## Obstetrics – infection

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A Case Report: 
Acute Uterine Inversion After Controlled Cord Traction during Vaginal Delivery

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Introduction

Acute uterine inversion is a rare condition, incidence 1:2000 to 50000 births. This situation can become life threatening obstetric emergency case. Therefore, it needs an early recognition and appropriate management. The purpose of this article is to describe a case of complete acute uterine inversion.

Case

A 26-year-old woman had delivered a full-term baby boy, 3500 g, at primary health care. After delivering, midwife injected oxytocin 10 IU i.m and started controlled cord traction. After 15 minutes, a second dose of oxytocin was injected. During traction, came out uterus 3 cm from vagina. On her way to hospital, whole portion of uterus and placenta came out from vagina. In hospital, she diagnosed as hypovolemic shock grade III, uterine inversion. Some part of the placenta was still attached on protruded uterus. We performed manual placenta then continuing with uterine reposition in operating theatre. The uterine inversion was corrected manually then given uterotonic. After 4 days observation in ICU and ward, patient discharged

Discussion

Uterine inversion is an obstetric complication requires a rapid diagnosis and immediate treatment. Its low incidence leads to scarce experience in solving the problem. There were several risk factors, such as mismanagement of third stage of labor and location of placenta. The best prognosis occurs when the diagnosis and maneuvers are performed early. For the management, one of the technique was Johnson’s method, reverse the uterus with manual pressure on the fundus through the vagina. But in this case, we detached the placenta first then repositioning manually after.

Conclusion

As simple as controlled-cord traction procedure could be a disastrous event. Despite the fact that uterine inversion is uncommon, all obstetrician need to have awareness that this kind situation can occur and need skill using non-surgical or surgical methods.
Prediction of the outcome of labour in induced prolonged pregnancy by transvaginal ultrasonographic measurement of cervical length.

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Background and Objectives: Induction of labour is an intervention to artificially initiate uterine contraction leading to progressive dilatation and effacement of cervix and birth of the baby. The traditional method of predicting a successful vaginal delivery in induced labour was based on Bishop Score. This is subjective and had shown a poor predictive value of Bishop Score for the outcome of induction. The objective of this study was to correlate the preinduction cervical length measured by transvaginal ultrasonography (TVS) with the mode of delivery.

Methodology: This study was conducted in Department of Obstetrics and Gynecology for one year. 100 pregnant women with prolonged pregnancy planned for induction of labour were included. Cervical length was measured by TVS prior to induction of labour. The primary outcome was the mode of delivery.

Results: The mean age was 23.84 ± 4.56 years. Among 100 patients, 53% had vaginal delivery and 47% had cesarean section. 63 were primigravida and 37 were multigravida. On the basis of cervical length, the patients were divided into two groups. One group with cervical length ≤25mm and the other group with cervical length >25mm. There were 54 patients with cervical length ≤25mm and 46 patients with cervical length >25mm. There was a significant correlation between cervical length and mode of delivery with p<0.001. Those who had cervical length ≤25mm, 77.7% had vaginal delivery and 22.3% had cesarean Section. Among those who had cervical length >25mm, 23.9% had vaginal delivery and 76.1% had cesarean section. There was also significant association of parity with cervical length. Comparing multigravida with primigravida with cervical length ≤25mm, 82.7% versus 72% had vaginal delivery. Similarly comparing multigravida with primigravida with cervical length >25mm, 37.5% versus 21% had vaginal delivery.

Conclusion: Cervical length measured sonographically can predict the outcome of induced labour in prolonged pregnancy.
Butorphanol in labour analgesia.

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Department of Obstetrics and Gynaecology, BPKIHS, Nepal.

Background and Objective: Labour pain is one of the most severe pain ever experienced by the laboring women. Pain is a subjective phenomenon and is different for each woman. Different methods of labour analgesia are in practice depending upon the availability, ease of administration, safety of the drug and preference of the treating physician. The objective of this study was to see the effect of butorphanol injection (opioids) as a labour analgesia.

