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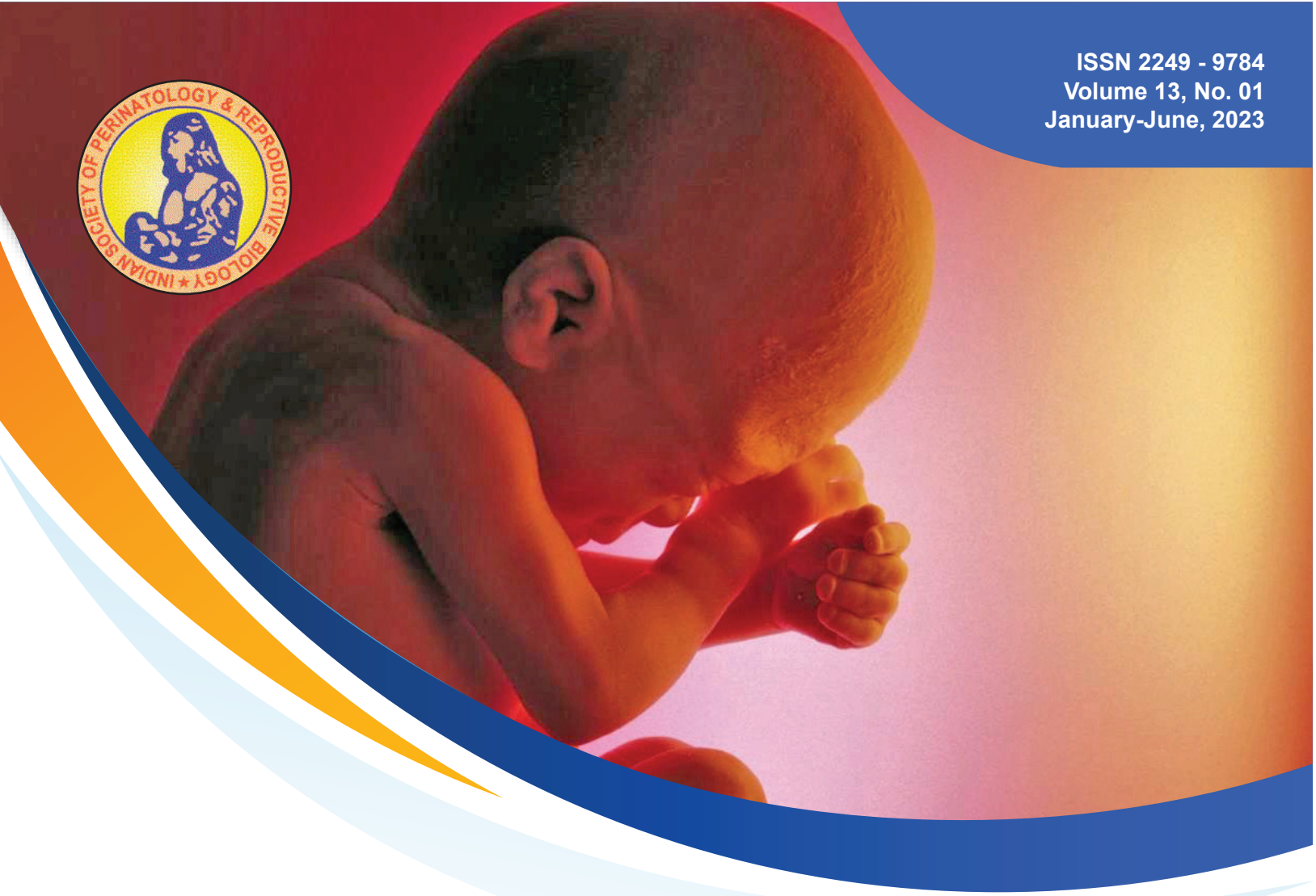

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Contents

Review Article

Managing Pregnancy in Cancer Survivors

Meena Samant[1], Shalini Warman[2]

Introduction

Cancer complicates about 1 in 2000 pregnancies, and the frequency has been rising in recent years.[1] Delay in first childbearing contributes significantly to a rise in this incidence. Cancer survivors are rapidly increasing in number due to earlier cancer diagnosis, aging of society and improvements in cancer treatments. In recent decades, there have been fewer miscarriages and premature births thus improving the obstetric outcome. Often, pregnancy after cancer treatment is safe for both the mother and baby. Here, in this review article, we discuss about the different facets of care of the pregnant lady who has undergone cancer treatment.

Interval between Pregnancy and Cancer Treatment[2,3,4]

A wait period of twelve months after finishing chemotherapy is advised by many organizations. Chemotherapy has a toxic effect on rapidly dividing cells and may damage the oocytes recruited for ovulation (the process of folliculogenesis takes around 12 months). Therefore, the rates of miscarriages and birth defects are more in pregnancies occurring soon after chemotherapy. Chemotherapy mediated immunosuppression may be a cause for small for gestational age fetuses and fetal growth restriction. There is no risk of preterm birth if pregnancy is planned one year after chemotherapy without radiation and two years after combined chemotherapy and radiation. Lifelong thyroid hormone replacement is given to thyroid cancer survivors. Hypothyroidism causes adverse feto-maternal outcomes thus, American Thyroid Association recommends postponement of pregnancy for 6-12 months after starting hormone replacement therapy. There is a risk of preterm birth in survivors of cancer cervix if conception occurs within one year of diagnosis. The chances of recurrence of breast cancer are maximum within 24 months after diagnosis, so women with breast cancer are advised against pregnancy for this time duration. Tamoxifen treatment is continued for 5 years in breast cancer, so breast cancer survivors need to avoid pregnancy for that time because of the risk of relapse/ poor outcome if tamoxifen is stopped. If women are willing to take this risk, interruption after 2 to 3 years of tamoxifen could be considered to allow pregnancy. Tamoxifen should be resumed following delivery in these patients.

Pre-pregnancy Counselling in Cancer Survivors

Depleted ovarian follicles causes premature ovarian failure and amenorrhea. Ovarian reserve in these patients is tested using Inhibin B, AMH and day 3 FSH. The uterine function, uterine blood flow, uterine cross-sectional area and endometrial thickness should be assessed by an ultrasound, prior to attempting a pregnancy. This may be valuable in predicting fertility in women at risk of uterine vascular insufficiency. A poor ovarian reserve can also be indicated by a small ovarian volume and a few number of antral follicles.[5] Certain germline mutations increase the risk of malignancy in the offspring. The BRCA 1 & 2 mutations increase the risk of breast and ovarian

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cancer, and mismatch repair genes (MLH1, MLH2, MSH6, PMS2) increase the risk of colorectal and endometrial cancer. All male and female cancer survivors with confirmed familial cancer syndrome should be offered genetic counselling. These patients can also be offered IVF and pre-implantation screening when planning a pregnancy.[6] At the time of the cancer diagnosis, the beginning of therapy, and once more at the conclusion of treatment and during follow-up, the patient should be informed about contraceptive counseling and the risks of infertility. A 2022 study emphasized the need for contraception as the rates of unplanned pregnancy were similar in both cancer survivors and the comparison group.[7] It is pertinent to discuss the risk of adverse pregnancy outcomes with the patient and the family and they should be informed that evidence does not support the survivors having an increased risk of congenital malformed fetuses. Cancer survivors treated with anthracyclines and chest irradiation should have a surveillance for cardiomyopathy in the pre-pregnancy period. If the survivors have a compromised left ventricular systolic function and the LVEF is < 30% before pregnancy, it is likely to further reduce during pregnancy and in postpartum. Pre-conceptional counseling should also emphasize choosing an acceptable delivery location and referring to a skilled obstetrical team.[8] Folic acid supplementation 400mcg should be started preconceptionally.

Contraception in Cancer Survivors[9]

Chemotherapy or radiation treatments may be teratogenic, so women are advised to avoid pregnancy during treatment. It is important to conceive in a period of optimum health, thus lies the importance of contraception. Permanent contraception may also be opted by some. Long-acting reversible contraception (LARC) with intrauterine devices (IUDs) or implantable contraceptives are more effective than short-term contraceptive methods, which include the use of estrogen and progestin with various delivery systems.

The various options of contraception are tabulated in Table 1.

NCCN guidelines on Adolescent and Young Adult (AYA) Oncology, Version 2.2024: For those who have been cancer-free for at least six months and have no history of hormonally mediated malignancies, chest radiation, anemia, osteoporosis, or venous thromboembolism, using any form of contraception is advised. IUDs is the preferred first-line contraceptive

Table 1: Contraceptive options in cancer survivors

Type of Cancer	Intra-Uterine devices (IUDs)			Progesterone only contraception	Combined hormonal contraception (CHC)
GESTATIONAL TROPHOBLASTIC DISEASE					
Decreasing or undetectable β-hCG levels	MEC 3			MEC 1	MEC 1
Persistently elevated β-hCG levels or malignant disease	MEC 4			MEC 1	MEC 1
BREAST CANCER					
Family history of cancer	MEC 1			MEC 1	MEC 1
Current breast cancer	Cu-T MEC 1			MEC 4	MEC 4
	LNG-IUS MEC 4				
Past breast cancer and no evidence of current disease for 5 years	Cu-T MEC 1			MEC 3	MEC 3
	LNG-IUS MEC 3				
ENDOMETRIAL CANCER		I	C	MEC 1	MEC 1
	Cu-T	MEC 4	MEC 2		
	LNG-IUS	MEC 4	MEC 2		
OVARIAN CANCER		I	C	MEC 1	MEC 1
	Cu-T	MEC 3	MEC 2		
	LNG-IUS	MEC 3	MEC 2		
HEPATOMA	Cu-T MEC 1			MEC 3	MEC 4
	LNG-IUS MEC 3				

MEC: Medical Eligibility Criteria by WHO; LNG-IUS: Levonorgestrel Releasing Intrauterine System; Cu-T: Copper T containing Intrauterine Device; I: Initiation, C: Continuation

option for females with a history of breast cancer. An LNG-IUS may be preferable for those treated with tamoxifen as it may reduce tamoxifen-induced endometrial changes without increasing the risk of breast cancer recurrence. The US CDC advises against using CHCs in individuals of reproductive potential who have active cancer or who have undergone cancer treatment within the last six months due to the risk of venous thromboembolism related with their usage.

Fathering a Child after Cancer Treatment

All males receiving gonadotoxic therapy should get infertility risk counseling. A testicular biopsy can be done in prepubertal boys, prior to initiation of oncologic treatment. The sample can be cryopreserved and used for Spermatogonial Stem Cell Transplantation (SSCT) later in life. In a study, a slightly increased risk of congenital malformations was found in children fathered by men diagnosed with TGCC (Testicular Germ-Cell Cancer). However, there was no additional risk increase brought on by radiotherapy or chemotherapy as the risk was the same in both pregnancies before and after paternal cancer treatment.[10] Male cancer survivors are advised by medical professionals to wait two to five years following treatment before having children. Despite the fact that sperm continue to be produced for several months after the beginning of cytotoxic therapy, pregnancy should be avoided during this time due to a higher risk of genetic damage to the sperm. Recovery of spermatogenesis may itself take 2- 5 years.[11]

Concerns about bearing a Child after Cancer Treatment

Cancer survivors may have a lot of concerns about childbearing.

