Date: 09 Jun 2017
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Ultrasound at 34 or 36 Weeks in Low Risk Pregnancies

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1. Routine third trimester ultrasound scans-can Ireland buck the trend?

Author(s): Smyth S.; Imcha M.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Mar 2017; vol. 124 ; p. 40

Publication Date: Mar 2017

Publication Type(s): Conference Abstract

Available in full text at BJOG: An International Journal of Obstetrics and Gynaecology - from John Wiley and Sons

Abstract: Internationally there are conflicting reports on the merits of routine third trimester ultrasound scans (USS) in low risk pregnancies. This study aimed to assess whether routine USS during the third trimester of pregnancy is a valuable resource in low risk pregnancies in Ireland. The routine 31 week USS appointments for January-March 2016 were acquired from the Viewpoint Booking System data. Parameters of fetal growth, anomaly and wellbeing were reviewed. Of the initial 507 records reviewed, 491 were included in the final draft. The USS were at a mean of 31.1 weeks of gestation. The mean estimated fetal weight at the time of the scan was 1.8 kg. This resulted in 46 (9.3%) diagnoses of small-for-gestational-age and 89 (18.1%) diagnoses of large for gestational age. Repeat scans were performed on 260 women who did not originally meet requirements for re-scan. Assessment of growth (n = 150) was the most common reason documented in these cases. In addition to estimating fetal weight, useful parameters such as presentation and markers of fetal wellbeing can be assessed at 31 weeks of gestation. In this low risk population while the prevalence of abnormalities is expectedly low, offering a routine third trimester ultrasound scan allows for identification of evolving high risk pregnancies. This can lead to increased intervention rates and underlines the importance of appropriate interpretation of scan findings by qualified ultrasonographers and fetal medicine specialists. This much debated question of validity of third trimester USS requires more robust studies in Ireland and internationally.

Database: EMBASE

2. Predictive role of transvaginal ultrasonographic measurement of cervical length at 34 weeks for late pre-term and late-term deliveries in nulliparous women.

Author(s): Kokanali, Mahmut Kuntay; Çelik, Hatice; Kokanali, Demet; Taşçi, Yasemin

Source: The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians; 2016; vol. 29 (no. 11); p. 1789-1794

Publication Date: 2016

Publication Type(s): Journal Article Observational Study

Abstract:OBJECTIVETo investigate the predictive role of transvaginal ultrasonographic measurement of cervical length (CL) at 34 weeks of gestation in determining late-preterm and late-term deliveries in nulliparous women.METHODSCL was measured by transvaginal ultrasonography at 34 weeks in 318 women (singleton, nulliparous, low-risk and vertex presentation). All women were followed-up till birth and delivered at hospital. Deliveries were classifed according to gestational week as late-preterm (34(0/7) to 36(6/7) weeks), term (37(0/7) to 40(6/7) weeks) and late-term (41(0/7) to 41(6/7) weeks).RESULTSThere was a significant correlation between CL at 34 weeks and gestational week at delivery (r = 0.614, p < 0.001). Receiver-operating characteristic curve analysis showed that CL measurement below 25.5 mm predicted late-preterm delivery with a sensitivity of 80.0%, specificity of 93.9%, positive predictive value (PPV) of 52.6% and negative predictive value (NPV) of 98.2%; while CL above 42.5 mm had 70.4% sensitivity, 93.5% specificity, 50.0% PPV and 97.1% NPV in prediction of late-term delivery.CONCLUSION Measurement of CL with transvaginal ultrasonography at 34 weeks of gestation can be of beneficial in predicting the risk of late-preterm and late-term deliveries in nulliparous women.

Database: Medline

3. Routine third trimester ultrasound in low risk pregnancy confers no benefit!: FOR: The benefits of routine third-trimester scanning are less clear cut

Author(s): Thornton J.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; 2016; vol. 123 (no. 7); p. 1121

Publication Date: 2016

Publication Type(s): Note

Available in full text at BJOG: An International Journal of Obstetrics and Gynaecology - from John Wiley and Sons

Database: EMBASE

4. Routine third trimester ultrasound in low risk pregnancy confers no benefit!: AGAINST: Arguments for a routine third trimester ultrasound: what the meta-analysis does not show!

Author(s): Ray, Camille Le; Grangé, Gilles

Source: BJOG : an international journal of obstetrics and gynaecology; Jun 2016; vol. 123 (no. 7); p. 1122

Publication Date: Jun 2016

Publication Type(s): Journal Article

Available in full text at BJOG: An International Journal of Obstetrics and Gynaecology - from John Wiley and Sons

5. Angiogenic Factors and Doppler Evaluation in Normally Growing Fetuses at Routine Third-Trimester Scan: Prediction of Subsequent Low Birth Weight

Author(s): Triunfo S.; Parra-Saavedra M.; Crovetto F.; Gratacos E.; Figueras F.; Rodriguez-Sureda V.; Dominguez C.

Abstract: Objective: To evaluate in normally growing fetuses at routine 32-36 weeks scan the performance of maternal angiogenic factors, Doppler and ultrasound indices in predicting smallness for gestational age (SGA) at birth. Methods: A cohort of 1,000 singleton pregnancies with normal estimated fetal weight (EFW, >=10th centile) at 32-36 weeks scan was included. At inclusion, Doppler indices (mean uterine artery pulsatility index [mUtA-PI], cerebroplacental ratio and normalized umbilical vein blood flow by EFW (ml/min/kg) were evaluated, and blood samples were collected and frozen. Nested in this cohort, maternal circulating placental growth factor (PlGF) and soluble fms-like tyrosine kinase-1 (sFlt-1) were assayed by enzyme-linked immunosorbent assay in all cases with a birth weight =10th centile). Results: 160 cases were included (80 SGA and 80 controls). EFW (2,128 vs. 2,279 g, p < 0.001), mUtA-PI z-values (-0.25 vs. -0.65, p = 0.034) and sFlt-1/PlGF ratio (11.10 vs. 6.74, p < 0.005) were lower in SGA. The combination of sFlt-1/PlGF ratio and EFW resulted in a 66.3% detection rate for subsequent SGA, with 20% of false-positives. Fetal Doppler indices were not predictive of SGA. Conclusions: In normally growing fetuses, maternal angiogenic factors add to ultrasound parameters in predicting subsequent SGA at birth. This supports further research to investigate composite scores in order to improve the definition and identification of fetal growth restriction.Copyright © 2015 S. Karger AG, Basel.

Database: EMBASE

6. Contingent versus routine third-trimester screening for late fetal growth restriction

Author(s): Triunfo S.; Crovetto F.; Gratacos E.; Figueras F.; Scazzocchio E.; Parra-Saavedra M.