Materials and methods: A Prospective cohort study was conducted in which two hundred eligible women planned for vaginal delivery were enrolled in the study and injection butorphanol 1mg was given intramuscularly at the onset of active stage of labour every 4 hourly and on demand. Pain assessment was done every hourly during labour until delivery with numerical Pain analogue scale. Need of additional analgesia, time of delivery, mode of delivery, duration of delivery and neonatal outcome was also noted.

Results: The pain score in term of decrease in first, second, third and fourth hour was (8.83 ± 0.773, p value < 0.001), (9.84 ± 0.544, p value < 0.005), (9.94 ± 0.338, p value < 0.12), (9.6 ± 0.298, p value < 0.317) respectively where decrease in pain in 1st and 2nd hour after injection was statistically significant. Most of the participants delivered vaginally within 6 hour of butorphanol injection.

Conclusion: Butorphanol injection is effective in reducing labour pain without significant side effects to the women and the neonate and could be considered as a feasible method of labour analgesia in women in resource poor setting where regional analgesia or other expensive labour analgesics cannot be used.
INTRODUCTION
Abnormally invasive placenta (AIP), is a severe obstetric complication with a high risk of massive hemorrhage and emergency hysterectomy. Maternal mortality ratio is as high as 305 per 100,000 births in Indonesia and about one-third of maternal deaths were caused by obstetric hemorrhage. AIP has become main interest among Indonesian obstetrician in the last few years due to its contribution as emerging cause of obstetric hemorrhage and maternal mortality. However, there were no published data regarding the incidence and management of AIP in Cipto Mangunkusumo Hospital as the tertiary referral center in Indonesia. Therefore, a review of data within Cipto Mangunkusumo Hospital was performed to identify the change in incidence of AIP and to describe the maternal outcomes of AIP cases in this hospital.

METHOD
It was a retrospective evaluation of AIP cases over a 3-year period. Patients with AIP at Cipto Mangunkusumo Hospital, Jakarta, Indonesia over a 3-year period from January 2015 to 31 December 2017 were retrospectively identified from Medical Record Unit of the hospital. Abnormally invasive placenta was defined primarily by a histopathology report. It was also defined clinically by operative reports. The medical records of all cases were individually reviewed. Histopathology results were collected for each case where available.

DISCUSSION
There was rising incidence of AIP in Cipto Mangunkusumo Hospital from 2015 to 2017 as shown in Figure 1. AIP is becoming more common mainly due to increasing rates of c-section. The 2017 incidence of AIP in Cipto Mangunkusumo Hospital (1.24%) was higher than the international incidence of AIP (0.02 – 0.5%). There are two possible explanations about this finding. First, Cipto Mangunkusumo Hospital is the tertiary referral center in Indonesia, thus it is the main destination for complex and difficult cases across the country, especially cases from Jakarta and other cities nearby. Second, obstetricians are now living in the era of growing AIP cases, so whenever they dealt with a case of previous caesarean section, especially in the presence of placenta previa, the awareness of AIP was rising. This high level of suspicion will lead to higher detection rate and higher number of referral to major centers with complete personnel and facilities, such as Cipto Mangunkusumo Hospital.

REFERENCES
SURGICAL MANAGEMENT OF ABNORMALLY INVASIVE PLACENTA: FACTORS AFFECTING MANAGEMENT OUTCOMES IN AN INDONESIAN TERTIARY HOSPITAL

Riik khi Amalia Putri, M. Adya F. Dilmu, Yudithya Purwoesu, Yudiarto Budi Saroyo, Noroyono Wibowo

Obstetrics and Gynecology Department Cipto Mangunkusumo Hospital, Faculty of Medicine University of Indonesia

Introduction
- Incidence of accreta 1:1000 deliveries, range from 0.04% rising up to 0.9%
- Maternal death in 6%-10% of the cases
- Caesarean hysterectomy is recommended to avoid massive maternal hemorrhage
- Optimal conservative surgery has not been previously established
- Factors affecting the outcome in Ciptomangunkusumo Hospital

Material and Methods
- Gestational age
- History of curettage
- Previous c-section
- Placenta separation
- Pain score

