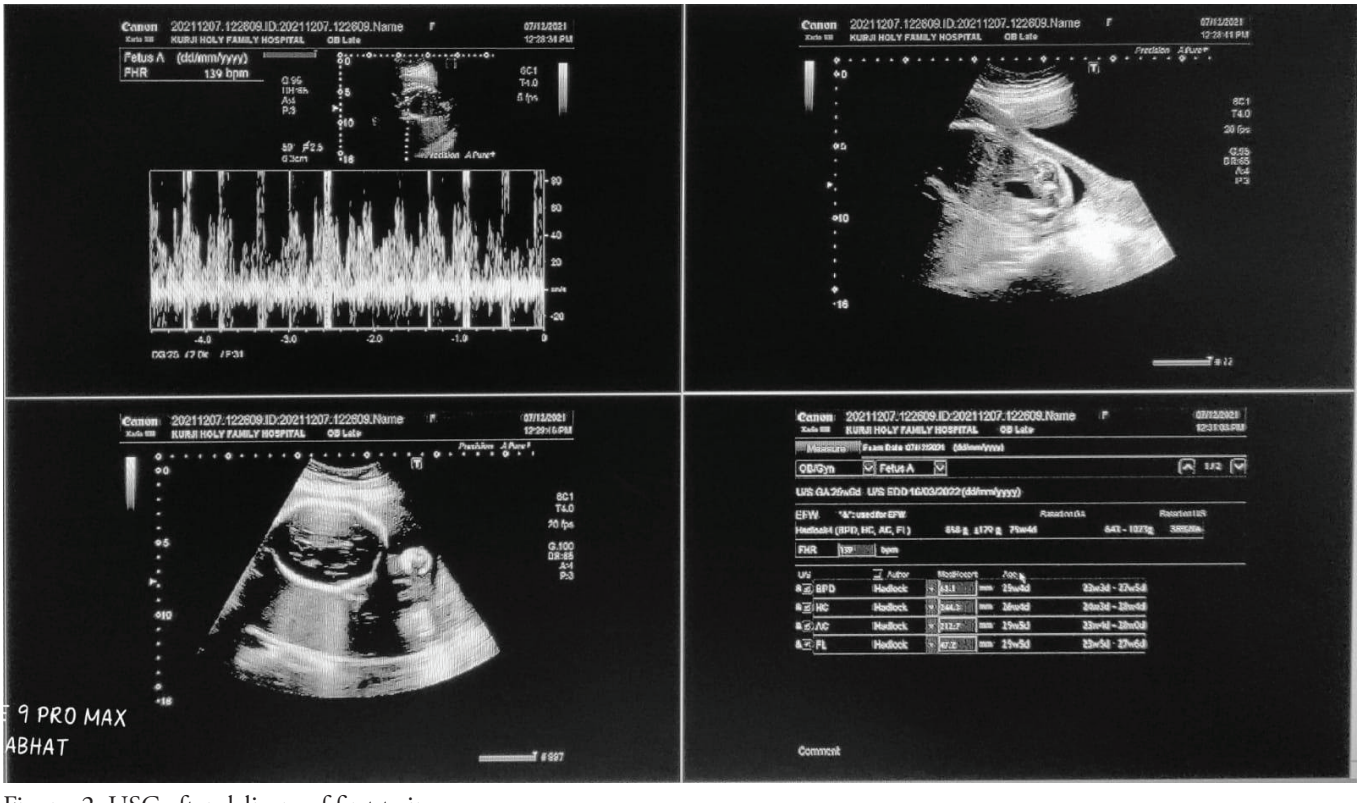

Figure. 2: USG after delivery of first twin

delivery was conducted and a live preterm male baby of 915 grams was delivered. Two placentas were removed manually, one normal looking but in pieces and other with a thin cord and dried, dessicated look. The APGAR of baby at 1 minute and 5 minutes were 4 and 9 respectively. Baby was shifted to the NICU for further care. Mother was observed for 48 hours post-delivery. There were no clinical signs of infection and was discharged from hospital. The baby however suffered from RDS in spite of surfactant and ventilatory support and succumbed on Day 8 of birth.