Abstract:OBJECTIVE: To evaluate the use of third-trimester ultrasound screening for late fetal growth restriction (FGR) on a contingent basis, according to risk accrued in the second trimester, in an unselected population.METHODS: Maternal characteristics, fetal biometry and second-trimester uterine artery (UtA) Doppler were included in logistic regression analysis to estimate risk for late FGR (birth weight =34 weeks). Based on the second-trimester risk, strategies for performing contingent third-trimester ultrasound examinations in 10%, 25% or 50% of the cohort were tested against a strategy of routine ultrasound scanning in the entire population at 32+0 to 33+6weeks.RESULTS: Models were constructed based on 1393 patients and validated in 1303 patients, including 73 (5.2%) and 82 late FGR (6.3%) cases, respectively. At the second-trimester scan, the a-posteriori second-trimester risk (a-posteriori first-trimester risk (baseline a-priori risk and mean arterial blood pressure) combined with second-trimester abdominal circumference and UtA Doppler) yielded an area under the receiver-operating characteristics curve (AUC) of 0.81 (95% CI, 0.74-0.87) (detection rate (DR), 43.1% for a 10% false-positive rate (FPR)). The combination of a-posteriori second-trimester risk plus third-trimester estimated fetal weight (full model) yielded an AUC of 0.92 (95% CI, 0.88-0.96) (DR, 74% for a 10% FPR). Subjecting 10%, 25% or 50% of the study population to third-trimester ultrasound, based on a-posteriori second-trimester risk, gave AUCs of 0.81 (95% CI, 0.75-

0.88), 0.84 (95% CI, 0.78-0.91) and 0.89 (95% CI, 0.84-0.94), respectively. Only the 50% contingent model proved statistically equivalent to performing routine third-trimester ultrasound scans (AUC, 0.92 (95% CI, 0.88-0.96), P=0.11).CONCLUSION: A strategy of selecting 50% of the study population to undergo third-trimester ultrasound examination, based on accrued risk in the second trimester, proved equivalent to routine third-trimester ultrasound scanning in predicting late FGR.Copyright © 2015 ISUOG. Published by John Wiley & Sons Ltd.

Database: EMBASE

7. Reference ranges of amniotic fluid index in late third trimester of pregnancy: what should the optimal interval between two ultrasound examinations be?

Author(s): Hebbar, Shripad; Rai, Lavanya; Adiga, Prashant; Guruvare, Shyamala

Available in full text at Journal of Pregnancy - from National Library of Medicine

Abstract:BACKGROUNDAmniotic fluid index (AFI) is one of the major and deciding components of fetal biophysical profile and by itself it can predict pregnancy outcome. Very low values are associated with intrauterine growth restriction and renal anomalies of fetus, whereas high values may indicate fetal GI anomalies, maternal diabetes mellitus, and so forth. However, before deciding the cut-off standards for abnormal values for a local population, what constitutes a normal range for specific gestational age and the ideal interval of testing should be defined.OBJECTIVESTo establish reference standards for AFI for local population after 34 weeks of pregnancy and to decide an optimal scan interval for AFI estimation in third trimester in low risk antenatal women.MATERIALS AND METHODSA prospective estimation of AFI was done in 50 healthy pregnant women from 34 to 40 weeks at weekly intervals. The trend of amniotic fluid volume was studied with advancing gestational age. Only low risk singleton pregnancies with accurately established gestational age who were available for all weekly scan from 34 to 40 weeks were included in the study. Women with gestational or overt diabetes mellitus, hypertensive disorders of the pregnancy, prelabour rupture of membranes, and congenital anomalies in the foetus and those who delivered before 40 completed weeks were excluded from the study. For the purpose of AFI measurement, the uterine cavity was arbitrarily divided into four quadrants by a vertical and horizontal line running through umbilicus. Linear array transabdominal probe was used to measure the largest vertical pocket (in cm) in perpendicular plane to the abdominal skin in each quadrant. Amniotic fluid index was obtained by adding these four measurements. Statistical analysis was done using SPSS software (Version 16, Chicago, IL). Percentile curves (5th, 50th, and 95th centiles) were constructed for comparison with other studies. Cohen's d coefficient was used to examine the magnitude of change at different time intervals.RESULTSStarting from 34 weeks till 40 weeks, 50 ultrasound measurements were available at each gestational age. The mean (standard deviation) of AFI values (in cms) were 34 W: 14.59 (1.79), 35 W: 14.25 (1.57), 36 W: 13.17 (1.56), 37 W: 12.48 (1.52), 38 W: 12.2 (1.7), and 39 W: 11.37 (1.71). The 5th percentile cut-off was 8.7 cm at 40 weeks. There was a gradual decline of AFI values as the gestational age approached term. Significant drop in AFI was noted at two-week intervals. AFI curve generated from the study varied significantly when compared with already published data, both from India and abroad.CONCLUSIONNormative range for AFI values for late third trimester was established. Appreciable changes occurred in AFI values as gestation advanced by two weeks. Hence, it is recommended to follow up low risk antenatal women every two weeks after 34 weeks of pregnancy. The percentile curves of AFI obtained from the present study may be used to detect abnormalities of amniotic fluid for our population.

Database: Medline

8. Screening for fetal growth restriction with universal third trimester ultrasonography in nulliparous women in the Pregnancy Outcome Prediction (POP) study: a prospective cohort study.

Author(s): Sovio, Ulla; White, Ian R; Dacey, Alison; Pasupathy, Dharmintra; Smith, Gordon C S

Available in full text at Lancet, The - from ProQuest

Abstract:BACKGROUND Fetal growth restriction is a major determinant of adverse perinatal outcome. Screening procedures for fetal growth restriction need to identify small babies and then differentiate between those that are healthy and those that are pathologically small. We sought to determine the diagnostic effectiveness of universal ultrasonic fetal biometry in the third trimester as a screening test for small-for-gestational-age (SGA) infants, and whether the risk of morbidity associated with being small differed in the presence or absence of ultrasonic markers of fetal growth restriction.METHODSThe Pregnancy Outcome Prediction (POP) study was a prospective cohort study of nulliparous women with a viable singleton pregnancy at the time of the dating ultrasound scan. Women participating had clinically indicated ultrasonography in the third trimester as per routine clinical care and these results were reported as usual (selective ultrasonography). Additionally, all participants had research ultrasonography, including fetal biometry at 28 and 36 weeks' gestational age. These results were not made available to participants or treating clinicians (universal ultrasonography). We regarded SGA as a birthweight of less than the 10th percentile for gestational age and screen positive for SGA an ultrasonographic estimated fetal weight of less than the 10th percentile for gestational age. Markers of fetal growth restriction included biometric ratios, utero-placental Doppler, and fetal growth velocity. We assessed outcomes for consenting participants who attended research scans and had a livebirth at the Rosie Hospital (Cambridge, UK) after the 28 weeks' research scan.FINDINGSBetween Jan 14, 2008, and July 31, 2012, 4512 women provided written informed consent of whom 3977 (88%) were eligible for analysis. Sensitivity for detection of SGA infants was 20% (95% CI 15-24; 69 of 352 fetuses) for selective ultrasonography and 57% (51-62; 199 of 352 fetuses) for universal ultrasonography (relative sensitivity 2·9, 95% CI 2·4-3·5, p<0·0001). Of the 3977 fetuses, 562 (14·1%) were identified by universal ultrasonography with an estimated fetal weight of less than the 10th percentile and were at an increased risk of neonatal morbidity (relative risk [RR] 1·60, 95% CI 1·22-2·09, p=0·0012). However, estimated fetal weight of less than the 10th percentile was only associated with the risk of neonatal morbidity (pinteraction=0·005) if the fetal abdominal circumference growth velocity was in the lowest decile (RR 3·9, 95% CI 1·9-8·1, p=0·0001). 172 (4%) of 3977 pregnancies had both an estimated fetal weight of less than the 10th percentile and abdominal circumference growth velocity in the lowest decile, and had a relative risk of delivering an SGA infant with neonatal morbidity of 17·6 (9·2-34·0, p<0·0001).INTERPRETATION Screening of nulliparous women with universal third trimester fetal biometry roughly tripled detection of SGA infants. Combined analysis of fetal biometry and fetal growth velocity identified a subset of SGA fetuses that were at increased risk of neonatal morbidity.FUNDINGNational Institute for Health Research, Medical Research Council, Sands, and GE Healthcare.

