Volume1|Issue 8|2020

GYNAE SPECTRUM

Dear Doctor,

Greetings from Micro Labs. We are happy to bring you "Gynae Spectrum", which contains latest and interesting news in the field of Obstetrics and Gynaecology.

This issue contains:

- A new model to screen early onset preeclampsia.
- Largest tubal pregnancy- A case report.
- A disposable Laparoscope cleared by FDA

Should you require any article or, medical information, please feel free to contact us medicalservices@microlabs.in

Looking forward to your valuable feedback.

Best Regards,

Medical Team, Micro Labs Limited

1.A new model to screen early onset preeclampsia.

Preeclampsia (PE) complicates 2-8% of pregnancies. Early detection of women with an increased risk for preeclampsia is important to minimize adverse perinatal events.
Many screening models have been developed to identify pregnancies at high risk for PE at 11-13 weeks of gestation. These are mainly multiparametric algorithms derived from logistic regression analysis combining maternal characteristics and medical and obstetric history with a series of biophysical and biochemical markers.

Characteristic of Multivariate Gaussian distribution is use of specific population medians to calculate the MoMs(multiples of the median) of each marker.

Multivariate Gaussian distribution models combine use of local characteristics with the knowledge accumulated from different sources, chosen depending on the best quality available information.

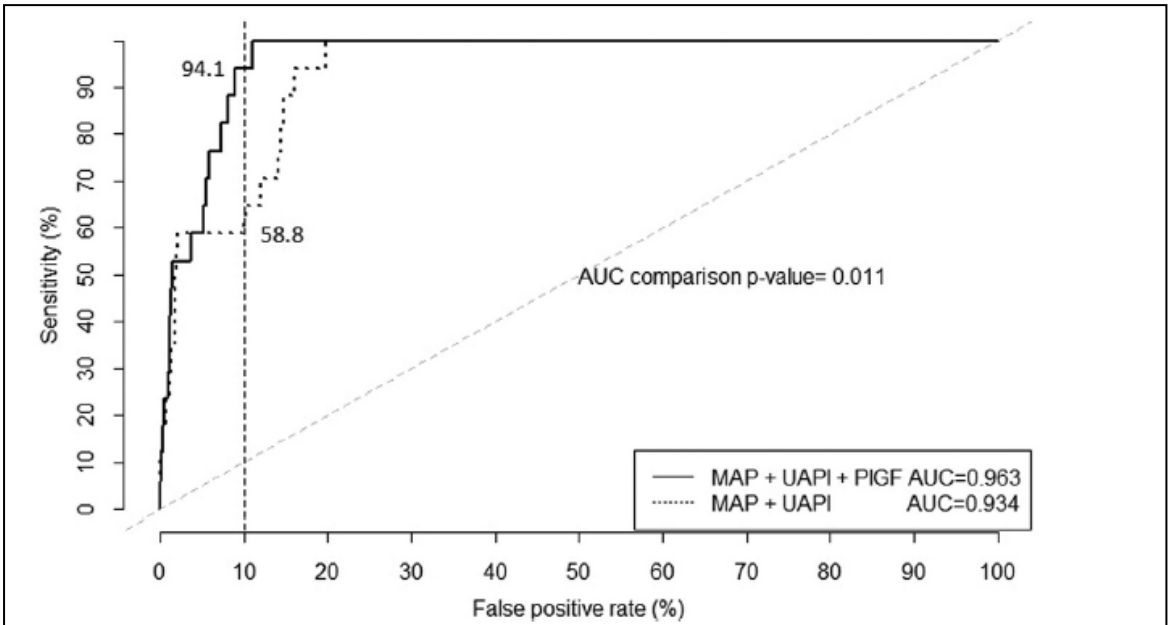
Objective of the study is to assess the performance of a first-trimester multivariate Gaussian distribution model including maternal characteristics and biophysical/biochemical parameters for screening of early-onset preeclampsia (delivery <34 weeks of gestation).

Methods:
A prospective cohort of singleton pregnancies undergoing routine first-trimester screening (8 weeks 0/7 days to 13 weeks 6/7 days of gestation) for screening of early onset preeclampsia was undertaken.