Neonatal outcome

<table>
<thead>
<tr>
<th>Variables</th>
<th>No of cases</th>
<th>NS</th>
<th>No of cases</th>
<th>NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm</td>
<td>100</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth weight</td>
<td>100</td>
<td>70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Surgical technique

- Variables: Hysterectomy, Conservative
- Pain score: 100, 80, 60
- Hemostatic procedure
- Type of uterine incision
- Other procedure

Intraoperative bleeding

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preterm</td>
<td>100</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth weight</td>
<td>100</td>
<td>70</td>
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</tr>
</tbody>
</table>

Conclusion
- Duration of surgery and intraoperative bleeding are the main factors of maternal outcome
- Gestational age is associated with neonatal outcome
- Duration of surgery is associated with intraoperative bleeding
- Placenta separation and other procedure are commonly performed in conservative surgery

References
ABSTRACT

Our purpose was to develop mobile-based calculator to predict the probability of cesarean delivery (CD) due to failure to progress that can be used anytime and anywhere through the mobile network. The predictive model for CD has 11 predictive variables such as parity, risk factors, maternal age, maternal height, cervical dilatation at admission, symphysion-fundal height, categorized fetal birth weight, the use of oxytocin, the prolonged latent phase, and the arrest of active phase, and stage ≥2. The area under the ROC curve for the model was 0.944 (95% CI: 0.926-0.962). The Hosmer-Lemeshow type of goodness-of-fit tests to assess the accuracy of these formulas was performed, which resulted in a large p-value (0.253). Our mobile-based calculator was shown to be generally accurate and a ‘user-friendly’ method. In further studies, we hope to develop mobile-based models that can estimate an individual’s risk for CD precisely in real time. This will enable reporting of arrest of active phase based on their data to their doctor or nurse at any time and any place using the mobile birth (mbirth) network.

INTRODUCTION

The use of a simple effective mathematical model to calculate the risk of CD would be very useful to all obstetricians in counseling women. Numerous methods have been described to estimate the risk of emergency CD, including logistic regression, decision tree analysis, Bayesian modeling, and neural networks. Previous models usually lack information regarding both their goodness-of-fit and their discriminant accuracy, and only a few have been published that achieve an acceptable discriminant accuracy1-8 as shown by their area under the curve (AUC) (0.663 to approximately 0.93). Our primary target was limited to predicting CD due to failure to progress of labor in uncomplicated singleton vertex births, which presents a homogenous study group. We also developed the predictive model by adopting dynamic variables depending on phases of labor progression in addition to the static variable at admission that are related to risk of CD. We then integrated the predictive models into a mobile application to create a user-friendly mobile birth (mbirth) network to instantly estimate any woman’s probability of CD.

METHODS AND MATERIALS

Data were obtained retrospectively for 1326 women who delivered singleton births with cephalic presentation and were admitted for labor in the delivery ward. This retrospective study was performed at Eulji University Hospital in Daejeon, South Korea between January 2000 and January 2005. Nineteen independent variables were used. Prediction model were created by identifying a set of fixed and dynamic variables that are predictors of the outcome based on logistic regression modeling. First, a univariate analysis of potential predictor factors was performed using the Chi-squared test and/or Student’s t test for qualitative or quantitative variables, respectively. Of these variables, association with a P value of <0.2 was chosen for inclusion in a multivariate binary logistic regression model using backward elimination. Next, the area under the receiver operating characteristics curve (ROCauc) was also calculated as a measure of predictive accuracy. The fit of the logistic regression model was assessed based on the Hosmer-Lemeshow goodness-of-fit test. Once the model was derived, internal validity was assessed using bootstrapping methods. All statistical analyses were performed using R software, version 3.4.3 (http://www.r-project.org/), except for the univariate analysis using the Chi-squared test and/or Student’s t test, which were performed using IBM SPSS Statistics 21 software.