Database: Medline

9. Ultrasound screening for fetal growth restriction at 36 vs 32 weeks' gestation: a randomized trial (ROUTE).

Author(s): Roma, E; Arnau, A; Berdala, R; Bergos, C; Montesinos, J; Figueras, F

Available in full text at Ultrasound in Obstetrics and Gynecology - from John Wiley and Sons

Available in full text at Ultrasound in Obstetrics and Gynecology - from Wiley-Blackwell Free Backfiles NHS

Abstract:OBJECTIVETo compare the utility of routine third-trimester ultrasound examination at 36 weeks' gestation with that at 32 weeks in detecting fetal growth restriction (FGR).METHODSThis was an open-label parallel randomized trial (ROUTE study) conducted at a single general hospital serving a geographically well-defined catchment area in Barcelona, Spain, between May 2011 and April 2014. Women with no adverse medical or obstetric history and a singleton pregnancy without fetal abnormalities at routine second-trimester scan were assigned randomly to undergo a scan at 32 weeks' gestation (n = 1272) or at 36 weeks' gestation (n = 1314). Primary outcome measures were detection rates of FGR (customized birth weight < 10(th) centile) and severe FGR (customized birth weight < 3(rd) centile).RESULTSThere were no significant differences in perinatal outcome between those who underwent a scan at 32 weeks' gestation and those who underwent a scan at 36 weeks' gestation. Severe FGR at birth was associated significantly with emergency Cesarean delivery for fetal distress (odds ratio (OR), 3.4 (95% CI, 1.8-6.7)), neonatal admission (OR, 2.23 (95% CI, 1.23-4.05)), hypoglycemia (OR, 9.5 (95% CI, 1.8-49.8)) and hyperbilirubinemia (OR, 9.0 (95% CI, 4.6-17.6)). Despite similar false-positive rates (FPRs) (6.4% vs 8.2%), FGR detection rates were superior at 36 vs 32 weeks' gestation (sensitivity, 38.8% vs 22.5%; P = 0.006), with positive and negative likelihood ratios of 6.1 vs 2.7 and 0.65 vs 0.84, respectively. In cases of severe FGR, FPRs for both scans were also similar (8.5% vs 8.7%), but detection rates were superior at 36 vs 32 weeks' gestation (61.4% vs 32.5%; P = 0.008). Positive and negative likelihood ratios were 7.2 vs 3.7 and 0.4 vs 0.74, respectively.CONCLUSIONIn low-risk pregnancies, routine ultrasound examination at 36 weeks' gestation was more effective than that at 32 weeks' gestation in detecting FGR and related adverse perinatal and neonatal outcomes.

Database: Medline

10. Ultrasound and Doppler evaluation at routine third trimester scan: Association with Declining growth trend of ADE Quate-for-gestational fetuses

Author(s): Parra Saavedra M.A.; Triunfo S.; Crovetto F.; Gratacos E.; Figueras F.

Abstract: Objective: The aim of this study was to evaluate the association between ultrasound and Doppler parameters with a subsequent declining growth trajectory fetal in low risk population with normal fetal growth assessment during third trimester routine scan. Methods: A cohort of 1004 term AGA fetuses was created of consecutive singleton pregnancies attended at our Institution between November 2011 and November 2013 for routine third trimester scan. Inclusion criteria were: (i) an estimated fetal weight > 10 centile according to local standards and (ii) a umbilical artery Doppler pulsatility index (PI) below the 95th centile . Umbilical artery (UA) Middle cerebral artery (MCA) and mean uterine artery (UtA) pulsatility index (PI) was calculated. The umbilical vein blood flow (BF) (mL/min) was also calculated at a free-floating loop as reported elsewhere. Only the Doppler examination at routine third trimester scan was considered for this study. Growth trajectory were classified in percentiles according to the change in growth centile between the routine scan (34+1 weeks) and birth weight. The association between ultrasound and fetal Doppler parameters and the risk of low growth trajectory (LGT: defined as below the 10 centile according to the change in growth centile between the routine third trimester scan and birth weight) was analyzed by binomial logistic regression. Furthermore, a predictive model for LGT, was constructed with a Decision Tree Analysis using an Exhaustive Chi-squared Automatic Interaction Detector (CHAID). Results: Multivariable analysis showed that significant contributions to prediction of low growth trayectory were provided by nulliparity (p=0.045), EFW percentile (p 52 % (risk 16.4 %) ; UtA-PI >1.26 (risk 75 %). Conclusions: Fetal ultrasound and Doppler assessment may be of value in detecting at third trimester routine scan, adequate for gestational age pregnancies that are at risk of subsequent low growth trajectory due to subclinical placental insufficiency, this findings may be of particular value in the in detecting fetal subgroup at high risk of adverse perinatal outcome.

11. Uncomplicated Pregnancies and Ultrasounds for Fetal Growth Restriction: A Pilot Randomized Clinical Trial

Author(s): Hammad I.A.; Mlynarczyk M.; Abuhamad A.Z.; Chauhan S.P.; Rabie N.; Magann E.F.; Goodie C.; Chang E.