1. **Risk of children getting cancer:** Around 5% of all cancers are hereditary and many of them are associated with germline mutations. These cancers develop at a much younger age. The common amongst them being BRCA 1&2 (increased risk of breast and ovarian cancer), HNPCC (increased risk of colon, endometrial, gastric cancer), MEN 2a (increased risk of medullary thyroid cancer, pheochromocytoma, and hypoparathyroidism). Genetic counselling is offered in confirmed cases.
2. **Risk of cancer recurrence:** The risk of breast cancer recurrence or mortality is not increased by pregnancy in women with low-risk breast cancer. Lee et al. found that women who became pregnant after breast cancer did not have a different risk of recurrence and death, compared with those who did not become pregnant after breast cancer treatment.[12] Thus, breast cancer is no longer a contraindication to pregnancy, however a wait period of 2 years is recommended (as discussed before). Contrarily, PABC (Pregnancy Associated Breast Cancer) has a significant risk of recurrence because it is particularly sensitive to the hormonal environment of pregnancy. Women having a history of melanoma or Hodgkin lymphoma appear to be unaffected by pregnancy in terms of recurrence rates or illness survival. Planning a pregnancy in breast cancer survivors on tamoxifen, requires stopping the drug, which can increase the risk of relapse.
3. **Issues regarding infertility:** Any of the treatment modalities can lead to male or female infertility. Options of fertility preservation should be discussed prior to treatment.
4. **Uncertainty:** There is an uncertainty regarding relapse, recurrence, survival and concerns for raising the child, in the cancer survivors. Proper pre-conceptional counselling and psychotherapy might be of help in such cases.

Reproductive Outcomes in Cancer Survivors[8]

In the first livebirths of female survivors of Child, Adolescent or Young Adults (CAYA) cancers, there is no increased risk of malformations or altered sex ratios to suggest enhanced germ cell mutagenicity.[6] CAYA cancer survivors treated with radiotherapy in doses that expose the uterus, are more prone to adverse obstetrical outcomes such as miscarriage (moderate quality evidence), premature birth (high quality evidence), and low birth weight (high quality evidence). Thus high -risk obstetrical surveillance is recommended in such cases. The dose of radiation that exposes CAYA survivors to these risks is not clearly demonstrated. Radiation therapy to uterine-exposed volumes can harm the uterine vasculature, inhibit uterine muscle growth, and perhaps affect endometrial function due to poor blood flow. Poor implantation of the embryo and poor placental growth may hence occur. Miscarriage and fetal growth

restriction results from a reduced uterine elasticity and volume. Additionally, ovarian failure-related hormonal insufficiency may result in decreased uterine volumes. Although preceding radiation may not in and of itself enhance the risk for an elective C-section, these elevated obstetrical risks may affect the decision to perform one. Early initiation of chemotherapy or other cancer treatments in these patients may warrant labor induction or C-section.[13] myometrial fibrosis causes Impaired uterine distensibility and it can be associated with cervical incompetence contributing to the increased risk of pre-term birth.[6] Cardiomyopathy may be the cause of shortness of breath, fatigue and ankle swelling in CAYA cancer survivors.

Cancer survivors do not appear to be at a higher risk for stillbirth as compared to the general population.[14] There is a threefold risk of developing hypertension in pregnancy in survivors of Wilms tumor treated with abdominal radiotherapy.[14] Hyperinsulinemia associated with TBI (Total Body Irradiation) and/or growth hormone (GH) treatment for radiotherapy-related GnRH deficiency may lead to metabolic syndrome and gestational diabetes milletus. Cancer survivors who have undergone cranial or breast irradiation may experience diminished lactation or failure to breastfeed. Breast radiation reduces the irradiated breast's ability to produce milk, while radiation to the head produces HPA (Hypothalamic Pituitary Axis) dysfunction.[6] Abdominal and pelvic radiation has also been linked in several studies to a higher risk of perinatal mortality and postpartum hemorrhage.[6] A study of 232 female colo-rectal cancer patients documented increased rates of antepartum haemorrhage, caesarean delivery, low Apgar score, need for neonatal resuscitation and NICU admission compared to controls. Open but not laparoscopic cancer surgery in these colo-rectal cancer females was associated with increased risk of gastrointestinal obstruction, spontaneous abortion, antepartum haemorrhage, postpartum haemorrhage and prolonged hospital stay >5days.[6] Adverse pregnancy outcomes don't seem to be linked to prior chemotherapy treatment alone.[5] Among cancer survivors, absolute maternal mortality peripartum is still rare.[13] Although more common in these individuals than in the general population, venous thromboembolism cannot be identified as a specific cause of death.[13]

Effect of Pregnancy on Cancer Outcomes[6]

Pregnancy is safe for women who have had a history of breast cancer and has no negative effects on overall survival. Like breast cancer, melanomas are also diagnosed in women of childbearing years. According to a study, there was no statistically significant difference in overall survival between melanoma-diagnosed pregnant women and melanoma-diagnosed non-pregnant controls.

Obstetric Care after Trachelectomy[15,16]

Women with post-trachelectomy pregnancies are more frequently seen in obstetric practice as a result of earlier cervical cancer detection and an increase in the number of women having fertility-preserving surgery.

Contraception: Oral hormone contraceptive users don't seem to have a higher chance of developing cervical cancer. The use of combined hormone methods, subdermal implants and progesterone implants are given UK MEC category 2. The progesterone-only pill (POP) relies on the action of cervical mucus and since the cervix is removed, this action is lost rendering POPs an ineffective contraception. POPs are given MEC 1 category as per UK MEC criteria. Due to the difficulties in identifying the isthmic os and isthmic stenosis, the insertion of an IUCD is technically complex and demands expertise.

Pre-conceptional: Counselling and risk assessment is done for women planning pregnancy. A preventive cerclage is inserted at the remnant cervix following RT (Radical Trachelectomy) to prevent premature deliveries. Multiple pregnancies should be avoided by elective Single Embryo Transfer (eSET) and doing IUI when monofollicular growth is documented on follicular monitoring.

Management of miscarriage in these patients: There is an increased rate of mid-trimester miscarriage (7-11%) and ascending infections and PPROM are the major causes. Expectant care and medical therapy without a surgical intervention should be taken into consideration for an early miscarriage following RT. For individuals who need D&E, the neocervix is dilated to Hegar size 7 (if necessary), preferably under ultrasound guidance, through the isthmic cerclage. When doing a surgical evacuation after a second trimester miscarriage, the cerclage might need to be

removed. Some studies also recommend hysterotomy to avoid lacerating the residual cervix and/or removing the cerclage and the decision is taken keeping the gestational age into consideration.

Antenatal Care and Management: Cervical (isthmic) incompetence, ascending infection, prematurity, PPROM and chorioamnionitis are more frequently observed in pregnancy post RT. A loss of mechanical, cellular, biochemical and immunological barrier in a neo-cervix is a cause. The risk of preterm delivery is around 45%. There is a difficulty in assessment of detection of labor as there is a painless dilatation of neo-cervix.

The frequency of visits can be every two weeks after 18 weeks. Serial isthmic or neo-cervical length scans to monitor isthmic shortening and funnelling is recommended at every antenatal visit (every fortnightly). Expertise is required for assessing the length of the neocervix. If prophylactic cerclage proves to be ineffective, the patients may need to undergo another cerclage depending on the gestational age. Transabdominal approach may be used even in early after first trimester. Urine culture is done at the first visit and later if symptomatic (some suggest doing urine culture in each trimester). Unnecessary cervical digital examination should be avoided. Limitation of activity can be advised. Bed rest is preferably avoided unless there is vaginal bleeding or a suspicion of early threatened labour. Sexual intercourse may be a source of infection; patients may be advised to consider avoiding coitus from 20 weeks onwards. Barrier contraception to be advised to prevent the risk of infection. Elective dental work during pregnancy is avoided to minimise risks of infection and preterm birth resulting from periodontitis. If there are signs of premature labor or if delivery seems impending, antenatal corticosteroids, fetal neuroprotection with magnesium sulphate and tocolysis should be given as per guidelines and protocols. The use of vaginal progesterones is debatable in these patients, but some recommend its use from 12 weeks until 36 weeks. Antibiotics should be started if premature rupture of membranes occurs and deliver as soon as possible.

Cervical cytology should be checked during and after pregnancy to detect recurrence.

Thromboprophylaxis with low-molecular-weight heparin is reserved for women with additional risk factors for venous thromboembolic disease.

Other Antenatal and Perinatal Considerations: The incidence of varices at the site of uterovaginal anastomosis is 14%–24%. It can lead to abnormal bleeding during pregnancy. Hemostasis in this case can be achieved by compression or argon laser. In women who have undergone RT, C-section should be the mode of delivery due to the sutured residual cervix. Care should be taken not to injure the urinary bladder or the uterine artery (if not ligated during RT), as there is an absent or poorly formed lower segment due to distortion following cervical amputation. A classical C-section should be avoided. Cerclage removal is not done at the time of C-section. The elective C- Section should be at 37 weeks or later, but one should be prepared for it any time after 34 weeks. Intra-abdominal adhesions make the surgery technically difficult prolonging the duration of the C-section causing damage to other vital organs. In the postpartum period, lochiometra could be a concern due to narrowing of the cervical canal. There are risks associated with preterm birth and prematurity. Timely administration of antenatal corticosteroids may improve outcomes in preterm neonates.

Obstetrical Care after Breast Cancer[3,17,18,19]

According to studies to date, a subsequent pregnancy is not likely to affect the outcome of the breast cancer, and, equally, a prior diagnosis of breast cancer will not necessarily affect the pregnancy outcome. Tamoxifen has a long half-life; therefore, doctors urge women using it to quit 3 months before trying to get pregnant. To prevent the need for imaging during pregnancy, they should have any necessary regular imaging before attempting to conceive. Given their low life expectancy and potential impact on their ability to receive effective treatment, women with metastatic disease should be counselled against becoming pregnant. Disease recurrence should be ruled out prior to conception. Information about disease recurrence and the necessary treatment should be given to the woman. A multidisciplinary approach is then needed. According to studies, pregnancy does not increase the risk of recurrence, even in hormone receptor-positive

breast cancer. According to a study, the prognosis for pregnant women after breast cancer was comparable to that of the non-pregnant group. The prognosis is good for women with a subsequent pregnancy after early-stage breast cancer. The published series reflect an improvement in treatment over recent decades.

Chemotherapy, radiation therapy, or a combination of these treatments for breast cancer survivors do not raise the incidence of congenital abnormalities, single gene disorders, or chromosomal syndromes in their progeny. Few studies have demonstrated an increase incidence of low birth weight, preterm labor and an increased need of C-sections in these patients. Mothers can breastfeed from the unaffected breast, but due to the damage done by radiotherapy, it is very improbable that this will happen from the irradiated breast.