RESULTS

The logistic regression models as a function of the obstetric variables are shown in Tables 1. The predictive models for CD have 11 variables. The ROCauc was 0.944 (95% CI: 0.926-0.962). The Hosmer-Lemeshow type of goodness-of-fit tests to assess the accuracy of these formulas was performed, which resulted in small p-values (0.253). Based on the resulting bootstrap resampling, the ROCauc (0.8491) showed that the predictive model yielded good predictability, indicating that the model prediction was at an acceptable level.

TABLE 1. Predictive model for risk of cesarean delivery during labor (cervical dilatation≥6cm)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Odds ratio</th>
<th>95% CI (P-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parity</td>
<td>2.397</td>
<td>10.9</td>
<td>4.98-24.1 (0.001)</td>
</tr>
<tr>
<td>Risk factor</td>
<td>0.085</td>
<td>1.09</td>
<td>0.95-1.22 (0.32)</td>
</tr>
<tr>
<td>Cervical dilatation at admission</td>
<td>0.274</td>
<td>1.54</td>
<td>1.06-2.25 (0.014)</td>
</tr>
<tr>
<td>Maternal age (years)</td>
<td>0.069</td>
<td>1.07</td>
<td>1.01-1.14 (0.027)</td>
</tr>
<tr>
<td>Fetal birth weight (reference:3.5kgg)</td>
<td>0.267</td>
<td>1.30</td>
<td>1.02-1.75 (0.028)</td>
</tr>
<tr>
<td>Maternal height (cm)</td>
<td>-0.147</td>
<td>0.86</td>
<td>0.82-0.91 (0.001)</td>
</tr>
<tr>
<td>Symphysion-fundal height (cm)</td>
<td>0.216</td>
<td>1.21</td>
<td>1.11-1.30 (0.001)</td>
</tr>
<tr>
<td>Stage ≥2 at active phase</td>
<td>-1.411</td>
<td>0.24</td>
<td>0.14-0.42 (0.001)</td>
</tr>
<tr>
<td>Prolonged latent phase</td>
<td>0.296</td>
<td>1.35</td>
<td>1.20-1.51 (0.001)</td>
</tr>
<tr>
<td>Arrest of active phase</td>
<td>0.296</td>
<td>1.35</td>
<td>1.20-1.51 (0.001)</td>
</tr>
<tr>
<td>Use of oxytocin</td>
<td>0.322</td>
<td>1.37</td>
<td>1.24-1.52 (0.001)</td>
</tr>
<tr>
<td>Intercept</td>
<td>0.296</td>
<td>1.35</td>
<td>1.20-1.51 (0.001)</td>
</tr>
</tbody>
</table>

PREDICTED probability of CD during active labor = exp[26.39+2.397(Parity)+0.085(Risk factor)+0.274(Cervical dilatation at admission)+0.069(Maternal age)+0.267(Fetal weight)+0.216(Maternal height)+0.216(Symphysion-fundal height)+0.411(Stage at active phase)+0.296(Prolonged latent phase)+0.296(Arrest of active phase)+0.296(Use of oxytocin)]

DISCUSSION

Most research models have been used a paper-based predictive tool, and may unfortunately limit their usability. After we developed the predictive models, we converted them into a mobile application, “Mobile birth (mbirth) calculator” for Android systems, to improve usability (Figure 1A). The prediction probabilities for a case is shown (Figure 1B-A). A patient is a 54-year old primiparous woman who was 165 cm tall, with a 30-cm of symphysion-fundal height with a risk factor (preclampsia). She was admitted to the delivery ward at 38 weeks + 5 days of pregnancy with a cervical dilatation of 6 cm and intact membrane, and an estimated fetus weight of 2.7 kg. She was administered oxytocin due to inadequate uterine contractions and then the cervical dilatation progressed beyond 4 cm. This woman with ≥2 stage-1 underwent arrest of the active phase was treated with oxytocin. To estimate the predicted chance of CD during labor, variable values are inserted into the input columns of the mbirth calculator. The predicted chance of CD during labor was calculated as 30% using the mbirth calculator.

CONCLUSIONS

This is the first report describing mobile-based calculator (mbirth) for prediction of CD which showed a higher discriminatory accuracy than previous paper-based calculations.