Available in full text at AJP Reports - from National Library of Medicine

Abstract: Objective The purpose of this multicenter pilot study was to determine the feasibility of randomizing uncomplicated pregnancies (UPs) to have third trimester ultrasonographic exams (USE) versus routine prenatal care (RPNC) to improve the detection of small for gestational age (SGA; birth weight < 10% for GA). Material and Methods At three referral centers, 50 UPs were randomized after gestational diabetes was ruled out. Women needed to screen, consenting, and loss to follow-up was ascertained, as was the detection rate of SGA in the two groups. Results During the study period at the three centers, there were 7,680 births, of which 64% were uncomplicated. Of the 234 women approached for randomization, 36% declined. We recruited 149 women and had follow-up delivery data on 97%. The antenatal detection rate of SGA in the intervention group was 67% (95%

confidence intervals 31-91%) and 9% (0.5-43%) in control. Conclusion The pilot study provides feasibility data for a multicenter randomized clinical trial to determine if third trimester USE, compared with RPNC, improves the detection of SGA and composite neonatal morbidity.Copyright © 2016 by Thieme Medical Publishers, Inc.

Database: EMBASE

12. The utility of ultrasound in late pregnancy compared with clinical evaluation in detecting small and large for gestational age fetuses in low-risk pregnancies.

Author(s): Al-Amin, Ahmed; Hingston, Tania; Mayall, Peter; Araujo Júnior, Edward; Fabrício Da Silva, Costa; Friedman, Deborah

Abstract:OBJECTIVETo determine the utility of ultrasound (US) in late pregnancy for identifying fetuses with growth disturbances.METHODSThis study was designed as a retrospective study of birth weights over a 12-month period at the Royal Hobart Hospital (RHH) and Barwon Health (BH). Data were collected from the discharge summaries and medical records at both hospitals targeting abnormal fetal weight below 10th percentile (small for gestational age - SGA) and above 90th percentile (large for gestational age - LGA).RESULTSThere were 4079 study patients from both hospitals. After weight adjustment by gender and gestational age, an abnormal fetal weight was detected in 741 cases (babies over the 90th percentile or below 10th percentile). One hundred and twenty-eight patients with high-risk pregnancies were excluded. Therefore, a total of 613 patients remained that were considered to be low-risk pregnancies with abnormal foetal growth; 305 patients from RHH and 308 from BH. The antenatal detection rate for LGA was 35.9%, at RHH by combination of US and clinical evaluation, while for BH it was 34.8% by clinical evaluation alone (p = 0.910). The antenatal detection rate for SGA was 36.8% via US and clinical evaluation at RHH and 54.5% by clinical evaluation alone at BH (p = 0.006).CONCLUSIONThis study shows no benefit in the use of routine US for the antenatal diagnosis of LGA compared with clinical evaluation in low-risk pregnancies. US evaluation was inferior to clinical evaluation in the antenatal diagnosis of SGA in low-risk pregnancies.

Database: Medline

13. Impact on obstetric outcome of third-trimester screening for small-for-gestational-age fetuses.

Author(s): Callec, R; Lamy, C; Perdriolle-Galet, E; Patte, C; Heude, B; Morel, O; EDEN Mother-Child Cohort Study Group

Available in full text at Ultrasound in Obstetrics and Gynecology - from John Wiley and Sons

Available in full text at Ultrasound in Obstetrics and Gynecology - from Wiley-Blackwell Free Backfiles NHS

Abstract:OBJECTIVESTo evaluate the performance of screening for small-for-gestational-age (SGA) fetuses by ultrasound biometry at 30-35 weeks' gestation, and to determine the impact of screening on obstetric and neonatal outcomes.METHODSFor this prospective cohort study, pregnant women were recruited from two French university maternity centers between 2003 and 2006. Performance measures of third-trimester biometry for the prediction of SGA, defined as estimated fetal weight < 10(th) centile, were analyzed. Obstetric outcomes and neonatal health status were compared, first, between SGA neonates diagnosed correctly at ultrasound examination (true positive (TP); n = 45) and SGA neonates that went undiagnosed (false negative (FN); n = 110) and, second, between non-SGA neonates identified as normal at ultrasound examination (true negative (TN); n = 1641) and non-SGA neonates diagnosed incorrectly as SGA (false positive (FP); n = 101).RESULTSIn the prediction of SGA, third-trimester ultrasound had a sensitivity of 29.0% (95% CI, 22.5-36.6%) and specificity of 94.2% (95% CI, 93.0-95.2%). Positive and negative predictive values were 30.8% (95% CI, 23.9-38.7%) and 93.7% (95% CI, 92.5-94.8%), respectively. One hundred and ten SGA neonates went undiagnosed at ultrasound. Compared to the TN neonates considered as of normal weight at ultrasound, planned preterm delivery (before 37 weeks) and elective Cesarean section for a fetal growth indication were 2.4 (P = 0.01) and 2.85 (P = 0.003) times more likely to occur, respectively, in the FP group of non-SGA neonates, diagnosed incorrectly as SGA during the antenatal period. There was no statistically significant difference in 5-min Apgar score < 7, cord blood pH at birth < 7.15 and need for neonatal resuscitation between the two subgroups (TN vs FP and TP vs FN).CONCLUSIONSThe performance of third-trimester ultrasound screening for SGA seems poor, as it misses the diagnosis of a large number of SGA neonates. The consequences of routine screening for SGA in a low-risk population may lead to unnecessary planned preterm deliveries and elective Cesarean sections in FP pregnancies, without improved neonatal outcome in the FN pregnancies.

Database: Medline

14. Predicting fetal growth deviation in parous women: combining the birth weight of the previous pregnancy and third trimester ultrasound scan.

Author(s): Papastefanou, Ioannis; Souka, Athena P; Eleftheriades, Makarios; Pilalis, Athanasios; Chrelias, Charalambos; Kassanos, Dimitrios

Source: Journal of perinatal medicine; Jul 2015; vol. 43 (no. 4); p. 485-492

Publication Date: Jul 2015

Publication Type(s): Journal Article

Abstract:AIMTo investigate the value of the birth weight of the previous pregnancy (BW1) alone and combined with the third trimester ultrasonographically estimated fetal weight (EFW) and Doppler studies in the prediction of small (SGA) and large for gestational age (LGA) neonates in the index pregnancy (BW2).METHODSome 1298 parous women with uncomplicated singleton pregnancies who had a third trimester ultrasound scan were considered as samples in this retrospective cohort study. Maternal and pregnancy characteristics, BW1, EFW, umbilical artery, and middle cerebral artery pulsatility indices were investigated as predictors of SGA and LGA.RESULTSBW1, maternal weight, mode of conception, and smoking status were associated with BW2 ($R2=0.39$) with BW1 being the strongest predictor ($R2=0.37$). The addition of EFW conferred significant improvement ($R2=0.63$), whereas the addition of the Doppler indices did not. The sensitivity of BW1 alone in the prediction of SGA was 75% for 25% screen positive rate and increased to 92% with the addition of EFW. The equivalent figures for LGA were 68% and 93%, respectively.CONCLUSIONSBW1 used as a continuous variable is predictive of growth deviations in the index pregnancy. Incorporating EFW enhanced the sensitivity for the detection of both conditions.