Pregnancy after Ovarian Cancer[20,21]

Conservative surgery for ovarian cancer should aim to prevent recurrence and it includes complete surgical staging, including pelvic/para-aortic lymph node sampling, multiple peritoneal biopsies, washings, and omentectomy. In one study, the pregnancy rate for patients trying to conceive was 51.7% for those with early-stage ovarian neoplasms who got suitable adjuvant chemotherapy and conservative surgical treatment. Additionally, among women who had documented live births, the obstetric, neonatal, and oncologic outcomes were positive and there was no evidence of any congenital defects in their children.

Normal pregnancy may cause high blood CA125 levels, which typically peak in the first trimester and return to normal range in the second. Thus, it is of limited value for substantiating a recurrence/ follow up during pregnancy. However, fluctuations in CA 125 levels may be of concern. Computed tomography (CT) could not be used as test in pregnancy and ultrasound or an MRI is an alternative evaluation tool. Ascites can develop rapidly at recurrence and relapse. Close examination of accumulation of ascites may lead to early diagnosis of recurrence.

Pregnancy after Endometrial Cancer/ Atypical Endometrial Hyperplasia[22,23]

The treatment for endometrial cancer and atypical endometrial hyperplasia is total hysterectomy. However, fertility preserving treatment may be opted by women with no children. Pregnancy is often encouraged as soon as possible (preferably by ART) after successful treatment of endometrial cancer (after complete remission, CR) for two reasons: there is a protective effect of changes in endogenous estrogen and progesterone during pregnancy, and the duration of response to hormonal therapy may be as low as 12-24 months. Many patients with early-stage endometrial carcinoma have been reported to have achieved successful pregnancies after conservative medical management. Because recurrence after successful fertility-sparing therapy of endometrial cancer is very high, prophylactic hysterectomy is usually performed once patient has given birth to a child. Until now, there are no data regarding how many pregnancies a woman could support after fertility-sparing therapy of early endometrial cancer. In a meta-analysis, the pregnancy rate was 34% in the group treated with progestins only (live birth rate of 20%), 18% in LNG-IUS group (live birth rate of 14%), and 40% in progestin plus LNG-IUS group (live birth rate of 35%). Successful pregnancies may be indicated by a normal BMI, a shorter time to CR, a prolonged three-month treatment, fewer hysteroscopy procedures, and a thicker endometrium, while relapse before pregnancy can negatively impact conception. Moreover, a successful pregnancy protects the endometrium while ART (Assisted Reproductive Techniques) does not increase the risk of recurrence. High hormone levels during pregnancy have the same effects as a highly successful progesterone treatment and it does not accelerate the growth of endometrial lesions. The decidual endometrium is totally exfoliated during birth and the puerperal process; this is analogous to curettage and has a therapeutic impact on endometrial lesions to, at least in some way, prevent relapse. Pregnancy also stops the PCOS induced vicious cycle of estrogen exposure in obese females. However, a follow-up interval of six months should be maintained for routine tumor follow-up during pregnancy. Counselling regarding optimal weight gain in pregnancy and the development of gestational diabetes, pre-eclampsia is important in these survivors.

Conclusion

A personalized preconception consultation and pregnancy surveillance is very helpful for CAYA cancer survivors. Targeted lower body and the uterus

radiation increases the risk of preterm birth and low birthweight, necessitating close monitoring of high-risk pregnancies. It is important to reassure the survivors that there is no elevated risk of congenital abnormalities. The numbers of pregnancies after cancer treatment are limited to produce evidence-based guidelines and further research and data is warranted in this field.

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Original Article: Obstetrics

Study of Maternal Mortality and Morbidity in Patients Undergoing Elective and Emergency LSCS

Haunemkim Suantak[1], Chandana Ray Das[2], Pranoy Nath[3]

ABSTRACT

Background: Caesarean section or caesarean delivery is a surgical procedure in which a baby is delivered through abdominal and uterine incision. A Caesarean delivery can be planned ahead of time or performed in an emergency. It carries more risk than a vaginal delivery. Caesarean delivery is mainly done in to save foetus and at times to save the mother by termination of pregnancy. It is sometimes associated with great deal of mortality and morbidity due to either intra operative or postoperative complications. Emergency LSCS has more complications as compared to elective LSCS. Most of the patients undergoing Emergency LSCS are un booked as compared to Elective LSCS. Complications are present both in Emergency and Elective LSCS with emergency relatively more. Most of the un booked and referred patients undergo emergency LSCS which contributes to major complications

Aims and objectives: The aim was to determine the prevalence of Caesarean delivery in Silchar Medical College and to study the most common cause leading to mortality and morbidity in patients undergoing Elective and emergency LSCS.

Materials and Method: A hospital based prospective observational study was conducted in Silchar Medical College and Hospital from 1st June 2021 to 31st May 2022 after approval from ethical committee. A total of 300 patients attending the Labour room were examined during the study period.

Results: During our study period total number of births were 9831, out of which 4375 birth were by Caesarean delivery. It was found that un-booked cases contributed more in emergency LSCS. Since $P < 0.001$, the un-booked patients are significantly associated with emergency LSCS. The maximum number of the patients had their education up to matriculation and maximum number of the patients were socioeconomically middle class. Highest number of cases belonged to age group 21 to 25years both in emergency LSCS and elective LSCS. Highest number of C-section is perform for primigravida and incidence of C section is decreasing with increasing parity. In our study patients undergoing emergency LSCS were mostly given midline

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vertical incision and transverse incision was common in elective LSCS patients. Out of the total of 200 patients who had emergency LSCS 30 of the patients were admitted in central ICU who were maternal near miss and out of 100 patients with elective LSCS only two patients were maternal near miss. fetal distress is the most common indication in emergency LSCS and previous Caesarean with associated complication is most common indication for Elective LSCS. Intra operative complications are higher with patients undergoing emergency LSCS. Patients undergoing emergency LSCS had more complications in postoperative period as compared to Elective LSCS. Anaemia was the most common maternal risk factor in the group of people undergoing Emergency LSCS and Gestational diabetes mellitus was common among in Elective LSCS group. There was a death of one patient out of 300 patients. She was a referred case of obstructed labour with severe anaemia. LSCS done with one blood in hand. She expired within 24hrs. in ICU

Conclusion: From our study we have found that anaemia and late referral is one of the leading causes in maternal mortality and morbidity

Key words: LSCS- lower segment caesarean section. ICU-Intensive care unit BOH-Bad obstetric history

Introduction:

Caesarean delivery is defined as birth of fetus through abdominal wall incision and uterine wall incision.[1]

Primary caesarean delivery defined as a caesarean delivery in a woman without a prior caesarean birth and secondary caesarean define as caesarean delivery in a woman who had a caesarean birth in previous pregnancy.[2]

Caesarean delivery was done to save fetus in the dead or dying mother in the 18th century. Caesarean delivery being done to save life of mother in Nineteenth century. Caesarean delivery has become an increasingly safe and common procedure with use of safe anaesthesia, suturing techniques, antiseptics, asepsis, blood transfusion and antibiotics. The continued improvement in safety has led to caesarean delivery being done on demand today with no medical indications though the mortality related to caesarean birth is still 3-4 times higher than vaginal birth.[3,4]

Caesarean section is one of the most performed surgical procedures in today's obstetric practice, and is associated with a great deal of maternal morbidity and mortality. With the immense advances in anaesthetic services and improved surgical techniques the morbidity and mortality of the procedure has decreased considerably.[5] After caesarean birth, the maternal mortality and morbidity is nearly five times increases than vaginal births, especially the risks of haemorrhage, sepsis, amniotic fluid embolism and thrombo embolism. In a subsequent pregnancy, caesarean section increases technical difficulties due to adhesions which leads to increase the risk of injury to bowel and bladder and more chance of morbid adhesion of placenta which may further result in higher risk of haemorrhage and Peripartum hysterectomy.[6]

The nature of the caesarean section performed is either elective or emergency depending on the indication of the caesarean section.

Elective caesarean section is a term used when the procedure is done at a pre-arranged time during pregnancy to ensure the best quality of obstetrics, anaesthesia, neonatal resuscitation, and nursing services. These are cases where there is an indication for caesarean section but there is no urgency and examples include placenta previa with no active bleeding and mal-presentation etc. The procedure is termed as emergency caesarean section when it is performed due to unforeseen or acute obstetric emergencies.[4] The emergency caesarean sections are carried out when there is an immediate threat to the mother or fetus.[7]

Materials and Method:

This is a prospective observational study among 300 pregnant women with entitled "Study of mortality and morbidity in patients undergoing elective and emergency LSCS" has been carried out in the

department of Obstetrics and Gynaecology of Silchar Medical College and Hospital, Silchar, Assam, in the period from 1st June to 31st May. Out of 300 cases 200 were emergency LSCS and 100 elective LSCS. The patients were selected in simple random method.

In a prepared proforma patients were examined for their name, age, parity, and general and obstetrics examination. The socioeconomic status, educational status, booking status, etc. too were noted. Their intra-operative and postoperative complications were noted. Complications leading to death of the patients were also noted. All investigation reports necessary were taken into account. Informed and written consent were obtained from all cases and attendants.

HISTORY OF PRESENT AND PAST CAESAREAN SECTION: The points to be noted are duration of pregnancy and labor, indication of the caesarean section. Whether it was maternal or fetal indication.

DETAILS OF OPERATION: A note is made in cases undergoing caesarean section regarding date, type of anaesthesia, indication of operation, blood transfusion or any complications. Any added procedures, intra operative findings, complications were also noted.

EXAMINATION OF PATIENT

Postoperative day 1 = BP, pulse rate, respiratory system, CVS, urine output, vaginal examination, abdominal examination, calculation of output and input (IV fluid) were done.

Postoperative day 2 = BP, pulse rate, respiratory system, CVS, urine output, catheter removed or not, whether minimal mobilization of patient done or not, Bowel sound if present or absent, oral liquid diet started or not were noted.

Post operative day 3 = BP, pulse rate, respiratory system, CVS, urine output, soft oral diet started or not were noted.

Post operative day 4 = bandage removal and examination of stitch site were done. Checked whether any discharge or gaping is there or not, whether patient passed urine or not. If patient does not have any other problem can be discharged.

Post- operative day 5=whether patient was discharged on day 5, if not then the reason for extended hospital stay were noted.

DISCHARGE

The observations recorded at the time of discharge were

1) for mother - pulse, blood pressure, temperature, condition of scar, HB and other parameters.
2) for baby - general condition, feeding, weight was noted.