Funding & Acknowledgements

This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korean government (Ministry of Education) (NRF-2017R1D1A3B03037770).

REFERENCES


Fig 1A. Main page of mobile birth (mbirth)

Fig 1B. Predicted chance of cesarean delivery during labor (cervical dilatation≥6cm). The calculated chance was 30%.
Case Report: Successful Myomectomy of Red Degeneration Leiomyoma in Early Pregnancy

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Presented at The
1st APCOMN Conf 2nd
BCM - CUHK Joint Symposium in Clinical Genetics

Introduction

The prevalence of leiomyoma during pregnancy is reported as 2%, of which 10% result in pregnancy complications [1]. During pregnancy, uterine leiomyoma are usually asymptomatic but may be occasionally complicated by red degeneration and an increased frequency of adverse events, such as spontaneous abortion, preterm labor, antepartum hemorrhage, cesarean section and postpartum hemorrhage [1-3].

The management of uterine leiomyoma during pregnancy is largely expectant and its surgical removal is generally delayed until after delivery [2]. Myomectomy is generally avoided during pregnancy due to the high risk of or obstetrical complications and no clear unanimous consensus exists, with a surgical approach reserved for cases of intractable abdominal pain and degeneration or rapid growth of myoma [3].

Case Presentation

We present a case of a large symptomatic fibroid diagnosed during pregnancy which was successfully managed by antepartum myomectomy. A 30-year-old primigravida presented with a 6 month history of abdominal enlargement and amenorrhea of 8 weeks duration. The abdominal swelling started as a small lump but markedly increased in size in the preceding 3 months. It was associated with pain and severe epigastric discomfort.

The abdomen was grossly distended and tense. There was a massive central abdominal mass which was firm and regular, measuring 40 cm from the symphysis pubis. Abdominal sonography showed an intra-uterine viable singleton fetus of 8 weeks gestation. It also showed a 40 cm cystic tumor located at superior aspect of the uterus. A sonographic and MRI diagnosis of adenomyoma in pregnancy was made.

Considering the increase in symptoms that were non-responsive to analgesic therapy, due to organ compression, after extensive counselling, a laparotomy surgery was planned.

During surgery, intramural fibroid measuring 40 cm in diameter was situated at the fundus aspect of the uterus. It was removed and the myoma bed was quickly closed. The estimated blood loss was 800 ml and 2 units of whole blood were transfused intra-operatively. The histology report showed sections of interlacing bundles of smooth muscles with areas of crenated degeneration with no evidence of malignancy.

Physiological fetal growth and an uneventful antenatal period were reported until 39 weeks of gestation when a cesarean section was performed. The patient delivered a healthy female baby weighing 3250 gr with Apgar scores of 8 and 9 at one and five minutes, respectively.

Discussion

Controversy persists among reports of myomectomy being performed during pregnancy. The management of uterine leiomyoma during pregnancy is largely expectant and its surgical removal is generally delayed until after delivery [4].

The decision to remove the fibroid was justified by its size and the patient’s symptoms. A degenerating uterine fibroid may mimic an ovarian tumor in pregnancy and obstetricians should be aware of the differential diagnosis. Although most cases of uterine fibroids in pregnancy can be managed conservatively, antepartum myomectomy may be necessary in selected cases [5].

In our case a laparotomic approach was chosen, because of the size, the location of myoma, and the acute syndrome of the patient.

Conclusion

The decision to perform myomectomy during pregnancy should be based upon the fibroid size, location and its rapid growth to prevent various possible forthcoming adverse events. The surgical approach should be tailored to the patient and to the characteristics of the myoma. Further investigation is needed to improve and better define the safety and feasibility of laparotomic myomectomy during pregnancy.

References

Repeated placenta accreta ending with abortion and hysterectomy: A case report.