Database: Medline

15. Routine ultrasound in late pregnancy (after 24 weeks' gestation).

Author(s): Bricker, Leanne; Medley, Nancy; Pratt, Jeremy J

Source: The Cochrane database of systematic reviews; Jun 2015 (no. 6); p. CD001451

Publication Date: Jun 2015

Publication Type(s): Research Support, Non-u.s. Gov't Meta-analysis Journal Article Review

Available in full text at Cochrane Library, The - from John Wiley and Sons

Abstract:BACKGROUNDDiagnostic ultrasound is used selectively in late pregnancy where there are specific clinical indications. However, the value of routine late pregnancy ultrasound screening in unselected populations is controversial. The rationale for such screening would be the detection of clinical conditions which place the fetus or mother at high risk, which would not necessarily have been detected by other means such as clinical examination, and for which subsequent management would improve perinatal outcome.OBJECTIVESTo assess the effects on obstetric practice and pregnancy outcome of routine late pregnancy ultrasound, defined as greater than 24 weeks' gestation, in women with either unselected or low-risk pregnancies.SEARCH METHODSWe searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 May 2015) and reference lists of retrieved studies.SELECTION CRITERIAAll acceptably controlled trials of routine ultrasound in late pregnancy (defined as after 24 weeks).DATA COLLECTION AND ANALYSISThree review authors independently assessed trials for inclusion and risk of bias, extracted data and checked them for accuracy.MAIN RESULTSThirteen trials recruiting 34,980 women were included in the systematic review. Risk of bias was low for allocation concealment and selective reporting, unclear for random sequence generation and incomplete outcome data and high for blinding of both outcome assessment and participants and personnel. There was no difference in antenatal, obstetric and neonatal outcome or morbidity in screened versus control groups. Routine late pregnancy ultrasound was not associated with improvements in overall perinatal mortality. There is little

information on long-term substantive outcomes such as neurodevelopment. There is a lack of data on maternal psychological effects.Overall, the evidence for the primary outcomes of perinatal mortality, preterm birth less than 37 weeks, induction of labour and caesarean section were assessed to be of moderate or high quality with GRADE software. There was no association between ultrasound in late pregnancy and perinatal mortality (risk ratio (RR) 1.01, 95% confidence interval (CI) 0.67 to 1.54; participants = 30,675; studies = eight; I^2 = 29%), preterm birth less than 37 weeks (RR 0.96, 95% CI 0.85 to 1.08; participants = 17,151; studies = two; I^2 = 0%), induction of labour (RR 0.93, 95% CI 0.81 to 1.07; participants = 22,663; studies = six; I^2 = 78%), or caesarean section (RR 1.03, 95% CI 0.92 to 1.15; participants = 27,461; studies = six; I^2 = 54%). Three additional primary outcomes chosen for the 'Summary of findings' table were preterm birth less than 34 weeks, maternal psychological effects and neurodevelopment at age two. Because none of the included studies reported these outcomes, they were not assessed for quality with GRADE software.AUTHORS' CONCLUSIONSBased on existing evidence, routine late pregnancy ultrasound in low-risk or unselected populations does not confer benefit on mother or baby. There was no difference in the primary outcomes of perinatal mortality, preterm birth less than 37 weeks, caesarean section rates, and induction of labour rates if ultrasound in late pregnancy was performed routinely versus not performed routinely. Meanwhile, data were lacking for the other primary outcomes: preterm birth less than 34 weeks, maternal psychological effects, and neurodevelopment at age two, reflecting a paucity of research covering these outcomes. These outcomes may warrant future research.

Database: Medline

16. Do Regular Ultrasound Scans Reduce the Incidence of Stillbirth in Women with Apparently Normal Pregnancies?

Author(s): Toner, Brenda; Mone, Fionnuala; Ong, Stephen

Source: The Ulster medical journal; May 2015; vol. 84 (no. 2); p. 98-101

Publication Date: May 2015

Publication Type(s): Journal Article Observational Study

Available in full text at Ulster Medical Journal, The - from National Library of Medicine

Abstract:OBJECTIVETo determine the incidence of stillbirth in women who have regular ante-natal ultrasound compared to those that have infrequent scans in a low risk population.STUDY DESIGNA retrospective observational study was performed in a tertiary center with 5,700 deliveries per annum. Data on all deliveries was collected via the Northern Ireland Maternity System Database. Only women with an apparently low risk pregnancy were included. Women who had private antenatal care often had frequent scans in the third trimester. Women who did not have private antenatal care often had scans infrequently. The still birth rate was calculated for both groups of women from 2007 to 2011 and compared using a Chi-squared analysis.RESULTSOur study included 23,519 'low-risk' deliveries spanning 2007-2011. This included 2,088 (9%) patients who had frequent ultrasound surveillance and delivery at term and 21,431 (91%) patients who did not. The overall stillbirth rate was 0.34% and 0.20% respectively which was not statistically different (p=0.31).CONCLUSIONThere is no difference in the rate of stillbirth between patients who have more frequent ante-natal ultrasound surveillance compared with those who do not in a low risk population.

Database: Medline

17. Routine third trimester ultrasound to prevent adverse perinatal outcome

Author(s): Smith G.

Source: BJOG: An International Journal of Obstetrics and Gynaecology; Apr 2015; vol. 122 ; p. 359

Publication Date: Apr 2015

Publication Type(s): Conference Abstract

Available in full text at BJOG: An International Journal of Obstetrics and Gynaecology - from John Wiley and Sons

Abstract: The use of ultrasonography to identify small for gestational age (SGA) infants is widespread in contemporary obstetric practice. The current approach in the United States of America, United Kingdom and many other countries is that women are not routinely scanned in late pregnancy, but are selected for third trimester ultrasonography on the basis of pre-pregnancy risk factors, development of obstetric complications, and serial measurement of symphysealfundal height. This approach identifies one third, or fewer, SGA infants and unidentified SGA is a common finding in perinatal deaths. However, a metaanalysis of nine trials evaluating universal late pregnancy ultrasonography, including approximately 27 000 women, demonstrated no beneficial effect, which led to the recommendation that it should not routinely be offered in the third trimester. Evaluation of a screening programme could yield a negative result for three major reasons. First, the screening test may perform poorly, i.e. it has poor diagnostic effectiveness. Second, screening may not be coupled with use of an effective intervention, i.e. the screening programme is not clinically effective. Third, both the screening test and intervention may be effective, but the studies are methodologically flawed, for example, they may be underpowered. We have recently completed a prospective cohort study of 4512 unselected nulliparous women where we performed serial, blinded uteroplacental Doppler flow velocimetry and fetal biometry (Lancet 2015, in press). The potential for clinical benefit arising from universal ultrasonography will be discussed.