Discussion

There are numerous papers published on delayed delivery of second twin but due to rarity of the condition there is no universal protocol or gold standards for treatment available so far. Extreme prematurity at birth has very less chances of survival of a healthy new born without any major sequelae. Many case reports are available emphasizing that delay in delivery of second twin after preterm birth of the presenting twin can be advantageous for undelivered fetus and can significantly prolong the gestation thereby improving survival and long-term outcome.

In this study, patient selection for delayed interval delivery is based on the fact that it was di-chorionic di-amniotic twin with intact membrane. There were no clinical signs of infection at the time of birth of first twin. The gestational age at delivery of first twin was 25 weeks 1 day. Delaying delivery after reaching viability gives opportunity for active management in extremely premature newborns. Similar study was done by Arabin and Van Eyck [2009] on 93 twins and 34 triplets that qualified for delayed interval delivery in a single centre during 17 year period and reported better outcomes when the deliveries of first twin occurred beyond 25 weeks as compared to that occurred before 25 weeks gestation.[3]

The patient was started on broad spectrum antibiotic prophylaxis, steroid for fetal lung maturity, patient's vitals were monitored regularly and required laboratory investigations were done. Tocolysis and cervical cerclage was not tried in this patient. Sharma R and Dadu R in their case report have suggested to consider elective cerclage if delivery of first twin occurred before 23 weeks.[4] However, Benito et al. concluded cervical cerclage was not contributive to the improvement of pregnancy outcomes in delayed interval delivery.[1] Nan Yu and colleagues conducted a retrospective study of delayed interval delivery cases at their centre and concluded that cervical cerclage after delivery of first twin is associated with longer inter delivery interval without increasing the risk of intrauterine infecting.[5] According to some reports, routine tocolysis should be used prophylactically.[6,7] However, Weemhoff et al; 2001[8] recommended only therapeutic use of tocolysis. In this case tocolysis therapy was not used because uterine contraction ceased immediately after birth of first twin.

This case probably was not the best case for the success of delayed interval delivery. There has already been intervention by way of fetal reduction. UTI also may have accelerated the early delivery. With the available resources and facilities at our centre, the latency interval of 2nd twin was prolonged by 10 days. Mortality of extremely premature could not be prevented eventually. Puerperium was uneventful and at the time of discharge mother was healthy showing no clinical and biochemical signs of infection.

Compliance with Ethical Standards Conflict of interest

The authors declare that they have no conflicts of interest.

Abbreviations:

H/O – History of
IVF – In vitro fertilization
USG – Ultrasonography
PPROM – Preterm premature rupture of membranes
NICU – Newborn intensive care unit
UTI – Urinary tract infection
ESBL – Extended spectrum beta lactamase

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Review Article: Gynecology

The Sentinel Lymph Node Mapping in Gynecological Malignancies

Ruchika Garg[1], Neha Singh[2]

Abstract

Sentinel lymph node directly receive drainage from a tumor. Sentinel Lymph node detection is an important procedure that minimizes morbidity due to extensive nodal dissection. For evaluation of lymph nodes, sentinel lymph node mappimg is an alternative with lesser side effects .With new technologies, such as the fluorescent dyes indocyanine green (ICG) and near-infrared fluorescence (NIR), and pathologic ultrastaging, SLN detection rate has increased. The aim is to present a clinical aspects of SLN biopsy in gynecological malignancies.

Introduction

Gynecologic malignancies are one of the most common cancers worldwide and one of the most important causes of women death, in particular in low-income countries.[1] The staging of these cancers, is based on the evaluation of the primary tumor, on the lymph node status and in the search of distant metastases.[2]

Sentinel lymph node (SLN) is the first lymph node to receive drainage directly from a tumor. SLN mapping has gained importance in staging of gynecological cancers in the last decade and it has been incorporated into National Comprehensive Cancer Network (NCCN) Guidelines for endometrial, cervical and vulvar carcinomas.[3,4,5] In gynecological tumors preoperative lymphatic mapping and intraoperative SLN detection are parts of Sentinel lymph node procedure.

Sentinel lymph node (SLN) mapping has been proposed as a less invasive technique used for assessment of lymph nodes. Technetium-99m (99mTc), indocyanine green (ICG) and blue dyes can be used alone or combined for identifying SLN. Due to high detection rate, and sensitivity Sentinel lymph node mapping is helpful in early stages of cervical or vulvar cancer.