METHODS

1) A series of 200 cases, irrespective of their age, parity, religion requiring emergency lower segment Caesarean section were taken up. Referral status, indications of Caesarean section were studied.
2) 100 patients who were planned beforehand for elective caesarean section were selected.
3) Booked case. These are the cases who had at least three antenatal checkup in her antenatal period and who have been admitted on their expected date of delivery.
4) Unbooked case. Those who doesn't had any antenatal checkup all throughout her pregnancy or had less than two antenatal checkup and those who were referred from other facilities as emergency.
5) Prevalence of lower segment caesarean section is found from the number of caesarean sections during the period of study.
6) Age: Five categories of age group were made for observation and description 15- 20 years, 21-25 years, 26-30 years, 31-35 years and above 35 years.
7) Parity ;The cases were divided into following groups according to parity into 0,1,2,3,4 and 5.
8) Indications for cesarean section were noted in each case. Maternal mortality and morbidity in patients undergoing emergency and elective LSCS It was found out from evaluation of certain factors during the period of study

-- Referral status, whether the patient was a referred case or booked case, the condition of patient at the time of referral
-- Any medical intervention taken after diagnosis in antenatal period
-- Indications of caesarean section Intra operative complications if any
-- Any added procedures postoperative complications

STATISTICAL ANALYSIS: Tables, PIE chart and BAR diagram used to show descriptive statistics. Chi square test was used to evaluate association between categorical variables. A p value <0.05 was considered as statistically significant at 95% confidence interval.

ETHICAL CONCERN: The study protocol was submitted to institutional research committee and ethical committee obtained approval. a written informed consent was obtained from participants of the study. All patients enrolled in this study received standard care. Clearance from ethical committee was received on 30th December 2020

RESULTS

Table1: Showing booking status of the patients in the study sample

	Emergency LSCS	%	Elective LSCS	%	P value
Un-booked	150	75%	2	2%	P<0.001
Booked	50	25%	98	98%	

Emergency LSCS comprised mainly of unbooked patients around 75%.and Elective LSCS comprised mainly of booked cases in our study

Table2: Baseline characteristics of the patient undergoing emergency and elective LSCS

Educational status	Illiterate	60	20.0%
	Primary	40	13.3%
	Secondary	30	10.0%
	Matriculate	90	30.0%
	Graduate	80	26.7%
Socioeconomic Status	Upper	80	26.7%
	Middle	100	40.0%
	Lower	120	33.3%

Table 3: Age distribution of patients undergoing caesarean sections both in emergency and elective cases

Age	Emergency LSCS	%	Elective LSCS	%	P value
15-20	50	25%	10	10%	0.0019
21-25	74	37.5%	50	50%	
26-30	50	25%	20	20%	
31-35	20	10%	10	10%	
35 above	6	3%	10	10%	
Total	200		100		

Majority of the patients undergoing both emergency and elective LSCS were in the age group 21 to 25yrs of age. Since P< 0.0019 it is statistically significant

Table 4: Distribution of cases in relation to parity

Parity	Emergency		Elective		P value
	Number	%	Number	%	
1	110	55%	50	50%	P < 0.0001
2	41	20.5%	45	45%	
3	25	12.5%	5	5%	
4	13	6.5%	0	0	
5	8	4%	0	0	
5 above	3	1.5%	0	0	

Hence it is evident from the above table that highest number of C- Section is performed among primigravida. Since p value is < 0.001.it is statistically significant

Table 5: Distribution of type of abdominal incisions among the patients

	Emergency LSCS		Elective LSCS		P value
Type of incision	number	%	number	%	
Transverse incision	40	20%	95	95%	P<0.0001
Vertical incision	160	80%	5	5%	
Total	200		100		

It is evident from the above table that vertical incision was mainly given in emergency LSCS and transverse incision was mainly given in Elective LSCS in our study

Table 6: Distribution of maternal near miss cases in patients undergoing emergency and Elective LSCS

Emergency LSCS		Elective LSCS	
Number	Percentage	Number	Percentage
30	15%	2	2%
Total=200		Total=100	

The number of patients requiring ICU admission following operation were included in maternal near miss. Here 15% of the patients who underwent emergency LSCS had the need for ICU care as compared to Elective LSCS

Table 7: Indication of Emergency LSCS and Elective LSCS

Indication	Emergency LSCS	%	Elective LSCS	%
Fetal distress in first stage of labour	50	25%		
Post CS with induction failure	15	7.50%		
Post CS with scar tenderness	7	3.50%		

Indication	Emergency LSCS	%	Elective LSCS	%
Post CS with draining PV	3	1.50%		
Post CS with fetal distress	3	1.50%		
Post CS with oligohydramnios	3	1.50%	6	6%
Post CS with twin gestation	2	1.00%	7	7%
Post CS postdated pregnancy not In labour			9	9%
Post CS with gestational diabetes mellitus			8	8%
Post CS with pregnancy induced hypertension	6	3%	6	6.0%
Post cs with no Living issue	3	1.50%	5	5%
Twice post caesarean	3	1.50%	6	6%
Thrice post caesarean	1	0.05%		
Oligohydramnios	18	9.00%	17	17%
Prolong labour	19	9.50%		
Obstructed labour	11	8.00%		
CPD	9	4.50%		
Transverse lie	4	2.00%		
IUGR	6	3.00%		
Antepartum haemorrhage	4	2.50%		
APE	14	7.00%	2	2%
Preeclampsia	6	3.00%		
Primi breech	10	5.00%	8	8%
Cord prolapse	3	1.50%		
BOH			16	16%
Elderly primi			10	10%
TOTAL	200	100.00%	100	100.00%

The most common indication in emergency LSCS was fetal distress followed by Post CS wt associated complications.the most common indication in Elective LSCS was Post CS wt associated complication.

Table 9: Caesarean section in relation to their intraoperative complications

	Emergency LSCS		Elective LSCS		P value
	Number	%	Number	%	
1. Scarrupture	5	2.5%	0		0.7250
2. Extension of Surgical Incision	7	3%	3	3%	
3. Intraoperative Anyadded Procedure	8	4%	2	2%	
3. Need for Blood Transfusion	10	5%	3	3%	
4. Convulsion	4	2%	0		
5. Respiratory Complications	1	0.5%	0		
6. Need for Ionotropes	3	1.5%	0		
7. Cardiacarrest	1	0.5%	0		
Total	39	20.5%	8	8%	

Among our study groups of 200 patients undergoing emergency LSCS. 39 (20.5%) patients had intraoperative complications the most common intraoperative complication in emergency LSCS was need for blood transfusion 10 (5%). Out of the total 100 patients who underwent Elective LSCS, 8 (8%) patients had complications, the most common complication was extension of surgical incision 3%.

Table10: Postoperative complications associated with Caesarean section

Complications	Emergency LSCS	Elective LSCS	P value
1. Anaemia	14	1	0.6237
2. Postpartum haemorrhage	9	1	
3. UTI with urinary retention	5	2	
4. Wound infection	7	0	
5. Abdominal dist	4	1	
6. Respiratory distress	4	0	
7. Prolongedhospital stay	7	1	
Total	50	6	

Among the study group of 200 patients undergoing emergency LSCS 50 patients had postoperative complications and anaemia being the most common post operative complication. In elective LSCS only 6 patients out of 100 patients had post operative complication

Table 11: Showing distribution of subjects based on maternal risk factors

Riskfactors	Emergency LSCS (n=200)	Elective LSCS (n=100)	P value
Anaemia	30	6	0.0002
Antepartum ecclampsia	14	4	
Preeclampsia	6	2	
Gestational diabetes mellitus	1	7	
Heart disease	4	1	
Epilepsy	1	0	
Asthma	2	7	
Total	58	27	

The most common maternal risk factor in Emergency LSCS was anaemia.

Table 12: Showing number and cause of maternal death in study population.

	Emergency LSCS	Elective LSCS
No of death	1	nil
Cause of death	P4L3 at day 2 post op with severe anemia with anemic heat failure	nil
Total no of Caesarean delivery	200	100

Discussion

PREVALENCE OF CAESAREAN DELIVERY: During the study period, the prevalence of caesarean section is found to be around 44%in our hospital.

It is much higher than the WHO advocated ideal rate of (10 to 15%). Prevalence of caesarean section was 21.40% as per study by Hafeez et al[9] in 2014. The prevalence of cesarean delivery was 63% according to a study by R. Choudhury et al[11] in 2018.

BOOKING AND UNBOOKED STATUS: The unbooked or referred cases were more in Emergency LSCS as compared to Elective LSCS. 75% were unbooked cases in emergency LSCS.

Table 1: Showing booking status of patients undergoing caesarean section

Studies	Booked		Unbooked	
	EM	EL	EM	EL
Rabbiq et al[9] (2015)	36%	60%	63%	40%
P. Renuka et al[12] (2016)	76.70%	92.70%	23%	7.3%
N.Hemlatha et al[10] (2021)	68%	92.9%	32%	7.1%
Present study	25%	98%	75%	2%

SOCIOECONOMIC AND EDUCATIONAL STATUS

In our study we have found that maximum of our patient in the study were matriculate 30 % and as per Kuppuswamy socioeconomic status scale, 40% belonged to middle class. In a study by Gayathry et al,[13] most of the patients undergoing caesarean section was belonging to lower middle class family.

MATERNAL NEAR MISS CASES

In our study we have found patients requiring ICU care following cesarean delivery was more in emergency LSCS (15%) whereas around 2% in elective case.

According to Mina Harde et al[14] 2014total admission in ICU following LSCS was 2.8 %in a study of 2 years duration. As compared to other cases, obstetrics cases following emergency LSCS had high occupation rate 67%. Among the other obstetrical indication for ICU admission haemorrhage was found to be very significant cause.

INTRAOPERATIVE COMPLICATIONS

Table 2: Showing incidence of intraoperative complications due to emergency and elective cesarean section

Studies	Emergency LSCS	Elective LSCS
Ghazi et al[15] 2012	96%	30%
Gayathry et al[13s] 2017	45.3%	22.2%
Dr. B.S. Patel et al[16] 2020	24.6%	8.6%
Present study	20.5%	8%

Hence we can conclude from above studies that emergency LSCS has more intra operative complications when compared to Elective LSCS. According to N Hemlatha[10] 2021, scar rupture and need for blood transfusion was less in elective LSCS when compared to Emergency LSCS. In our study also we found that, scar rupture was less among patients undergoing Elective LSCS. In our study maximum complications intraoperatively was need for blood transfusion in both emergency and elective LSCS. The need for blood transfusion was also more comparatively in emergency LSCS as per study of N. Hemlatha.[10]

POSTOPERATIVE COMPLICATION

Table 3: Showing Post operative complications associated with cesarean section.

Studies	Anaemia		PPH		Woundinfection	
	EM	EL	EM	EL	EM	EL
Gayathry D et al[13] 2017	10.7%	6.7%	5.3%	2.2%	2.7%	1.1%
V. Thakur et al[17] 2015			0.91%	0.57%	26.62%	12.78%
Rabbiahaq et al[8] 2012	43.3%	16.6%			10%	3.3%
N. Hemlatham D[10] 2021	80%	19.57%			15%	nil
Present study	7%	1%	4.5%	1%	3.5%	nil

Anaemia as a post operative complication was seen more in Emergency LSCS than in Elective CS as per study by Gayathry et al and N. Hemlata. PPH was also commonly seen in emergency LSCS more than in

Elective CS. Wound infection was more common in Emergency LSCS case as per the above studies.