Database: EMBASE

18. Elastography in predicting preterm delivery in asymptomatic, low-risk women: a prospective observational study

Author(s): Wozniak S.; Czuczwar P.; Szkodziak P.; Milart P.; Wozniakowska E.; Paszkowski T.

Source: BMC pregnancy and childbirth; 2014; vol. 14 ; p. 238

Publication Date: 2014

Publication Type(s): Article

Available in full text at BMC Pregnancy and Childbirth - from BioMed Central

Available in full text at BMC Pregnancy and Childbirth - from ProQuest

Abstract:BACKGROUND: Despite the efforts to decrease the rate of preterm birth, preterm delivery is still the main cause of neonatal morbidity and mortality. Identifying patients threatened with preterm delivery remains one of the main obstetric challenges. The aim of this study was to estimate the potential value of elastographic evaluation of internal cervical os stiffness at 18-22 weeks of pregnancy in low risk, asymptomatic women in the prediction of spontaneous preterm delivery.METHODS: This prospective observational study included 333 low-risk, asymptomatic women presenting for the routine second trimester ultrasound scan according to the Polish Gynecological Society recommendation between 18-22 weeks of pregnancy. Ultrasound examinations of the cervix were performed transvaginally. The following data were recorded: elastographic color assessment of the internal os and ultrasound cervical length at 18-22 and 30 weeks of pregnancy; maternal age; obstetrical history; presence of cervical funneling at 30 weeks of pregnancy; gestational age at birth. Elastographic assessment of the internal os was performed using

a color map: red (soft), yellow (medium soft), blue (medium hard) and purple (hard). If two colors were visible in the region of the internal os, the softer option was noted. Statistical analysis was performed using Statistica software (version 10, Statsoft Poland) using the following tests: chi square test to compare frequency of preterm deliveries in various categories of internal os assessment and Spearman correlation test to determine the correlation between elastographic assessment and cervical shortening. To determine the cut off category of internal os elastography assessment in selecting high preterm delivery risk patients we have calculated the sensivity, specifity, negative predictive value and positive predictive value.RESULTS: The number of preterm deliveries (<37 weeks of pregnancy) was significantly higher in the red and yellow groups, than in the blue and purple groups. The sensivity, specifity, NPV and PPV for both red and yellow internal os assessment in predicting preterm delivery were 85.7%, 97.6%, 98.3% and 81.1% respectively.CONCLUSIONS: Elastographic assessment of the internal cervical os at 18-22 weeks of pregnancy may identify patients with high risk of preterm delivery in low-risk, asymptomatic women.

Database: EMBASE

19. A randomized controlled study to assess the role of routine third trimester ultrasound in low-risk pregnancy on antenatal interventions and perinatal outcome

Author(s): Revankar K.G.; Dhumale H.; Pujar Y.

Abstract: Objective: To assess the role of routine third trimester ultrasound in low-risk pregnancy on antenatal interventions and perinatal outcome. Design: Randomized controlled study. Setting: KLES Dr Prabhakar Kore Hospital and Medical Research Center, Belgaum. Subjects: A total of 290 low-risk pregnant women between 34 and 37 weeks attending antenatal clinic and fulfilling inclusion criteria were allotted using computer-generated randomization numbers into study and control groups. Intervention: In study group, third trimester ultrasound was performed to assess fetal growth, amniotic fluid index (AFI), malpresentations, and late onset fetal anomalies. In control group, no routine ultrasound was performed, unless indicated by clinical suspicion during subsequent visits. High-risk fetuses identified were managed as per the standard protocol. All women were followed to assess antenatal interventions, intrapartum events and perinatal outcome. Results: Detection of high-risk fetuses antenatally in study and control groups was 17.25 and 2.07% respectively. This difference was statistically significant (p = -0.0001). Rates of antenatal interventions among study and control were 24.8 and 4.44% respectively. Prevalence of small for gestational age (SGA) fetuses among study and control was 6.9 vs 11.03% respectively. This difference was not statistically significant (p = -0.253). There was no statistical difference in adverse intrapartum events, cesarean section rate for nonreassuring cardiotocography (CTG), low Apgar score and neonatal intensive care unit (NICU) admissions among study and controls. Conclusion: Routine third trimester ultrasound is a logical solution for detection of high-risk fetuses in low-risk pregnancies which would otherwise be missed by clinical examination. However, this leads to an increase in antenatal interventions without significantly influencing the perinatal outcome.Copyright © 2014, Jaypee Brothers Medical Publishers (P) Ltd. All rights reserved.

Database: EMBASE

20. Does performing fetal ultrasound assessment once versus twice in the third trimester in low risk women alter the stillbirth rate?

Author(s): Mone, F; Meti, S; Ong, S

Source: Irish medical journal; Jun 2014; vol. 107 (no. 6); p. 181-183

Publication Date: Jun 2014

Publication Type(s): Journal Article Observational Study

Available in full text at Irish Medical Journal - from Free Access Content

Abstract: The aim of this retrospective observational study was to evaluate if performing fetal growth scans once or twice in the third trimester impacts on stillbirth rates in low risk pregnancies. The study was performed in a tertiary centre with 6,000 deliveries per annum. Data on all deliveries was collected via the National Maternity System Database and high risk pregnancies were excluded to calculate the stillbirth rate before and after 2011 when ultrasound assessment was performed twice and once in the third trimester. Between 2009-2012 there were 18,856 low risk-pregnancy deliveries with 45 stillbirths, (average stillbirth rate 0.26%). The stillbirth rate in 2009/2010 was 54/9423 (0.25%). The stillbirth rate in 2012 was 13/5615 (0.27%). [p = 0.897; chi square = 0.017; df = 1]. There was no statistical difference in the stillbirth rate when low risk women were scanned once or twice in the third trimester.

Database: Medline

21. The impact of the frequency of fetal ultrasound in the third trimester and the rate of stillbirth in low risk pregnancies

Author(s): Mone F.; Shrivashankar M.; Ong S.

Source: Archives of Disease in Childhood: Fetal and Neonatal Edition; Jun 2014; vol. 99

Publication Date: Jun 2014

Publication Type(s): Conference Abstract

Available in full text at Fetal and Neonatal - from Highwire Press

Abstract: Objectives To determine if performing fetal growth scans once or twice in the third trimester of pregnancy has an impact on the stillbirth rate in low-risk pregnancies Methods A retrospective observational study was performed in a tertiary centre. Data was collected using the computerised Northern Ireland Maternity System (NIMATs) on all births and stillbirths in the Royal Maternity Hospital from 2009-2012. We compared pre-2011 versus post 2011 i.e. when patients were scanned twice in the third trimester versus once routinely. Statistical analysis was performed using SPSS Results There were 18,856 deliveries in 'low-risk' patients from 2009-2012. The average stillbirth rate in this group was 0.25% per number of low risk pregnancies per annum. The stillbirth rate in the 2009/2010 group was 0.25%. The stillbirth rate in the 2012 group was 0.27%. This difference was not statistically significant [p = 0.897; chi square = 0.017; df =1]. Conclusions This study indicates that there is no difference in stillbirth rate when a strategy of scanning once or twice in the third trimester of pregnancy is employed in women with an apparent normal pregnancy. A randomised controlled trial is required to determine if routine fetal biometry can reduce stillbirth. This is unlikely to be performed given the large numbers required to perform such a trial which is approximately 250,000 subjects per arm.