SLNs are cut at 50-200 μm intervals and two paraffin embedded slides are prepared from each section. One slide is stained with H&E and the other with immunohistochemistry stains (AE1 and AE3 anticytokeratin antibodies) if no metastasis is identified by H&E examination. Tumor deposits from 0.2 mm to <2mm are defined as micrometastasis. And >2mm are defined as macrometastasis and isolated tumor cells (ITCs) are defined as single tumor cells or clusters<0.2mm.

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Endometrial Cancer

Nodal status guides the adjuvant treatment plans. The SLN mapping algorithm is a less invasive technique for evaluation of nodal status. IN Current literature three mods of injection have been described: (i) cervical injection; (ii) endometrial peri-tumoural injection assisted by hysteroscopy; and (iii) myometrial/ subserosal intraoperative injection.[6] 99mTc, blue dyes (1% methylene blue, 1% isosulfan blue or 2.5% patent blue sodium) or ICG, 1 mL deep (1 cm) and 1 mL superficial (3-4 mm) cervical injections are made at 3 o'clock and 9 o'clock positions before hysterectomy. SLNs detection occurs 15-60 minutes after the injection. For intraoperative SLN assessment One step nucleic acid amplification assay (OSNA) is a new method which detects cytokeratin 19 messenger RNA in metastatic lymph nodes. In some retrospective series, it has been shown that removal of SLNs alone does not have a negative effect on oncological outcomes, both in low- and high-risk pathologies as 3-year overall survival and disease-free survival (DFS) were comparable between the SLN algorithm group and lymphadenectomy groups.[7,8]

Cervical Cancer

In cervical cancer as stage IA2 and beyond it, SLN removal is needed, with SLN all enlarged suspicious nodes must be removed. and when SLNs are negative for metastases, the pelvic lymph node dissection can be safely avoided. Side-specific lymphadenectomy is mandatory if SLN is not detected. Cervical injections are done with ICG, blue dye or 99mTC at two or four points.[9] SLN technique can be used in tumors up to 4 cm, the best detection rates, sensitivity and NPV are achieved in tumors smaller than 2 cm.[10] latest version of the NCCN Cervical Cancer Guidelines (version 3.2019) considers SLN biopsy in patients with early-stage cervical cancer <2cm an alternative to complete pelvic lymphadenectomy.[11] In between patient of cervical cancer undergoing only SLN biopsy and complete bilateral pelvic lymphadenectomy after SLN biopsy, recurrence rate is different.

Vulvar Cancer

Vulvar cancer is a rare neoplasm (1% of all cancers in women and until 5% of all gynecologic cancers), and more frequent in older women. Lymphatic metastasis is the most important prognostic features in vulvar cancer. SLN detection is best suited in the patient if they had a simple punch biopsy before surgery.

SLN biopsy is most specific in patients with tumors< 4cm that are located 2cm from the midline and obtained via combined techniques (radiocolloid and patent blue).[12,13] Inguinal bilateral lymphatic drainage could be associated to pelvic spread in lesion close to the clitoris. The primary tumor should be resected with at least 1 cm clear margins and when SLN metastases are >2mm complete ipsilateral lymphadenectomy should be done. Contralateral lymph nodes should also be resected or treated with external beam radiation therapy. Frozen section of SLNs may be used to for deciding to perform complete lymphadenectomy.

Ovarian Cancer

SLN biopsy is investigational in ovarian cancer. In early-stage ovarian cancer incidence of positive LNs is low, ranging from 5% to 15%,[14] while in advanced-stage cancer LNs, dissemination is over 20%,[15] and generally para-aortic SLN are found below or above the inferior mesenteric artery. 99mTC, blue dye or ICG can be used as tracers alone or in combination and injected at the utero-ovarian and infundibulopelvic (IP) ligaments, or only at the IP ligament if hysterectomy had been performed previously, just underneath the peritoneum. ICG is used in early-stage ovarian cancer in diagnosing nodal metastasis. SLN detection failure occurred in patients with: ovarian torsion due to disrupt the lymphatic flow of the ovaries[16] in case of obstruction lymph flow by LN metastases and dermoid cyst with a high number of adhesions preventing access to the ovarian ligaments.