XX Liu, YQ ZHONG, & JF Hu.
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Placental invasion is defined by abnormal trophoblast invasion of the myometrium and potentially to adjacent tissues, which may result in spontaneous uterine rupture, life-threatening hemorrhage, hypotensive shock and even emergency hysterectomy. In this article, we report the case of a 29-year-old woman admitted for lower abdominal pain and vaginal bleeding at her third and fourth pregnancy. The prenatal diagnosis of ultrasonic scan (US) and magnetic resonance imaging (MRI) revealed placenta previa complicated with placenta accreta at her fourth pregnancy. She had undergone laparotomy and hysterectomy finally ending with abortion. The final diagnosis was confirmed by intraoperative findings and postoperative pathology. It is necessary and meaningful to analyse this case in terms of the cause, prenatal diagnosis and treatment to prevent a recurrence.
Correlation of non-reassuring fetal heart rate pattern with umbilical blood cord pH and birth asphyxia: a prospective study in a tertiary hospital setting.

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Department of Obstetrics and Gynecology, Dr. Jose Fabella Memorial Hospital, Philippines.

Background: Cardiotocography is a tool for assessing the fetus during labor and identifying risk of asphyxia. Birth asphyxia is a common and serious neonatal problem globally and it significantly contributes to both neonatal morbidity and mortality. Umbilical cord artery blood gas analysis can provide information about the fetus exposed in intrapartum hypoxemic events as well as the risk for asphyxia and related sequelae. The relationship between nonreassuring fetal patterns and fetal acidosis has not yet been fully established. This study aims to assess the correlation of non-reassuring fetal heart rate pattern with umbilical cord pH and birth asphyxia.

Methods: 126 patients with non-reassuring fetal heart rate patterns with term, singleton pregnancies in labor was recruited during January 1, 2017 to September 30, 2017, in this prospective cross-sectional study at Dr. Jose Fabella Memorial Hospital. Intrapartum CTG was taken and classified according to NICHD 2008 classification (adapted by ACOG 2013). The umbilical cord arterial blood was taken immediately after birth, in a preheparinized syringe and was sent for analysis for pH to detect acidosis. Data collected includes maternal (i.e. parity, gestational age) and obstetrics (i.e. mode of delivery) backgrounds, neonatal (i.e. APGAR scores, birth weight, acid-base status) characteristics and fetal outcome, such as abnormal CTG, birth asphyxia, blood cord acidosis and mortality.

Results: In this study, among those who delivered with non-reassuring FHR patterns, most of the newborns where roomed in, and for those who were admitted in NICU, most of the neonates where admitted due to associated maternal conditions, not intubated and were discharged alive.

There were more mothers with Category II tracings (92.06%) compared to Category III FHR patterns (7.94%). Moreover, correlation of birth asphyxia and individual components of intrapartum CTG findings of non-reassuring FHR shows significant correlation especially with tachycardia (p=0.006), minimal variability (p=0.0322) and CTG category II (p=0.0016). No correlation of cord blood pH (p>0.05) and base excess (p>0.05) can be observed with CTG findings. Moreover, mean APGAR scores at 0 min is significantly higher among patients in rooming in than in NICU admission at 0 min (7.86 vs 6.28, p<0.0001) and at 5 min (8.93 vs 8.21, p=0.0003). Although no significant comparison of pH levels between NICU Admission and rooming in (X2=0.248, p=0.618). This present study reveals that tachycardia FHR, minimal variability and those with CTG Category II tracings increase the risk of birth asphyxia.

Conclusion: This present study reveals that certain abnormal CTG findings such as tachycardia, minimal variability and those with CTG Category II tracings increase the risk of birth asphyxia but abnormal CTG tracings has no direct correlation with umbilical cord pH. However, there is direct correlation of birth asphyxia with low umbilical cord pH.
Case Report: A Pathologic Sinusoidal Fetal Heart Rate Pattern observed in a Fetal Stroke in Utero

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ABSTRACT
Cardiotocography remains a reliable tool to monitor fetal status. It is in itself accurate when used both during antepartum and intrapartum. It is of particular comfort to the obstetrician that a normal tracing predicts good fetal status while an abnormal tracing may indicate serious fetal distress resulting in fetal hypoxia. A pathologic sinusoidal FHR pattern is commonly observed in cases of severe fetal anemia due to massive fetal-to-maternal hemorrhage, and is often accompanied by decreased fetal movements. This kind of an undulating wave form combined with a smooth baseline fetal heart rate is seen in severely affected anemic and dying fetuses.