7000 patients were included in the analysis.
Patients excluded were those pregnancies with aneuploidies, major fetal abnormalities, or ending in termination, miscarriage or fetal death before24 weeks of gestation
A multivariate Gaussian distribution model including maternal characteristics (a priori risk), serum pregnancy-associated plasma protein-A and placental growth factor assessed at 8 weeks 0/7 days to 13 weeks 6/7 days and mean arterial pressure and uterine artery pulsatility index measured at 11-13 weeks was used.

Results:
Incidence of global preeclampsia was 2 %, while of early-onset preeclampsia was 0.2%. The combination of maternal characteristics, biophysical parameters, and placental growth factor showed the best detection rate, which was 59% for a 5% false-positive rate and 94% for a 10% false positive rate.

The addition of placental growth factor to biophysical markers significantly improved the



Receiver operative characteristic curves for early-onset PE prediction of a multivariate Gaussian distribution model including a priori risk and biophysical markers with and without PlGF. The addition of PlGF to the model significantly increases test performance (*P* value of AUC comparison). Sensitivities for the cutoff point that corresponds to a 10% false-positive rate are displayed.

AUC, area under the curve; *PE*, preeclampsia; *PAPP-A*, pregnancy-associated plasma protein-A; *PlGF*, placental growth factor; *ROC*, receiver operative characteristic.

detection rate from 59% to 94%.

Discussion:

Results of the current study shows that validity of a strategy for preeclampsia screening in 2 steps comparable and superimposable with that performed for Down syndrome screening, with a blood sample being obtained for PlGF and PAPP-A measurement at a gestational age of 8.0 to 10.6 weeks and the biophysical markers measured at 11 weeks 0/7 days to 13 weeks 6/7 days.

Detection rate and positive and negative predictive values for early-onset preeclampsia prediction of the combination of MAP plus mean UtA-PI plus PlGF plus PAPP-A with their 95% CIs

Variables	Estimate	Lower bound	Upper bound
Detection rate	94.12%	71.31%	99.85%
Positive predictive value	2.27%	1.31%	3.67%
Negative predictive value	99.98%	99.91%	100%

The 95% confidence interval for the dejection rate, positive predictive value, and negative predictive value corresponds to a 10% false-positive rate cutoff.
CI, confidence interval; *MAP*, mean arterial pressure; *PAPP-A*, pregnancy-associated plasma protein-A; *PlGF*, placental growth factor; *UtA-PI*, uterine artery pulsatility index.

The risk for early onset Pre eclampsia , can be then calculated instantly at this point, allowing immediate intervention in terms of low-dose aspirin prescription without delay and without needing to call the patient again.

To perform predictive test is to decide whether to initiate a preventive treatment of preeclampsia in asymptomatic pregnancies (low dose aspirin), a threshold upon which the

test will be considered positive has to be defined.
To assess The most appropriate test cutoff value, the cost of a false negative versus a false-positive result has to be balanced.
Due to severity, early onset preeclampsia the consequences of a false-negative case are much higher for the mother and fetus than the overtreatment of a false-positive.

Conclusion:

The multivariate Gaussian distribution model is a feasible tool for early-onset preeclampsia screening including maternal factors, early placental growth factor determination (at 8 weeks 0/7 days to 13 weeks 6/7 days), and biophysical variables (mean arterial pressure and uterine artery pulsatility index) at 11 weeks 0/7 days to 13 weeks 6/7 days.

Reference:

Serra B et al. A new model for screening for early-onset preeclampsia [published online ahead of print, 2020 Jan 21]. Am J Obstet Gynecol. 2020; S0002-9378(20)30027-2

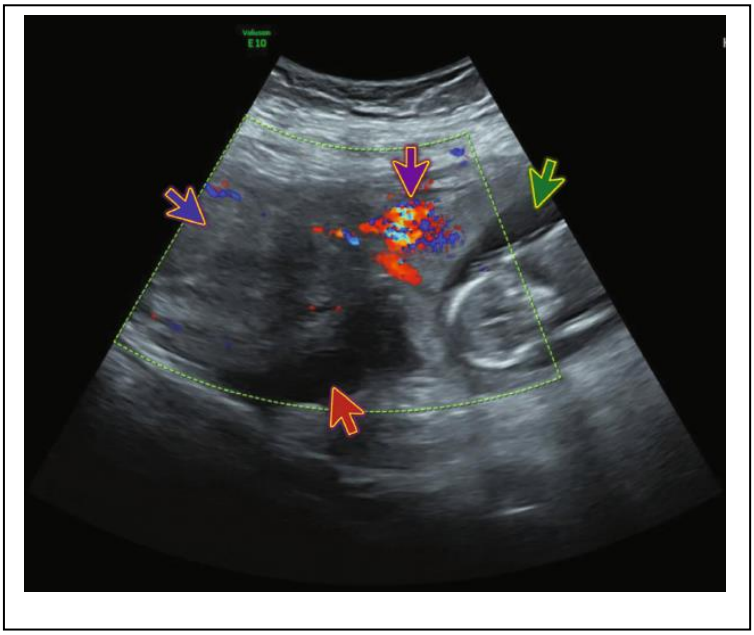
2. Largest tubal pregnancy- A case report.