Conclusion

Endometrial cancer: When no metastasis is detected by imaging modalities or intraoperative exploration, SLN mapping is an alternative procedure for lymph node evaluation in staging of apparently early-stage low-risk endometrial cancer patients. Removal of SLNs alone does not have a negative effect on oncological outcomes compared to complete lymphadenectomy.

Cervical cancer: SLN biopsy is completely reliable if bilateral SLNs are detected. SLN mapping may be used in tumors up to 4 cm, but best detection rates are observed in tumors<2cm.

Vulvar cancer: SLN biopsy is a most specific in patient with tumors <4cm that are located 2cm from the midline for inguinofemoral lymph node dissection in selected early-stage patients. For tumors >4 cm, SLN technique is both associated with reduced sensitivity and higher groin recurrences.

Ovarian cancer: The best detection rates were observed with injections at the utero-ovarian and IP ligaments, or only at the IP ligament if hysterectomy had been performed before, just underneath the peritoneum.. Most often high detection rate are found in the para-aortic region.

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Case Report: Gynecology

A Rare Case of Huge Broad Ligament Fibroid with Degenerative Changes Mimicking as Complex Ovarian Cyst

Kumari Vandana[1], Abha Rani Sinha[2]

Abstract

We report an unusual case of a huge broad ligament uterine fibroid with degenerative changes mimicking as a complex ovarian cyst on ultrasonography and CECT with the diagnostic difficulties posed. A 48-year-old married female presented with complaints of abdominal distention and a palpable abdominopelvic mass occupying whole of lower abdomen. Ultrasonography and CECT revealed a large mass with few internal septations extending into both uterine adnexa. The patient underwent a laparotomy. Gross examination revealed normal ovaries and a huge mass with prominent degenerative changes, originating from the uterus. The tumor was excised and pathologic evaluation revealed a broad ligament fibroid with degeneration. In conclusion, a huge broad ligament leiomyoma with degenerations can mimic a complex ovarian cyst on imaging studies. Therefore, broad ligament fibroid with degenerations should be considered during the differential diagnosis of large adnexal masses

Introduction

Leiomyoma of the uterus is the most common benign tumor of the female pelvis in the reproductive age group, which arises from uterine smooth muscle. It may arise in the broad ligament or at other sites where smooth muscle exists. They may be asymptomatic in more than 50% of patients or present with heavy menstrual bleeding, infertility or pressure effects if large or with pain if undergoing torsion. Broad ligament fibroids generally present with pressure symptoms like bladder and bowel dysfunction. They have typical easily recognizable appearance on imaging. Confusion in imaging studies may arise when fibroids present in unusual locations or undergo degenerations, which must be kept in mind. Here, we present a case of a woman with giant uterine myoma that had undergone extensive cystic degenerative changes, camouflaging an ovarian malignancy.

Case Report

A 48 year old female admitted in Shri Krishna Medical College and Hospital, Muzaffarpur, Bihar with complaints of abdominal mass and gastric upset along with pain in abdomen during menses since 1 year with insidious onset of diffused, dull aching and intermittent abdominal pain for 3 months. She had a weight gain of approximately 8 Kgs with a feeling of heaviness and hardness in the lower abdomen. She had 2 full term deliveries by cesarean section. She had regular and cyclical menstrual pattern. Examination revealed average build and nutrition. Her vital signs

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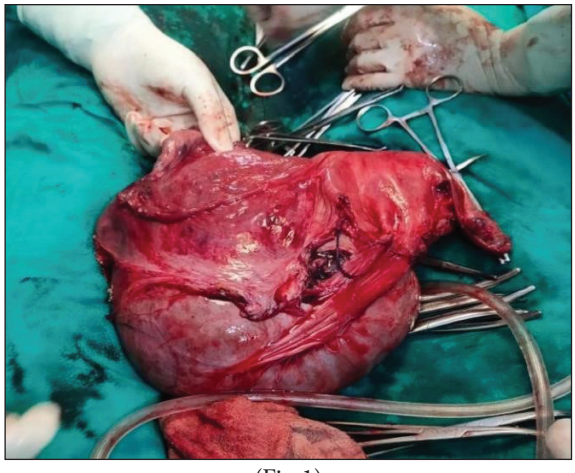