A 36-year-old woman with pulmonary tuberculosis and gestational diabetes diet-controlled at 34 weeks AGD came in for evaluation of decreased fetal movement. Sinusoidal fetal heart rate pattern was detected and she immediately underwent repeat cesarean section. Baby was limp, severely anemic with very tense fontanel and enlarged head. A neonatal cranial scan revealed massive fetal intracranial hemorrhage and the baby underwent a series of subdural tap despite counseling of an unfavorable neurological prognosis.

Keywords: Sinusoidal fetal heart rate pattern (SRH), Cardiotocography/ Electronic fetal monitoring, Decreased fetal movement, Cranial ultrasound, fetal intracranial hemorrhage

Case History and Course of Illness
A 36-year-old, G3P1 (1-0-1) patient at 34 4/7 weeks of gestation came in for assessment due to decreased fetal movement. She’s a known case of pulmonary tuberculosis on the 4th month of anti Koch’s treatment and a diagnosed case of Gestational Diabetes mellitus, diet-controlled. The patient had regular prenatal check up with attending physician until 30th week prior to admission, when she noted decreased fetal movement. No other associated signs and symptoms noted, persistence prompted consultation.

The patient is married and a Filipino and has no vices. Hypertension and Diabetes mellitus are the only known heredo-familial diseases. First pregnancy was a miscarriage followed by full term CS delivery.

The patient was seen at the pre-labor room not in cardio-respiratory distress with stable vital signs. All physical examinations were normal. The first 10 minutes tracing of the cardiotocogram revealed a sinusoidal fetal heart rate pattern.

The patient was admitted to the delivery room for fetal monitoring. A 3rd trimester cardiotocogram revealed a sinusoidal fetal heart rate pattern and fetal bradycardia (Figure 1A).

Laboratory work-ups were unremarkable. Stat repeat cesarean section was done under spinal anesthesia. Outcome: delivered a live baby boy white in color with poor peripheral pulses weighing 2500 grams. There were no intraoperative and postoperative complications noted. Placental histopathology was unremarkable.

On the neonate side, despite resuscitation, the baby remained pale and limp. Scalp veins were noted to be tense and widely split fontanelles. Blood transfusion was done for severe anemia correction, with hemoglobin of 24/6, hematocrit of 8 and platelet count of 211 g/dL. Stat cranial ultrasound revealed acute brain parenchymal hemorrhage (Figure 2).

DISCUSSION
Decreased fetal movement is believed to represent a compensatory fetal behavioral response, equivalent to the compensatory physiological response of redistribution of blood flow to essential organs. As hypoxia worsens, compensatory responses may fail to protect the fetus, eventually leading to fetal injury or death.

SRH pattern can be physiologic, pseudo-sinusoidal and pathologic. Pathologic SRH pattern is more commonly seen with severe fetal anemia of different etiologies and in some fetuses with severe intrapartum asphyxia, hypoxia and acidosis. The following True SRH pattern is defined by the following: (a) stable baseline FHR of 120-160 bpm; (b) amplitude of 5-15 bpm, rarely greater; (c) frequency of 2-5 cycles per minute; (d) fixed or flat short-term variability; (e) oscillation of the sinusoidal wave from above and below a baseline; and (f) no areas of normal FHR variability or reactivity. This type of SRH pattern is associated with hypoxemia and tissue hypoxia of the central nervous system and autonomic nervous system dysfunction.

Intracranial hemorrhage of various types are common occurrences among preterm neonates than in term neonates (25-40% vs. 2-4%). These hemorrhagic events are considered to reflect the fragile poorly supported blood vessels of the developing cerebral arterial matrix which are highly sensitive to increased arterial blood pressure associated with preferential cerebral blood flow occurring with hypoxia, hypercapnia or congestive heart failure. The predisposing factors are maternal, placental, fetal, or genetic aspect; however, no identifiable risk factor can be found in majority of the cases.