One maternal death was seen in a case of G4P3L2 at term pregnancy with obstructed labour with severe anaemia. She was a referred case and she doesn't have any antenatal check up. She was operated with 2 units of blood in hand. She died in CICU within 24 hours after surgery because of anemic heart failure From our study we have found that anaemia and late referral is one of the leading causes in maternal mortality and morbidity.

Conclusion

Majority of patients who underwent caesarean section were un-booked. Morbidity was high among the un-booked cases who were referred with no previous investigations. In un-booked cases there is no previous analysis of the risk factors, no early diagnosis and intervention for the presenting risk factors. Hence the main underlying cause of mortality and morbidity is due to no proper intervention earlier as there is no proper antenatal check up being done. With proper counseling and checkup, the patient's morbidity and mortality can be reduced to a very much higher extent.

From our study we have found that anaemia and late referral is one of the leading causes in maternal mortality and morbidity.

Measures recommended to decrease the common causes of mortality and morbidity due to elective and emergency LSCS

- Proper antenatal check up and regular blood investigation
- Timely diagnosis and intervention of any high-risk cases
- Proper counseling of the patient and her household members. Proper training of peripheral health workers

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Original Article: Obstetrics

Comparative Study of Progress of Labour in Spontaneous Versus Induced Labour by Simplified Partograph

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ABSTRACT

Objective: To compare the progress, mean duration, mode of delivery, need for augmentation and fetomaternal outcome in spontaneous versus induced labour by simplified partograph and also to promote the utilization of simplified partograph during labour.

Methods: A prospective observational analytical study conducted in tertiary hospital, over 18 months. Total sample size was 300(150 in spontaneous labour-Group A and 150 in induced labour -Group B). Parameters in both groups were compared with Simplified partograph.

Result: Vaginal delivery was significantly higher in spontaneous group as compared to induced group (64.7% vs 40.0%). Delivery between Alert & Action line was significantly higher in Induced group as compared to Spontaneous group (51.5% vs 34.5%); delivery before Alert line was significantly higher in spontaneous group as compared to induced group (60.1% vs 39.9%). Different parameters in induced and spontaneous group were compared. Maternal complication (11.3% vs 1.3%), Fetal distress (32.1% vs 17.3%), SNCU admission (28.7% vs 13.3%), Pathological CTG (31.3% vs 19.3%) were found to be higher in the induced group.

Conclusion: Partogram is efficient, time saving and gives a clear picture of labour. Induction of labour can be safe among primigravida if labour is partographically monitored.

Introduction

Labour is a natural physiological process characterized by progressive increase in frequency, intensity and duration of uterine contractions resulting in effacement and dilatation of the cervix with descent of the fetus through the birth canal. This physiological process may at times become pathological. Failure to recognize would result in prolonged labour with resultant increase in the intensity in the morbidity and mortality of both the fetus and mother. The best way to monitor labour is with the help of a partograph. Any delay or deviation from normal may be detected quickly and treated

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accordingly. As induction has both advantages and disadvantages this study was undertaken to compare the maternal and fetal outcomes of both induced and spontaneous labour using simplified WHO partograph. Partographs when used with defined management protocols is an inexpensive tool which can effectively monitor labour and be helpful in reducing incidences of both maternal and fetal morbidity and mortality by reducing the number of operative interventions, prolonged labour, obstructed labour and caesarean section. The indication of induction of labour must be worthy as likewise being sufficient indications for a caesarean section because if the procedure fails, the end result is caesarean section. Child birth is the period from the onset of regular uterine contraction until expulsion of placenta. To assess the progress of labour and to identify when intervention is necessary partograph can be highly effective in reducing complications from prolonged labour, for both mother &the new-born. The main aim of the study is to compare the mean duration of labour, eventual mode of delivery, requirement of augmentation by oxytocin and their feto maternal outcome in spontaneous vs induced labour by simplified partograph. Induction of labour is one of the most common procedures during pregnancy. Data from the National Centre for Health Statistics for the last decade indicate that the rate of labour induction has increased gradually from 9% to 20%. This increase has been noted both at community Hospitals and at the university tertiary care hospitals. Indications for induction of labour is post-dated pregnancy, leaking pv, medical disorder in mother, prolonged rupture of membrane etc. The American college of obstetricians and gynecologists practice bulletin "induction of labour" states, generally induction of labour has merit that if any pregnancy has high risk like GDM, prolonged leaking PV, HDP which has high risk to carry the pregnancy further that labour we can induce and terminate the pregnancy; it will be safe for both mother and baby.[1] As the induction have both advantages and disadvantages there is a need to study the progress of labour, maternal and fetal outcomes of both spontaneous and induced labour and to compare them by plotting the partograph. Methods (pharmacological and mechanical) used for induction of labour in the study: Prostaglandin E2[PGE2 gel] (dinoprostone gel), Oxytocin, Foley induction, Artificial rupture of membrane, Stripping of membrane.[2]

Aims and Objective of Resesrch

General objective:

- To monitor spontaneous and induced labour for progress and their fetomaternal outcome in both groups.
- To promote the utilization of simplified partograph during labour.

Specific objective:

- To compare the progress of labour, mean duration of labour, mode of delivery and need for augmentation in spontaneous versus induced labour by simplified partograph.

Materials and Methods:

This was a prospective observational analytical study conducted in a tertiary care hospital of India from April 2021 to September 2022 with a sample size of 300 after receiving Ethical Committee permission.

Inclusion criteria:

- Pregnant woman in spontaneous and induced labour
- Singleton term pregnancy ≥ 37 wks
- Vertex presentation
- Post-term pregnancy
- Premature rupture of membrane
- Preeclampsia, eclampsia
- Gestational hypertension
- Fetal causes (e.g., fetal growth restriction.)

Exclusion criteria:

- Preterm labour less than 37weeks
- Malpresentation
- Malposition
- Multiple pregnancy
- Antepartum haemorrhage
- Contracted pelvis
- Cephalo Pelvic Disproportion
- Previous LSCS
- Obstructed labour

Methodology

- On admission to the hospital a detailed history about exact time of onset of labour pains or leaking membranes was elicited. Details of menstrual and obstetric history, Family history, past history, personal histories were elicited as in the proforma.

- patients were selected according to the inclusion criteria and studied by using a simplified partogram.
- After an initial preparation of the patient, examination of the patient was carried out. All the vital signs and a detailed systematic evaluation was done. Local examination done.
- Per vaginal examination was done with the interval of 4 hourly.
- The simplified partogram was attached to the mother's case record when the patient was admitted in the labour room.
- This study has two group for comparison.

  Group A- Spontaneous labour which progress normally and reached >4cm cervical dilatation. The number of subjects allotted to this group were150.

  Group B- Induced labour where induction was done surgically, medically and mechanically by ARM, PGE2 gel and foleys, stripping of membrane, oxytocin respectively, reached >4cm. The number of subjects allotted to this group were 150.

In our study, the partograph was plotted in both groups. The aim of our study is to provide partographic pictorial overview of labour in both group and compare their progress, duration, mode of delivery, need of oxytocin augmentation and fetomaternal outcome in respect to alert and action line and that was compared analytically.

Result

Statistical Analysis was performed with help of Epi Info (TM) 7.2.2.2 EPI INFO is a trademark of the Centres for Disease Control and Prevention (CDC). Statistical analysis was done by SPSS software with p-value being 0.05.

1. Mode of delivery and the patients of the two groups [Table-1]

Table-1: Mode of delivery and the patients of the two groups

Mode of delivery	Spontaneous	Induced	TOTAL
CS	42	72	114
Row %	36.8	63.2	100.0
Col %	28.0	48.0	38.0
NVD	97	60	157
Row %	61.8	38.2	100.0
Col %	64.7	40.0	52.3
Outlet Forceps	5	11	16
Row %	31.3	68.8	100.0
Col %	3.3	7.3	5.3
Ventouse	6	7	13
Row %	46.2	53.8	100.0
Col %	4.0	4.7	4.3
TOTAL	150	150	300
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

Proportion of NVD was significantly higher in spontaneous group (64.7%) as compared to induced group (40.0%) ($Z=3.54$; $p<0.0001$).

2. Duration of labour in active stage and the patients of the two groups [Table-2]

Table-2: Duration of labour in active stage and the patients of the two groups

Duration of labour In active stage (hours)	Spontaneous	Induced	TOTAL
<5	40	32	72
Row %	55.6	44.4	100.0
Col %	26.7	21.3	24.0
5 - 9	110	108	218
Row %	50.5	49.5	100.0
Col %	73.3	72.0	72.7
≥10	0	10	10
Row %	0.0	100.0	100.0
Col %	0.0	6.7	3.3
TOTAL	150	150	300
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0
Mean±s.d.	5.29±1.57	6.05±2.02	
Median	5	6	
Range	2 - 9	2 - 12	

$\chi^2=8.26$; $p=0.016$ S-Significant Chi-square (χ^2) test showed that there was significant association between duration of labour and the patients of the two groups ($p=0.016$). t-test showed that the mean duration of labour of the patients of the induced group was significantly higher than that of spontaneous group ($t298=3.49$; $p<0.0001$).

3. Time point of delivery in Partograph and the patients of the two groups [Table-3]

Table-3: Time point of delivery in Partograph and the patients of the two groups

Time points of delivery in Partograph	Sponta-neous	Induced	TOTAL
Before Alert Line	89	59	148
Row %	60.1	39.9	100.0
Col %	29.7	19.7	49.3

Time points of delivery in Partograph	Sponta-neous	Induced	TOTAL
On The Alert Line	2	0	2
Row %	100.0	0.0	100.0
Col %	0.7	0.0	0.7
Between Alert Line & Action Line	51	76	127
Row %	34.5	51.5	100.0
Col %	17.0	25.3	42.3
Cross Action Line	8	15	23
Row %	34.8	65.2	100.0
Col %	2.6	5.0	7.7
TOTAL	150	150	300
Row %	52.6	47.4	100.0
Col %	100.0	100.0	100.0

χ^2 =13.46; p=0.0037 S-Significant Chi-square (χ^2) test showed that there was significant association between time point of delivery in Partograph and the patients of the two groups (p=0.0037). Between Alert & Action line was significantly higher in Induced group (51.5%) as compared to Spontaneous group (34.5%) (Z=2.42; p=0.015). Before Alert line was significantly higher in spontaneous group (60.1%) as compared to induced group (39.9%) (Z=2.82; p=0.0046).

4. Maternal complication and the patients of the two groups

There was significant association between maternal complication and the patients of the two groups

(p=0.012). In overall maternal complication was significantly higher in induced group (11.3%) as compared to spontaneous group (1.3%) it was significant (Z=2.97; p=0.0028).