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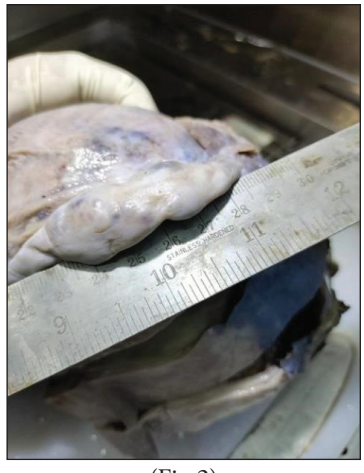

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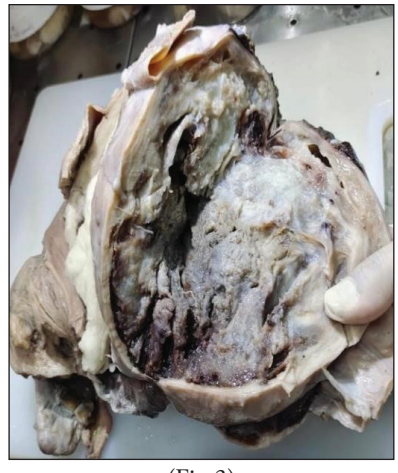

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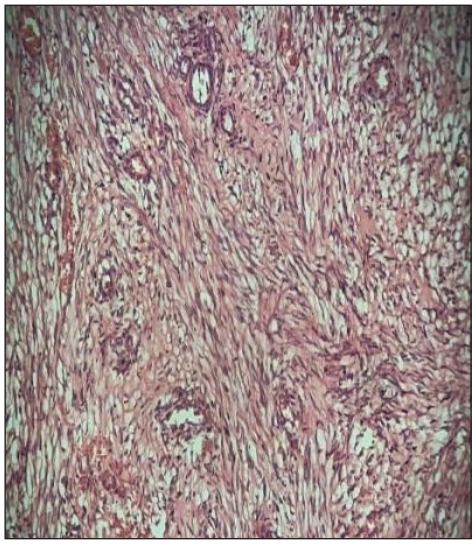

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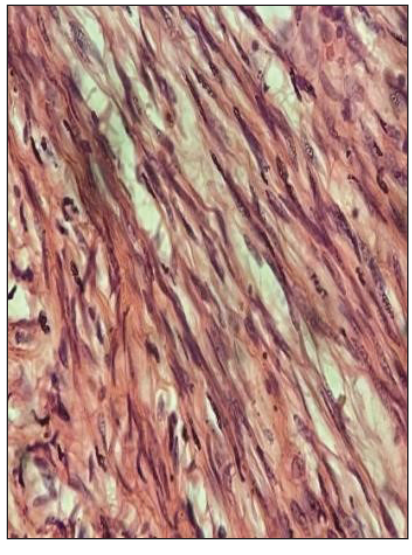

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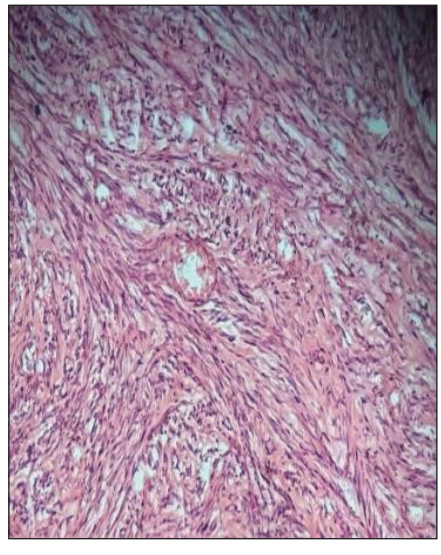

(Fig 6)