Database: EMBASE

22. Level 1 evidence for the diagnostic effectiveness of routine sonography as a screening test for small for gestational age (SGA) infants

Author(s): Sovio U.; Smith G.; Dacey A.

Abstract:OBJECTIVE: Antenatal detection of SGA infants has the potential to inform multiple aspects of care, but a meta-analysis including 27,000 women demonstrated no beneficial effect of routine screening using third trimester sonography. However, a detailed review (NICE, UK) concluded that the trials were designed in the absence of Level 1 evidence of the diagnostic effectiveness of screening using routine sonography and recommended further prospective studies. STUDY DESIGN: We conducted a prospective cohort study of unselected nulliparous women attending for prenatal care in Cambridge (UK) between Jan 2008 and Jul 2012. All women had screening fetal biometry performed at 28 and 36 weeks gestational age and these results were blinded, as required for Level 1 evidence of diagnostic effectiveness. Standard clinical care involved selection of women for sonograms in the third trimester on the basis of risk factors and serial symphyseal-fundal height measurements, and these results were reported. SGA was defined as birth weight percentile <10th for sex and gestational age, and severe SGA was defined as <3rd percentile. A positive prenatal diagnosis was defined as an estimated fetal weight (EFW) <10th percentile at the last sonogram performed prior to birth (using Hadlock equations and percentiles). RESULTS: Among 4,006 women with screening and outcome data, 352 (9%) infants were SGA and 85 (2%) were severe SGA. 1,696 (42%) women had one or more clinically indicated sonograms at or after 26 weeks gestational age. The sensitivity of standard care (selective sonography) was 20% for SGA and 32% for severe SGA (Table). The sensitivity of screening sonography was more than double that of selective sonography: 57% for SGA and 79% for severe SGA (both P<0.001 compared with selective sonography). The areas under the receiver operating characteristic (ROC) curve for screening EFW percentile were 0.87 for SGA and 0.92 for severe SGA. CONCLUSION: Routine sonography at 28 and 36 weeks performs well as a screening test to detect SGA infants in a population of unselected nulliparous women (Level 1 evidence of diagnostic effectiveness). (Table presented).

23. Performance of the ultrasound examination in the early and late third trimester for the prediction of birth weight deviations.

Author(s): Souka, Athena P; Papastefanou, Ioannis; Pilalis, Athanasios; Michalitsi, Vasiliki; Panagopoulos, Perikles; Kassanos, Dimitrios

Available in full text at Prenatal Diagnosis - from John Wiley and Sons

Abstract:OBJECTIVESThis study aimed to define the optimal gestational age in the third trimester, early (30-33 weeks + 6 days) versus late (34-37 weeks), for performing an ultrasound examination for fetal biometry to predict birth weight deviations: small for gestational age (SGA ≤ 5th centile) and large for gestational age (LGA ≥ 95th centile) neonates.METHODSWe used an observational cross-sectional study in uncomplicated singleton pregnancies that had a third trimester ultrasound for fetal biometry and umbilical and middle cerebral fetal Doppler studies. Estimated fetal weight and fetal Doppler parameters were the examined variables for the prediction of SGA and LGA.RESULTSThree thousand six hundred ninety women had an early examination, and 2288 women

had a late one. For a screen-positive rate of 10%, estimated fetal weight achieved 58% and 53.4% sensitivity for the prediction of SGA [area under the curve (AUC) = 0.8578, p < 0.001] and LGA (AUC = 0.8547, p < 0.001), respectively, by the early examination. Accordingly, the sensitivities significantly increased to 75.2% and 63.2% for the prediction of SGA (AUC = 0.9074, p < 0.001) and LGA (AUC = 0.8782, p < 0.001), respectively, by the late examination. The inclusion of the Doppler indices did not improve the predictive models.CONCLUSIONSA late third trimester ultrasound was superior in the prediction of SGA and LGA, and this improvement was more pronounced for the prediction of SGA.

Database: Medline

24. Third trimester abdominal circumference, estimated fetal weight and uterine artery doppler for the identification of newborns small and large for gestational age.

Author(s): Di Lorenzo, Giovanni; Monasta, Lorenzo; Ceccarello, Matteo; Cecotti, Vera; D'Ottavio, Giuseppina

Abstract:OBJECTIVETo understand if ultrasound biometric evaluation at 30-32 weeks of gestation is a valuable screening tool for the detection of small-for-gestational-age (SGA) and large-for-gestational-age (LGA) infants at birth in a low risk population.STUDY DESIGNWe enrolled 1848 pregnant women with singleton pregnancy undergoing routine fetal biometry. We divided the infants into four groups: moderate SGA, severe SGA, moderate LGA and severe LGA. We considered third-trimester estimated fetal weight (EFW), abdominal circumference (AC), EFW centile (EFWc), AC centile (ACc) and compared their prediction toward SGA and LGA to determine which of these parameters was the best estimator for fetal size. Then we took the strongest predictive value and added all history-related and ultrasound factors to run a stepdown multivariate logistic regression. All the variables were then dichotomized and sensitivity models only for statistically significant parameters were calculated.RESULTSWe identified the following predictive factors for each outcome: for severe SGA: EFWc with p<0.001, uterine artery pulsatility index (UtA PI) with p<0.002. For moderate SGA: EFWc with p<0.001, UtA PI with p<0.004, maternal preeclampsia p<0.002. For moderate and severe LGA: EFWc with p<0.001.CONCLUSIONWe can detect in a low-risk population a group at risk of growth deviations. Adding Doppler velocimetry to 30-32 weeks EFWc improves the specificity (84%) regarding SGA newborns, maintaining a good sensitivity (71%), and reducing the population to be re-screened from 27 to 17%. An ultrasound examination at 34-36 weeks or the clinical assessment of maternal risk factors remain the best tools for LGA newborns.