5. Fetal distress and the patients of the two groups [Table-4]

Table-4: Fetal distress and the patients of the two groups

Fetal distress	Spontaneous	Induced	TOTAL
Yes	26	48	74
Row %	35.1	64.9	100.0
Col %	17.3	32.0	24.7
No	124	102	226
Row %	54.9	45.1	100.0
Col %	82.7	68.0	75.3
TOTAL	150	150	300
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

There was significant association between fetal distress and the patients of the two groups (p=0.0032). Fetal distress was significantly higher in induced group (32.1%) as compared to spontaneous group (17.3%) (Z=2.46; p=0.013).

6. CTG abnormality and the patients of the two groups [Table-5]

Table-5: CTG abnormality and the patients of the two groups

CTG abnormality	Spontaneous	Induced	TOTAL
Normal	104	79	183
Row %	57.1	43.4	100.0
Col %	69.3	52.7	61.0
Pathological	29	47	76
Row %	38.2	61.8	100.0
Col %	19.3	31.3	25.3
Suspicious	17	24	41
Row %	41.5	58.5	100.0
Col %	11.3	16.0	13.7
TOTAL	150	150	300
Row %	50.0	50.0	100.0
Col %	100.0	100.0	100.0

χ^2=8.87; p=0.011 S-Significant Chi-square (χ^2) test showed that there was significant association between CTG abnormality and the patients of the two groups (p=0.011). Pathological was significantly higher in Induced group (31.3%) as compared to Spontaneous group (19.3%) (Z=1.98; p=0.04).

7. SNCU admission and the patients of the two groups:

There was significant association between SNCU admission and the patients of the two groups (p=0.0011). SNCU admission in induced group (28.7%) was significantly higher than Spontaneous group (13.3%) (Z=2.77; p=0.0054

8. Comparison of duration of labour (active stage in hrs)

There was significant difference in mean interval duration of labour (active stage in hrs) (F=8.73; p<0.0001). Mean duration of labour of Foley's was significantly highest for all and for amniotomy it was the lowest of all.

9. Comparison of Different parameters of study in both group

There were no significant differences in mean age and gestational age of the patients of the two groups (p>0.05). Thus, the patients were matched for these parameters. There were no significantly differences in baby weight and APGAR score at 1 minute of the two groups (p>0.05). The mean (Mean±s.d) duration of interval between induction to delivery of the induced group was 12.05±7.16 hours.

Discussion

In our study, mean total duration of labour in induced group is higher (6.05±2.02) hrs than spontaneous group is (5.29±1.57) hrs, which was found to be statistically significant (p value < 0.001). This shows that labour in induced and spontaneous is not comparable if partographically monitored. Our study finding is contrary to the similar study conducted by Ernest O. Orji et al[3,11,12] Anamika Singh & SmithaB. Rao et al,[4] Pramila Yadav et al[5,13] showed no significant difference in mean total duration of labour in both induced and spontaneous groups. Comparison of total duration of labour of different studies shown in [Table-6]. Mode of Delivery in our study, 48% (72 women) were delivered by caesarean section and 7% (11 women) by outlet forceps and 7% (5 women) by vacuum assisted and 40% (60 women) spontaneosly in induced group. Whereas, 28% (42 women) were delivered by caesarean section and 3% (5 women) by outlet forceps and 4% (6 women) by vacuum assisted and 64.7% (97 women) spontaneously in spontaneous group.

Table-6: Comparison Of Total Duration of Labour in Various Studies

Mean Duration of Labour (hours)	Our Study	Ernest O. Orji et al[67]	Anamika Singh &, Smitha B Rao et al[62]	Pramila Yadav et al[95]
Induced	6.05	6.507	6.507	5.43
Spontaneous	5.29	6.080	6.080	5.41
P value	P=0.016	0.131	0.15	0.865

Proportion of NVD was significantly higher in spontaneous group (64.7%) as compared to induced group (40.0%) (Z=3.54; p<0.0001). All the given studies, conducted by Ernest O. Orji et al[3,11,12] Anamika Singh et al, Smitha B Rao et al,[4] Pramila Yadav et al[5,6,13] show that rate of caesarean section is high in induced labour, which support my study. Different studies mode of delivery comparison given in [Table-7].

Table-7: Comparison of Caesarean Section Rate in Various Studies

Caesarean Section	Our Study	Ernest O. Orji et al[67]	Anamika Singh &, Smitha B Rao et al[62]	Pramila Yadav et al[95]
Induced	48%	35.3%	44%	25%
Spontaneous	28%	11.03%	21%	12%

Chi-square (χ^2) test showed that there was significant association between time point of delivery in Partograph and the patients of the two groups (p=0.0037). Number of deliveries occurred between Alert & Action line was significantly higher in Induced group (51.5%) as compared to Spontaneous group (34.5%) (Z=2.42; p=0.015) and deliveries occurred before Alert line was significantly higher in spontaneous group (60.1%) as compared to induced group (39.9%) (Z=2.82; p=0.0046). Comparison of deliveries in different groups show that most deliveries occur before the alert line in Anamika Singh &Smitha B Rao et al[7] which is contrary with our study. Number of deliveries occurred, which crossed the action line was more in induced group (18) 3.9% than spontaneous group (8) 2.1%.in our study these finding is similar with the study conducted by Pramila Yadav et al.[5,7,13] Different studies comparison given in [Table-8].

SNCU admission in induced group (28.7%) was significantly higher than Spontaneous group (13.3%) (Z=2.77; p=0.0054). our study findings are contrary of the study conducted by Glantz JC *et al.*[10] Neonatal ICU admissions found no significant differences between the 2 groups. Study by Chaubey S et al[9] showed that only 2% new-born were shifted to NICU each among both groups. Study by Abisowo OY et

Table-8: Comparison of time point of deliveries in partograph comparison with other studies

	Our study induced cases (grp-B)	Spontaneous (Grp-A)	Anamika Singh&, Smitha B Rao et al62 Induced	Spontaneous	Pramila Yadav et al 95 Induced	Spontaneous
Women who delivered before alert line	59(39.9%)	89(60.1%)	78(57.4%)	75(55.1%)		
Women who delivered between alert and action line)	76(51.5%)	51(34.5%)	13(11.3%)	38(33%)		
Women who delivered after action line	15(5.0%)	8(2.6%)	45(31.3%)	23(11.9%)	21(35%)	10(16.7%)
Women who delivered on alert line	0(0.0%)	2(0.7%)				

al[8] showed that 3.6% among spontaneous group were admitted to NICU and 7.3% of induced group.

Conclusion

1. Partogram is efficient, time saving and gives a clear picture of labour. It facilitates anticipation with reasonable certainty of labour problems and indicates the need for clinical re-evaluation.
2. It also identifies the cases, which may require intensive intrapartum monitoring and possible intervention either operative or non-operative.
3. Induced labour monitored with simplified partogram is comparable to spontaneous labour with no increased adverse fetal outcome. Induced labour may raise the likelihood of a caesarean section, but it has no negative effects on the outcome of the new born. Therefore, induction of labour can be safe among primigravida if labour is partographically monitored.

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Original Article: Gynaecology

Mature Oocyte Morphological Score and Its Utility in Assisted Reproduction Cycles

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ABSTRACT

Background: Oocyte quality is an important factor in determining the success rates of assisted conception cycles. We wanted to know the correlation of various oocyte morphological and physical parameters with quality of the embryos.

Methods: This is a single institutional prospective observational study conducted after institutional ethical committee approval over 18 months in 90 consenting women undergoing in-vitro fertilization. Ovarian stimulation protocols, gonadotropin doses and ovulation trigger were decided according to the patient's clinical profile. After retrieval, oocytes were incubated for 2 hours and denudation was done followed by morphological assessment of each oocyte under inverted microscope and ICSI was done with morphologically normal sperm. All injected oocytes were cultured singly and the grade of embryo according to the Istanbul consensus for cleavage stage embryos was noted for each oocyte.

Statistical Analysis/Results: 720 mature oocytes upon ICSI with morphological sperm yielded 408 (56.6%) Grade A, 125 (17.4%) Grade B embryos which were considered transferrable and 187 (26%) Grade C embryos and Unfertilized oocytes. Each oocyte morphological parameter was studied against the grade of embryo it formed.

Conclusion: We developed a mature oocyte morphological score with each variant of the oocyte parameter for both significant and non-significant oocyte parameters.

Key words: Oocyte quality, Oocyte scoring, IVF outcomes

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Introduction:

Infertility is considered as disease of the reproductive system and is defined as failure to achieve a clinical pregnancy after one year or more of regular unprotected sexual intercourse. The chance of couple conceiving depends on many factors and oocyte quality is one of the important factors determining the success of assisted conception cycles. Major determining factor determining the in-vitro fertilization (IVF) outcomes remains to be female age. Apart from maternal age, factors affecting the quality of oocyte are certain oocyte secreted factors, environmental factors, smoking, certain nutritional habits and intracellular temperatures. The prognostication of the ART cycle outcome can be done at or before the beginning of the cycle or during the cycle. The first approach would help in proper patient counselling and is the usual preferred approach. These mainly involves counselling based on the demographic factors including age, BMI, basal hormonal status, ovarian reserve tests including Follicle stimulating Hormone (FSH), Anti mullerian Hormone (AMH), Antral follicle count (AFC) and Estradiol, response to previous stimulation etc. The prognostic variables during the treatment cycle include folliculogenesis, endometrial response, oocytes retrieved, quality of oocytes, number and grade of embryos. Since these factors represent the unexpected changes in ovarian response, quality of oocytes, fertilization and cleavage of embryos, these can be utilized in a more appropriate counselling during the treatment cycle. The former group fails to communicate properly regarding certain unexpected or unpredictable events that can occur during treatment cycle. The counselling regarding the prognosis is very important in IVF cycles because this is one of the fields in Medicine which have maximum treatment failures and hence the clinician often need to face the grief and displeasure of the patients. This will help the patients too to face the situation. The currently available tests for prognosticating the IVF outcome are not uniformly applicable to all patient populations. The predictive values of many of these tests are quite debatable. Many models were developed for the prediction of clinical pregnancy over the last few years but many of these failed to achieve proper validation in further studies and hence are not currently very popular. Oocyte quality has been described in many studies as having positive correlation with embryo morphology[1], embryo quality[2], growth and development[3], cleavage rates[1] and pregnancy rates.[4]

Objective:

To formulate a total oocyte score in predicting clinical pregnancy

Materials And Methods:

Institutional ethical committee approval was taken before beginning the study and informed consent has been taken from all the study participants. This is a prospective observational study conducted over a period of 18 months in 90 women (720 mature oocytes) at Amrita Fertility Centre, AIMS, Kochi. All patients undergoing autologous IVF cycles irrespective of the indication for IVF and ICSI performed with morphologically normal sperm were included in the study. However, presence of endometrioma, uncontrolled endocrinological conditions, thin endometrium, history of recurrent miscarriage or implantation failure, uterine anomalies were excluded as these factors may affect the clinical pregnancy rates independently. Median age of the patients was 31.6± 3.6 years.