were within normal limits. Systemic examination was normal. Entire lower abdomen was uniformly distended by a 25x20 cm mass with smooth surface, regular well defined margins, side to side mobility, non-tender mass firm in consistency arising from, pelvis reaching 4 cm above umbilicus. Shifting dullness was absent. In per speculum examination cervix could not be visualized. Per vaginum examination revealed that cervix was firm and downwards but deviated to the left side; uterine size could not be properly assessed properly. The same mass was felt through all fornices with cervical movements not being transmitted to mass. Per rectal examination was normal. Complete blood count, serum electrolyte levels, tests of liver and renal function were normal. Ultrasonography and CECT revealed a huge 23×15×22 cm abdominopelvic cystic lesion with multiple internal septations and solid components likely arising from right adnexa suggestive of primary epithelial ovarian malignancy (serous cystadenocarcinoma) without ascites. However, the tumor markers were within normal limits. With a probable diagnosis of ovarian tumor, the patient was taken up for staging laparotomy. An abdominal midline xiphopubic vertical incision was made. Peritoneal washings were taken from paracolic gutters, pouch of Douglas and sent for cytology. It was seen that uterus and bilateral ovaries were normal. Enclosed between the leaves of broad ligament a large 25x20×22 cm, smooth, cystic mass with solid components was seen arising from right lateral wall of uterus between right round ligament and right uterine artery and pushing the right ovary posteriorly. Enucleation of the mass was done after opening the right broad ligament and dividing the round ligament. The Uterus and bilateral ovaries were removed as patient had completed her family. Postoperative recovery of patient was uneventful.

Gross histopathology specimen showed 25x20×22 cm smooth, multiloculated solid cystic mass with intact capsule weighing 3.4 Kg multiple thin septations filled with gelatinous and mucoid material was found suggestive of degeneration and calcification.

Microscopic and Histopathological Findings:

Section shows predominantly fascicles of smooth muscle cells in a myxoid background. Cells have cigar shaped nuclei with mild eosinophilic cytoplasm. Areas of necrosis or atypical mitosic figures are not seen.

Impressions-Features Suggestive of Broad ligament fibroid with degenerative changes.

Discussion

Leiomyoma of the uterus is the most common tumor of female pelvis with a prevalence of 20%-30%. Extrauterine location of fibroids are rare. Leiomyoma occasionally occurs with unusual growth pattern or in unusual locations that makes their identification more challenging, both clinically and radiologically. In 50% of cases there are no symptoms.[1] They are usually asymptomatic but have a potential to grow to a very large size which can present as pressure symptoms of pelvic pain and bladder or bowel dysfunction.[4–6] The extra-uterine location of leiomyoma can be in broad ligament, ovary, urinary bladder, urethra, vulva, vagina or anywhere there is smooth muscle.[5–7] In the broad ligaments the fibroid can be of two types i) true broad ligament fibroid which can arise from smooth muscle of round ligament, tubo-ovarian ligament or smooth muscle of uterine artery or ovarian vessels; ii) false broad ligament fibroid which arises from lateral wall of uterus or cervix. Most common secondary changes are degeneration, infection, hemorrhage, necrosis and rarely sarcomatous change. Degeneration like cystic, hyaline, myxoid or red degeneration occur when fibroids outgrow their blood supply. Calcification follows necrosis. Out of these, hyaline degeneration is common occurring in about 60% of cases whereas cystic degeneration is rare in about 4%. These degenerations pose a diagnostic challenge in imaging studies. CT is not the primary modality in the diagnosis of fibroid.[3] Degenerating fibroid can mimic ovarian tumor, endometrioma and abscess on ultrasound. Among extra-uterine fibroids, broad ligament fibroids generally achieve enormous size and generally present with pressure symptom like bladder and bowel dysfunction.[8,9] The diagnosis of broad ligament fibroid is difficult. The most useful modalities are USG, CT and MRI. The differential diagnosis of broad ligament fibroid includes pedunculated subserosal fibroid projecting towards the broad ligament, solid ovarian neoplasm, broad ligament cyst and lymphadenopathy.[7] Typically a fibroid on ultrasound appears solid in echogenicity with hypogenic shadowing. Degenerations give heterogeneous appearance. Our case was a false broad ligament fibroid which originated from uterus and grew within the folds of broad ligament with marked cystic degeneration. However, appearance of normal ovary should have been seen in our case which was missed on both ultrasound and in CT by radiologist. Surgery in such cases is challenging because of size and location of these fibroids especially since surrounding organs such as ureter, intestines and urinary bladder are at risk to get injured.[8,9]

Conclusion

Although fibroids typically have a characteristic ultrasound appearance, degenerating fibroids can have variable patterns and pose diagnostic challenges. Ours is an unusual case of a leiomyoma with extensive cystic degeneration presenting with symptoms of gastro intestinal pathology, masquerading as a cystic epithelial ovarian tumor. We are reporting this case on account of its rarity and diagnostic difficulties.

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