Ectopic pregnancy occurs in 0.91 % of pregnant women. Most extra uterine pregnancies (97%) are implanted in the fallopian tube; another 3% of ectopic pregnancies implant in the cervix, ovary, peritoneal cavity, or in uterine scars.
Most common site of the ectopic pregnancy is the fallopian tubes. The other places of implantation include the ovary, cervix, cesarean-section scar, and the abdomen.
Patient presents with abdominal pain, amenorrhea, and sometimes vaginal bleeding. The patient may have an atypical presentation or even be asymptomatic in the earlier stages.
Current is a case presentation of largest intact tubal ectopic pregnancy reported in the 15th week of gestation.

Case presentation:

A 35-year-old patient presented with lower abdominal pain, mild dysuria, and loose motion. No significant medical or obstetric history except for repeated attacks of pelvic inflammatory diseases (PID) and did not use contraceptives.
Patient reported her menstrual cycles as regular until four months ago, then irregular. The patient described the lower abdominal pain as cramping and denied any previous symptoms
Patient was stable. Her blood pressure was 112/75 mmHg, pulse was 99 beats per minute, respiratory rate was 18 per minute, and no fever.
Patient was anxious and in mild pain. Her chest was clear, with no associated sounds.
Patient had diffuse tenderness, especially in the umbilical region. She was guarding with no rigidity.
point-of-care ultrasound (POCUS) showed free fluid in the pouch of Douglas and a sac in the left adnexa with a living fetus and visible heartbeats.

Lab results showed anemia. The beta-human chorionic gonadotropin (BHCG) level was 56748.0 mIU/ml.

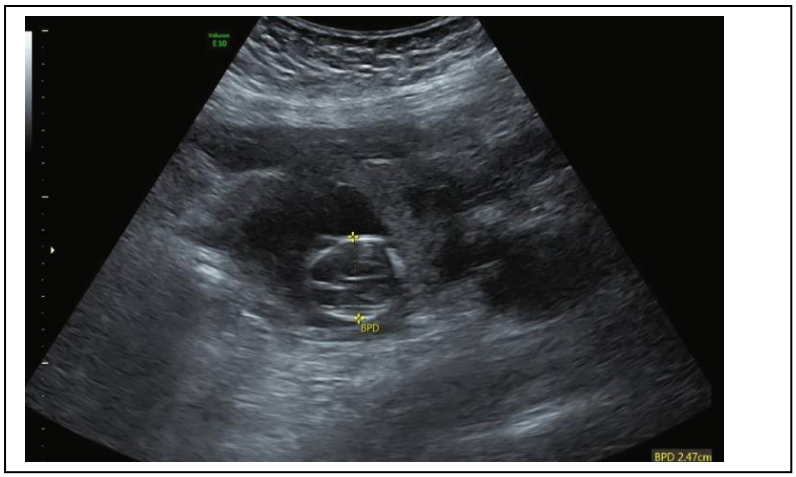


Ultrasound of the abdomen and pelvis showed evidence of an extrauterine gestational sac hosting a viable fetus of 15-week gestation. The gestational seen towards the left side of the uterus connected through a vascular stalk to the uterus.

The fetal heart rate was 176 bpm. The biparietal diameter (BPD) measured 2.47 cm, which corresponded to 15 weeks and 2 days. The femur length (FL) measured 1.41 cm, which corresponded to 15 weeks and 1 day.

Moderate hemoperitoneum was noted in the pouch of Douglas and represents oozing or rupture of the gestational sac. No blob sign or bagel sign. There were no fluids in the Morison pouch.