Patients were stimulated with gonadotropins according to institutional protocol and posted for oocyte retrieval after 35-36 hours after ovulation trigger. All the injected oocytes were assessed subjectively for the cytoplasm appearance, 1st polar body morphology, Oolemma breakage, Perivitelline space, shape of oocyte and zona, presence or absence of Refractile bodies, Vacuoles and Smooth Endoplasmic Reticulum. Once the oocytes were injected, they were cultured individually and a fertilization assessment was made on Day 2 or 3 post ICSI and embryos were graded according to Istanbul consensus.[5] A maximum of 3 (lesser in most cases) A or B grade embryos both of which were considered as good quality embryos were transferred either in a fresh or a frozen embryo transfer. Biochemical pregnancy (positive serum β hCG with value > 50 IU two weeks after embryo transfer) and clinical pregnancy (presence of gestational sac during the ultrasound scan performed two weeks after positive β hCG) were recorded. An objective oocyte score was calculated from the quality of embryos the oocyte formed and clinical pregnancy status of the patient.

Statistical analysis software used was IBM SPSS version 20.0 and categorical variables were expressed by frequency and percentage, continuous variables were expressed as median. Chi-square test was used to test association of categorical variables with grade of embryos. Score of oocytes was formulated by Multiple ordinal logistic regression (Odd's ratio with 95% CI). Cut-off mean oocyte score to predict clinical pregnancy was done by ROC curve analysis and Diagnostic measures.

Results:

Table 1: Distribution of patient characteristics (n = 90)

Variable	Median(Q1-Q3)
Age in years	31.6± 3.6
Total number of Embryos	6(3-10)
Gonadotropin Dose (IU)	300(225-450)
Embryos transferred	3(2-3)

Table 2: Univariate analysis of association of oocytes characteristics with grade of the embryos (n=720)

Parameters	Category	Grade			P value
		Grade C and Unfertilized oocytes	Grade B embryos	Grade A embryos	
Cytoplasm	Central granulation/ Coarse granulation) (n=167)	80(48.1)	36(21.3)	51(30.6)	<0.001
	Fine granulation (n=353)	89(25.1)	57(16.1)	208(58.8)	
	Normal (n=200)	18(9.1)	33(16.4)	149(74.4)	
Polar body	Fragmented / Big (n=101)	43(42.7)	13(12.7)	45(44.5)	<0.001
	Round (n=107)	42(39.3)	27(24.8)	38(35.9)	
	Normal (n=513)	103(20)	86(16.8)	325(63.3)	
Zona pellucid shape	Oval (n=18	10(55)	2(10)	6(35)	0.011
	Round (n=702)	178(25.3)	124(17.6)	402(57.2)	
Zona Pellucida Thickness	Thick (n=78)	41(52.3)	9(11.6)	28(36)	<0.001
	Normal (n=642)	146(22.8)	116(18.1)	379(59.1)	
Oocyte breakage	Sudden/Difficult breakage (246)	102(41.6)	29(11.9)	114(46.5)	<0.001
	Normal (474)	85(17.9)	96(20.2)	293(61.8)	
Perivitelline space	Large (n=200)	80(40)	34(16.9)	86(42.9)	<0.001
	Normal (n=520)	107(20.6)	92(17.6)	321(61.8)	
Perivitelline space granulate	Granulated (n=230)	89(38.5)	39(17.1)	102(44.4)	<0.001
	Normal (n=490)	98(20.1)	86(17.5)	305(62.3)	
Size of the oocyte	Normal (n=720)	187(26)	125(17.4)	408(56.6)	-
	Giant oocyte (0)	0	0	0	
Vacuole	Present (n=170)	66(38.7)	36(21)	69(40.3)	<0.001
	Absent (n=550)	122(22.1)	90(16.3)	339(61.6)	
Smooth Endoplasmic Reticulum	Present (n=51)	34(66.1)	5(10.7)	12(23.2)	<0.001
	Absent (n=669)	154(23)	120(17.9)	395(59.1)	
Refractile body	Present (n=102)	48(47.3)	19(18.8)	35(33.9)	<0.001
	Absent (n=618)	139(22.5)	106(17.1)	373(60.3)	
Oocyte shape	Oval (n=17)	9(55.6)	3(16.7)	5(27.8)	0.012
	Normal (n=703)	178(25.3)	122(17.4)	403(57.3)	

Table 3: Multivariate analysis of association of oocytes characteristics with grade of the embryos

Variables	Category	P value	Odds Ratio (95% CI)
Cytoplasm	Central granulation or coarse granulation	-	<0.001
	Fine granulation	<0.001	3.0 (2.0 ,4.3)
	Normal	<0.001	3.8(2.4,6.0)

Variables	Category	P value	Odds Ratio (95% CI)
Polar body	Fragmented or Big	-	1
	Round	0.398	0.79(0.46,1.4)
	Normal	0.662	1.1(0.71,1.7)
Zona pellucid shape	Oval	0.013	1
	Normal		3.4 (1.3,8.9)
Zona Pellucida Thickness	Thick	0.004	1
	Normal		2.0(1.3,3.3)
Oocyte breakage	Sudden/Difficult breakage	0.018	0.018
	Normal		1.5(1.1,2.1)
Perivitelline space	Large	0.089	1
	Normal		1.3(0.96,1.9)
Perivitelline space granulate	Granulated	0.004	1.0
	Normal		1.7(1.2,2.4)
Smooth Endoplasmic Reticulum	Present	0.0006	1
	Absent		2.9 (1.6,5.4)
Oocyte shape	Oval	0.229	1
	Normal		1.8(0.68,4.9)
Vacuoles	Present	0.009	1
	Absent		1.6(1.1,2.3)
Refractile body	Present	0.024	1
	Absent		1.6(1.1,2.5)

Table 4: Mature oocyte morphological scoring system

Oocyte Parameter	Category	Score
Cytoplasm	Central granulation or Coarse granulation	1
	Fine granulation	3.0
	Normal	3.8
Zona pellucida shape	Oval	1
	Normal	3.4
Zona Pellucida Thickness	Thick	1
	Normal	2.0
Oocyte breakage	Sudden/Difficult breakage	1
	Normal	1.5
Perivitelline space granulations	Granulated	1.0
	Normal	1.7
Smooth Endoplasmic Reticulum	Present	1
	Absent	2.9
Vacuoles	Present	1
	Absent	1.6
Refractile body	Present	1
	Absent	1.6
Polar Body	Fragmented or Big	1
	Round	0.79
	Normal	1.1
Peri-vitelline space	Large	1
	Normal	1.3
Oocyte shape	Oval	1
	Normal	1.8

Table:5 Distribution of Clinical and Biochemical pregnancy

Clinical Pregnancy	Frequency	Percent	Biochemical Pregnancy	Frequency	Percent
Yes	41	45.6	Yes	47	52.2
No	49	54.4	No	43	47.8

Among the total 90 patients 41(45.6%) had clinical pregnancy and 47(52.2%) had biochemical pregnancy.

Table 6: ROC curves for mean oocytes score for the prediction of clinical pregnancy

Area	Std. Error	p value	Asymptotic 95% Confidence Interval	
			Lower Bound	Upper Bound
0.756	0.050	<0.001	0.657	0.854

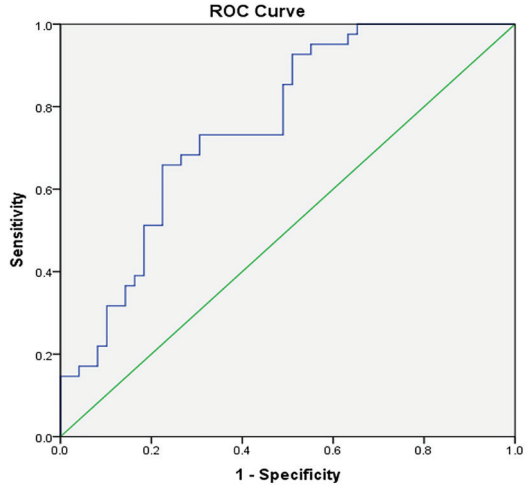

Fig:1. : ROC curves for mean oocytes score for the prediction of clinical pregnancy

Table 7: Diagnostic measures

Sensitivity	Specificity	Predictive Value positive	Negative predictive value	Accuracy
73.2%	69.4%	66.7%	75.6%	71%

Table 8: Association of mean oocytes score cutoff value with clinical pregnancy

Mean Oocytes Score	Clinical Pregnancy		p value
	Yes N (%)	No N (%)	
≥22.4	30 (66.7%)	15(33.3%)	<0.001
<22.4	11 (24.4%)	34 (75.6%)	

The results showed that the cut-off score of > 22.4 could predict a clinical pregnancy with sensitivity 73.2%, specificity 69.4% and accuracy 71%. (p value<0.001)

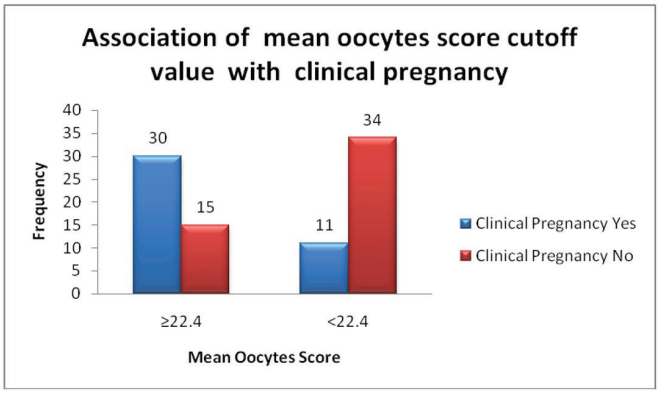

Fig:2.: Association of mean oocytes score cut-off value with clinical pregnancy

Discussion:

Table 1 describes the baseline patient characteristics, total number of embryos formed, average gonadotropin dose used in each patient and average number of embryos transferred in each patient.

Table 2 describes the univariate analysis where each categorical variant of a particular oocyte parameter was studied against the grade of embryo it formed after Intra-cytoplasmic sperm injection. Table 3 describes multivariate ordinal regression analysis association of oocytes characteristics with grade of the embryos. In this model, eight variables such as Cytoplasm (p value<0.001), Zona pellucida shape (p value=0.013), Zona Pellucida Thickness (p value=0.004), Oocyte breakage (p value=0.018), Perivitelline space granulations (p value=0.004), smooth endoplasmic reticulum (p value=0.0006), presence of Vacuole (p value=0.009) and Refractile body (p value=0.0244) showed statistical significance. Among the significant predictors, most significant predictor was cytoplasm with an Odd's risk of 3.8 vs 1 for normal and coarsely granulated cytoplasm respectively.