The FHR pattern in fetal intracranial hemorrhage is mostly non-reactive, minimal or poor variability, and late decelerations. The case we report here is rare because the FHR tracing showed a sinusoidal fetal heart rate pattern. Based on literature, this is the second case of fetal ICH with preterm patient described in the literature. The first was reported by Catanzareta et al.

Review of the literature suggests that prenatally diagnosed intracranial hemorrhages have a poor outcome. The long term outcome of infants who survive the condition also worsens with increasing severity and most common complications include cerebral palsy and neurodevelopmental delay, which is likely consideration for this case.

CONCLUSION
Fetal intracranial hemorrhage (ICH) is a rare prenatal event. Thus patients presenting with decreased fetal movement and sinusoidal fetal heart rate pattern, intracranial hemorrhage should also be part of the consideration. Presence of SRH warrants a thorough maternal and fetal evaluation to establish the cause and immediate intervention is required. The use of cardiotocogram or electronic fetal monitoring is helpful in determining the fetal well being and ancillary tests like ultrasound, Doppler studies or MRI is of great help in antenatal detection if fetal intracranial hemorrhage is suspected. When fetal ICH is diagnosed, parental counseling, etiologic evaluation, and appropriate management are required.

REFERENCES:
Vaginal birth after caesarean delivery (VBAC) has been advocated for several decades but remains a controversial issue. In China, repeat CS is the preferred mode of delivery for gravidae with a previous caesarean birth. In a latest national survey for near 7,000,000 deliveries the total CS rate in China after two-child policy was 41.1% in 2016 (JAMA,2018) compared with 46.2% in 2007–2008 (Lancet,2000).

The two-child policy introduced in China in 2015 could mean that around 10 million women will be undergoing CS every year in the near future, because as many as half of those women desiring a second child will have had a previous CS. Perinatal mortality aside, the increasing number of anticipated elective repeat CS will undoubtedly generate a disproportionate amount of maternal morbidity and even mortality. This, together with the workload, the need for hospital facilities and surgical expertise and the facilities required for postoperative care, especially for surgical complications and neonatal care, could overwhelm the majority of higher-level obstetric centres that have the necessary expertise and clinical support for the management of gravidae with a scarred uterus. The number of such centres is limited and their distribution is uneven and inadequate with respect to the majority of the population. The limited data available in China suggest that the VBAC rate is about 2–3% with most cases being unintentional due to preterm delivery, intrauterine fetal death, fetal abnormality or presenting too late for a repeat CS. One major concern with VBAC is uterine rupture, but experience in a county level hospital in Yunnan Province in the western part of China revealed that the uterine rupture rate was 0.13% in 2300 VBAC cases, and our experience with 1400 VBAC cases found that uterine rupture occurred in only two woman (0.14%). Furthermore, VBAC is more cost-effective, as medical and hospital expenses are less than half those of a repeat CS. In the current situation in China, VBAC is therefore a realistic and viable option for delivery in most women with previous CS and no recurrent indications for CS. However, even under these optimal circumstances such serious adverse events are not entirely preventable. Accordingly, many clinicians, hospitals and patients choose repeat CD, even if such resources are available.

The current obstetric culture in China may not be primed for ideal outcomes with TOLAC. Most labour and delivery units have a high volume of cases with limited resources. In addition, there is often an uneasy physician–patient relationship in China and medical malpractice claims are reviewed in the criminal court system. Payments are commonly negotiated with doctors and hospitals, leading to very conservative obstetric practice. There would undoubtedly be no tolerance for adverse outcomes associated with TOLAC and little enthusiasm for the practice on the part of obstetricians. The same is true for patients. A premium is placed on excellent outcomes, especially given the usual small family size in China. Therefore, the best way to decrease the CD rate in China is to focus on reducing primary CDs. Ideally, safe TOLAC will become increasingly available in China. In addition to reducing short- and long-term maternal morbidity, this may be very important for individual women. However, for this to happen considerable systematic change in obstetric care is required.