Anteverted uterus measured 8:1 × 6:6 cm and showed an endometrial thickness of 12.7mm and an empty uterine cavity.



Surgical pathology report showed specimen consisting of a possible female fetus with an attached umbilical cord and detached fragmented placenta. Fetus weighed 26.5 grams and measured 7.2 cm crown to rump and 3.7cm rump to heel. The foot measured 1.1cm in length. The head circumference measured 8.5 cm. There was no evidence of cleft palate grossly identified. The vertebral column was intact. The fetal anus and mouth were patent.

Skin was focally hemorrhagic. There were four extremities present, each bearing five digits. The trimmed placenta weighed 73 g and measured 9:5 × 5 × 2:2 cm. The umbilical cord measured 3.6cm in length and 0.4cm in diameter and was normally coiled.

The left fallopian tube measured 11.5 cm in length and 10cm in diameter and was dilated in the middle portion containing chorionic villi, decidual reaction, and the whole gestational sac consistent with ectopic tubal pregnancy.

Patient received blood transfusion. Patient had a laparotomy exploration for fearing of any

unexpected bleeding because of the advanced pregnancy.
A salpingectomy with hemostasis was done successfully.
During the postoperative period, the patient recovered and did not suffer any complications. She was discharged home on the 4th day postoperatively.

Discussion:

POCUS is a crucial tool as it can decrease the time to diagnosis and to direct patient care, especially in life-threatening conditions. It can detect the rupture of the ectopic pregnancy and the ongoing intraabdominal bleeding, which can be a sign of operative intervention. To diagnose ruptured ectopic pregnancy, POCUS has high sensitivity to detect an empty uterus, free fluid, extrauterine mass, or gestational sac of the ectopic pregnancy.
Current case , is the largest tubal ectopic pregnancy reported with 15^{th} week of gestation. The patient's beta-human chorionic gonadotropin (BHCG) level was 56748.0 mIU/ml. The biparietal diameter (BPD) of the fetus measured 2.47cm, corresponding to 14 weeks and 2 days. The femur length (FL) measured 1.41 cm, corresponding to 15 weeks.

Conclusion:

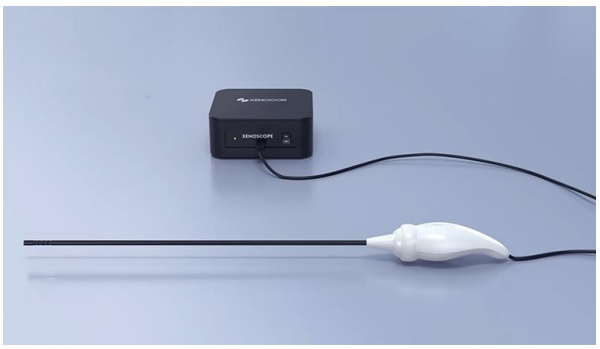
A case of Rupture ectopic pregnancy can cause intraperitoneal bleeding and hemorrhagic shock. Early detection of ectopic pregnancy is essential for better prognosis.

Reference:

Elmoheen A et al. Case Report The Largest Tubal Pregnancy: 14th Week Case Reports in Obstetrics and Gynecology. 2020; 4728730: 1-7

IN FOCUS

A disposable Laparoscope cleared by FDA



A 5mm articulating disposable laparoscope is cleared by FDA. The device does not require sterilization ,re-processing between procedures and is disposed off after it's used.
The entire system is quite compact, doesn't need an inbuilt large image processing tower.
Disposable laparoscopes are advantageous by reducing hospital costs and prevent cross-contamination. It also reduces downtime and waiting, and still providing consistent image quality for each time used.
Other advantages are : Non-conducting shaft removes the risk of electrosurgical arcing. Low

temperature Illumination removes risk of scope burns. Disposable single use device helps reduce the risk of disease transmission. Fog proof for consistent image quality.

The device produces a 1080P high-definition picture and features an anti-fog system that keeps the view clear. It can be integrated with any HD monitor, most tablets, and other display devices. It also includes an integrated light for illumination and a manual focus controller to set the appropriate focal point.

Reference:
Available at: https://www.medgadget.com/2020/04/xenoscope-disposable-5mm-laparoscope-fda-cleared.html. Accessed on 30-05-2020.