Mature oocyte morphologic score was generated by considering odds ratios obtained for each oocyte morphologic characteristic. Eight parameters mentioned above i.e. Cytoplasm characteristics, Zona pellucida shape, Zona Pellucida thickness, Peri vitelline space granularity, Smooth Endoplasmic reticulum, Vacuoles, Refractile bodies, Oocyte breakage were

independently statistically significant and the other three i.e. Oocyte shape, Size of Peri vitelline space and Polar body were not independently statistically significant in predicting the quality of embryos. Both significant and non-significant parameters were included in the score so as not to rule out the possibility of occurrence of simultaneous presence of multiple such parameters in a single oocyte with poorer outcomes (embryo quality and subsequent results). We have considered these parameters due to the results published in various studies regarding their importance in determining the embryo quality and IVF outcomes.[6,7,8,9,10]

Therefore, a relative weightage was given to each analysed oocyte if one or more of the following morphologic characteristics were present: oval Zona pellucida, thick Zona Pellucida, Sudden/Difficult oocyte breakage, large refractile body, granulated perivitelline space, centrally located granular cytoplasm and vacuoles, large or fragmented or round polar bodies, large peri vitelline space and shape of oocyte. The oocytes that received the lowest score were expected to have the least implantation potential (due to the poorer embryo quality). Similar scoring system was proposed with only a few significant oocyte parameters by Rienzi et al.[11]

The total oocyte score was calculated by summing all the individual parameter scores of a given oocyte and mean oocyte score by dividing the sum of all total oocyte scores with number of mature oocytes.

Table 5 depicts the clinical and biochemical pregnancy distribution among the population upon fresh/frozen embryo transfer of at least 2 embryos and a maximum of 3 embryos at cleavage stage. The mean oocyte score was studied against the Clinical Pregnancy rate to establish a cut-off of the oocyte score for predicting pregnancy. ROC curves were constructed to find the predictability of our oocyte scoring system in predicting clinical pregnancy outcome and showed statistical significance (p value <0.001). The area under the curve of mean oocyte score for the prediction of clinical pregnancy was 0.756±0. 050. The cutoff value of mean oocyte score was 22.4 with sensitivity 73.2% and specificity 69.4%.

Based on the above details, >22.4 is considered as cut-off value in predicting clinical pregnancy and in our study. The results showed that a cut-off total oocyte score >22.4 could predict clinical pregnancy with an accuracy of 71%. This may be used in future to select embryos developed from oocytes with higher score and transfer them earlier to possibly reduce the time for pregnancy.

Acknowledgements: Nil

Conflicts of Interest: None

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Case Report: Obstetrics

A Case Report on Cervical Fibroid – Myomectomy during Caesarean Delivery

Priyanka Kumari[1], Meena Samant[2], Hannah Elza Kurian[3]

ABSTRACT

Fibroid in pregnancy is not uncommon but cervical fibroid is rare during pregnancy and managing it is challenging for obstetricians. This is a case of cervical fibroid in gravida3 that was diagnosed during anomaly scan. Fibroid grew in size till term. She underwent elective caesarean delivery in view of previous 1 LSCS. Caesarean myomectomy was done and a 20× 15 cm big fibroid weighing 1655 gm was removed, with minimal blood loss. Intraoperative and postoperative period was uneventful. This case shows that myomectomy can be done for large fibroid during caesarean delivery with proper precaution and by an expert surgeon.

Keywords: Cervical Fibroid, Caesarean myomectomy

Introduction:

Fibromyomas of the uterus are not uncommon during pregnancy with an incidence ranging from 0.1 to 10.7% of all pregnancies.[1] However, fibroids of the cervical region are quite rare and pose a unique management challenge. Cervical fibroids in pregnancy makes it a high risk pregnancy as it can change the shape of the cervix, or push the uterus upwards or cause symptoms of obstruction and it needs to be managed accordingly.[2]

Surgical challenges are high with caesarean myomectomy of large-sized cervical fibroids due to its poor accessibility, close association with vital organs like the bladder, ureter, rectum and increased vascularity during pregnancy.[3]

We are reporting this case of pregnancy complicated with a large cervical fibroid which was managed conservatively throughout the antenatal period and treated surgically at the time of delivery.

Case Report:

This is a case of a 32 year old gravida3 para1+1 living1, booked case with history of previous 1 caesarean delivery done 3 years back for NPOL. She was diagnosed with a cervical fibroid measuring about 8 × 7.7 cm in size in her anomaly scan. The fibroid grew in size throughout her pregnancy to a size of 15× 10.3 cm in her third trimester scan (Fig 1). Despite the increase in the size of the fibroid, her antenatal period was uneventful. The patient was keen on myomectomy and gave her consent for doing the same

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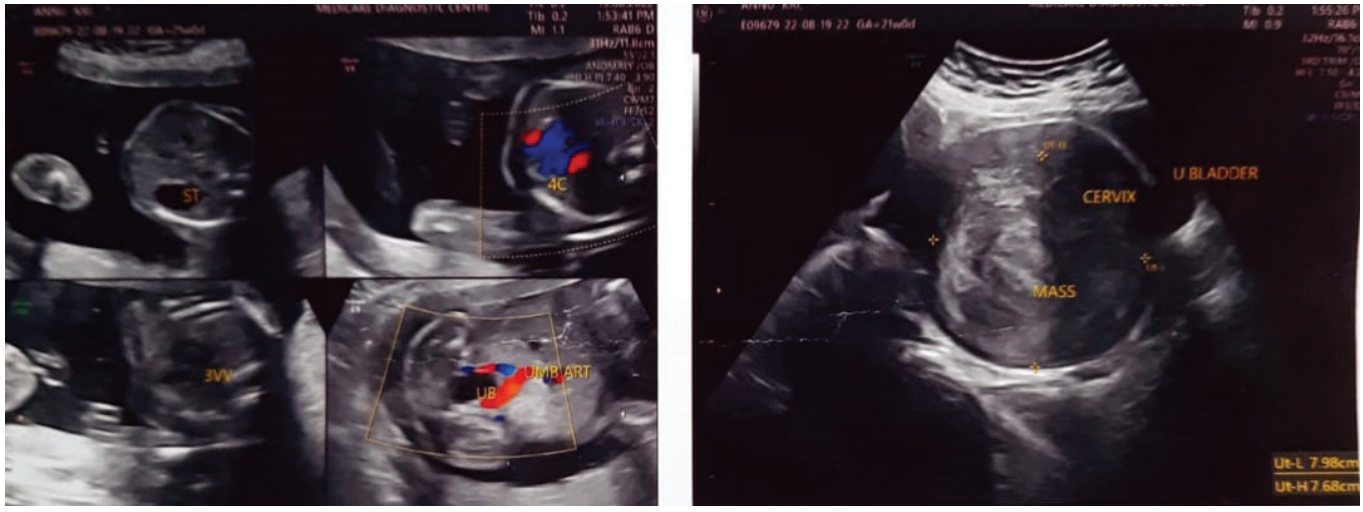

Fig 1: USG showing big cervical fibroid

along with caesarean delivery after being informed about the possible complications.

During caesarean delivery, the uterus was found to be shifted to the left side, fetal lie was oblique, with a floating head. Loose fold of peritoneum over lower segment of uterus was identified and a curvilinear incision was taken over it. A healthy male child of 2490 gm was delivered by vertex. Thereafter, the fibroid was palpated and it was found to be arising from the right posterolateral area of the cervix. Myomectomy was done by a nick at the prominent part, then brisk enucleation was done using myoma screw and scissors and a huge fibroid about 20×15 cm, weighing 1655 gm was removed (Fig 2); then the cavity was close by vicryl 1-0 suture followed by closure of the uterine wound by usual method. Complete haemostasis was achieved. Blood loss was about less than 600mL. Drain was kept for 24 hr with minimal serosanguinous discharge. Her intraoperative and postoperative period was uneventful. Her Hb% before and after surgery was 13.3% and 11.5% respectively. She was put on routine antibiotics and analgesics and was discharged with a healthy baby on postoperative day 4. On follow up visit at 6 weeks, patient did not report any complications.

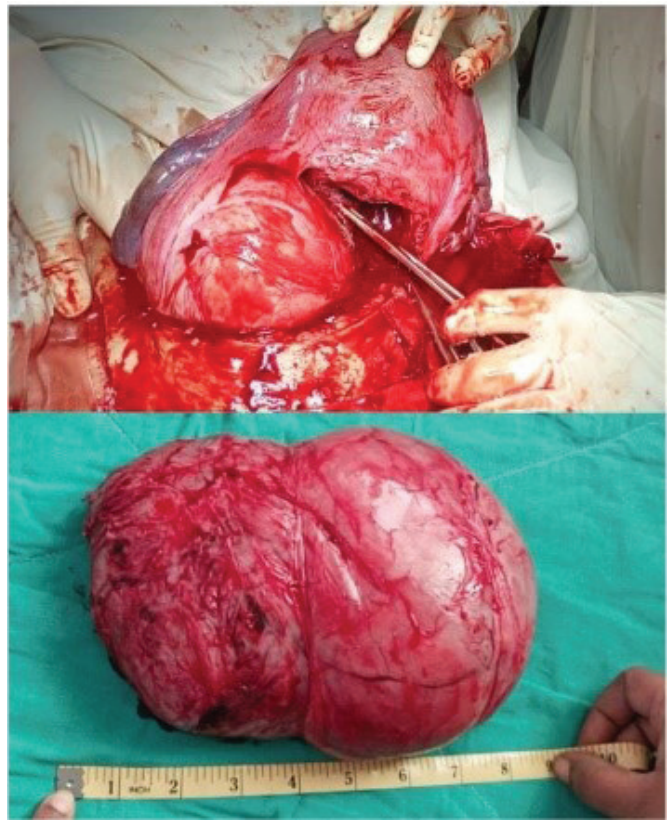

Fig 2: Cervical fibroid during and after caesarean myomectomy

Discussion:

Management of cervical fibroid during pregnancy is challenging and still a debatable topic. Many studies are available on the conservative management of cervical fibroids, but there are limited studies related to the myomectomy of large-size cervical fibroid during caesarean delivery due to the complications associated with the same such as uncontrolled bleeding, need for caesarean hysterectomy, ICU admission and other associated morbidities 1,4

This was a large fibroid, in an unusual position, pushing the fetal head up; it might have been the cause of NPOL in her last pregnancy. In this pregnancy, we electively planned to do a caesarean delivery with concurrent myomectomy owing to the large size of the cervical fibroid. Dissection of fibroid was fairly smooth and quick with minimal blood loss. There

was no need for intraoperative and postoperative blood transfusion and no prolonged hospital stay was required. Based on this case report, we ascertain that caesarean myomectomy can be one of the possible measures for treating large-sized cervical fibroids without any dreaded complications.

Concurrent myomectomy during caesarean section can decrease the morbidity and mortality associated with later surgery, decrease the hospital admission rate, reduce the economic burden on the patient and can provide early relief from associated symptoms and hence can be found to be beneficial over conservative management. Therefore, contrary to traditional view, our experience leads us to rethink that myomectomy during caesarean delivery can be easier than in a nongravid uterus due to some degree of oedema of the tissue and clear delineation of planes. It should be considered in properly selected cases by an experienced surgeon.

Compliance with Ethical Standards Conflict of Interest

The authors declare that they have no conflict of interest.

Abbreviations:

LSCS- Lower Segment Caesarean Section

NPOL- Nonprogress of Labour

Hb- Haemoglobin

USG- Ultrasonography

ICU- Intensive Care Unit

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