Database: Medline

25. Screening for intrauterine growth restriction in uncomplicated pregnancies: time for action.

Author(s): Chauhan, Suneet P; Rouse, Dwight J; Ananth, Cande V; Magann, Everett F; Chang, Eugene; Dahlke, Joshua D; Abuhamad, Alfred Z

Abstract:A randomized clinical trial (RCT) noted that sonographic examination in the third trimester, in conjunction with delivery at term for abnormalities of fetal growth, significantly decreased the likelihood of small-for-gestational-age (SGA) neonates in uncomplicated pregnancies. We identified 15 characteristics of screening tests and attempted to determine if there is evidence to routinely obtain sonographic estimates of fetal weight in the third trimester and decrease rates of SGA. Of the 15 suggested characteristics, currently 10 (67%) are fulfilled, two are uncertain (sonographic examination is cost-effective or reliable), and one (the test must do its job) is possibly valid. Due to the lack of RCTs demonstrating reduction in morbidity, there is potential for lead-time and length bias. To observe a 36% decrease (from 4.1 to 2.6%) decrease in composite perinatal morbidity, 6000 women need to be randomized to at least two sonographic examinations in the third trimester versus routine prenatal care. Such an RCT is warranted and justified.

Database: Medline

26. Performance of third-trimester ultrasound for prediction of small-for-gestational-age neonates and evaluation of contingency screening policies.

Author(s): Souka, A P; Papastefanou, I; Pilalis, A; Michalitsi, V; Kassanos, D

Available in full text at Ultrasound in Obstetrics and Gynecology - from John Wiley and Sons

Available in full text at Ultrasound in Obstetrics and Gynecology - from Wiley-Blackwell Free Backfiles NHS

Abstract:OBJECTIVESTo assess the performance of third-trimester fetal biometry and fetal Doppler studies for the prediction of small-for-gestational-age (SGA) neonates, and to explore contingency strategies using a first-trimester prediction model based on maternal and fetal parameters and third-trimester ultrasound.METHODSThis was an observational cross-sectional study of uncomplicated singleton pregnancies. Risk assessment for chromosomal abnormality was carried out in 4702 pregnancies using a combination of ultrasound markers (fetal nuchal translucency thickness (NT) and nasal bone assessment) and biochemistry (free beta-human chorionic gonadotropin (β-hCG) and pregnancy-associated plasma protein-A (PAPP-A)) at 11 to 13 + 6 weeks. Maternal demographic characteristics and method of conception were recorded. Third-trimester (30-34 weeks) fetal biometry (biparietal diameter (BPD), head circumference (HC), abdominal circumference (AC) and femur length (FL)) and umbilical artery (UA) and middle cerebral artery Doppler studies were performed routinely in a subgroup (n = 2310). Reference ranges for birth weight were constructed using the cohort of 4702 women, and neonates were classified as small (SGA, ≤ 5th centile) or appropriate (AGA) for gestational age. First-trimester, third-trimester and integrated first- and third-trimester prediction models for SGA were constructed using regression analysis and three different contingency strategies of rescanning in the third trimester were investigated.RESULTSAccording to the areas under the receiver-operating characteristics curves (AUCs), AC (AUC = 0.85) and

ultrasound-estimated fetal weight (EFW, AUC = 0.87) were equally good predictors of SGA. The model was marginally improved by the addition of UA Doppler, smoking status and first-trimester indices (free β-hCG and PAPP-A multiples of the median) (combined model, AUC = 0.88), but the difference was not statistically significant. A contingency strategy of rescanning 50% of the population in the third trimester according to the risk estimated by a first-trimester prediction model yielded a detection rate of 79% for a 25% screen-positive rate.CONCLUSIONThird-trimester ultrasound is effective in screening for SGA in uncomplicated pregnancies. The use of a contingency screening policy can reduce the need for unnecessary examinations.

Database: Medline

27. Fetal echocardiography in low-risk population

Author(s): Barberato M.F.A.; Binotto C.N.; Cavalcanti M.J.M.; Barberato S.H.; Miyague N.I.

Source: Echocardiography; Jul 2010; vol. 27 (no. 6); p. 736

Publication Date: Jul 2010

Publication Type(s): Conference Abstract

Available in full text at Echocardiography - from EBSCOhost

Available in full text at Echocardiography - from John Wiley and Sons

Abstract: Background: Doppler echocardiography is an essential tool for the accurate diagnosis of congenital heart disease (CHD) in fetal life Objective: We report our experience with a large series of echocardiographic assesment of antenatal cardiac alterations (including CHD) in a primary public health center. Methods: This was a cross-sectional observational study conducted between December 2006 and January 2010. Fetal Doppler echocardiograms were performed in low-risk second and third trimester pregnancies, using a sequential segmentar analysis of the heart (four chamber, ventricular outflow tract, arterial duct, and aortic arch). Results: 7515 fetuses with gestational age 26 +/- 4,5 weeks (range 15 to 40) and maternal age 26 +/- 7 years (range 12 to 45) were examined. Routine screening was the indication in 65.5% of the exams, contrasting with only 0.8% of suspected CHD after a routine obstetric ultrasound. About 91% of the exams were normal. Among the abnormalities, we observed CHD in 1.7%; arrhythmias in 1.1%; "golf ball" in 4.4% and tricuspid valvar regurgitation in 1.3% of the fetuses. The most prevalent fetal structural defects were ventricular septal defect (0.8%), atrioventricular defect (0.3%) and hypoplastic left heart syndrome (0.1%). Conclusions: Antenatal cardiac abnormalities were common in this low-risk population. Remarkably, only half of the CHD cases were suspected after undergone a conventional obstetric ultrasound, which highlights the importance of achieving fetal echocardiography in all pregancies.

Database: EMBASE

28. Routine Versus Indicated Third Trimester Ultrasound: Is a Randomized Trial Feasible?

Author(s): Ray C.L.; Morin L.

Abstract: Objective: An adequate and contemporary randomized trial is needed to resolve whether routine third trimester ultrasound followed by adapted perinatal management improves perinatal outcomes in a population of women at low risk. We aimed to describe current practices regarding third trimester ultrasound in our centre and to evaluate the feasibility of a randomized trial. Methods: All women with a singleton pregnancy managed from the beginning of pregnancy in our maternity unit who delivered after 28 weeks (N = 335) were assessed prospectively over a 50-day period. Details of maternal characteristics, medical and obstetrical history, management of pregnancy and delivery, ultrasound practices, and results were recorded. One hundred women had a brief personal interview to define their expectations and experience of third trimester ultrasound. Results: The women who were assessed had 2.9 +/- 1.2 ultrasound scans during their pregnancy. All had a second trimester ultrasound scan and 53.7% had a third trimester scan. There was no medical indication for the third trimester ultrasound scan in 12.8% of the women. Among women with a low-risk pregnancy, 40% had a third trimester ultrasound, and 21.6% of those were done without medical indication. Among women with a low-risk pregnancy who had a third trimester ultrasound, the interview disclosed that 80% found that the test was not stressful. Of the low-risk population interviewed, 83.6% would agree to participate in a future trial. Conclusion: Although any study designed to evaluate the effect of routine third trimester ultrasound on perinatal morbidity and mortality in a low-risk pregnant population would include a large patient sample, our study shows that a randomized trial is feasible because most women with a low-risk pregnancy do not consider this examination stressful and would volunteer to participate.Copyright © 2009 Society of Obstetricians and Gynaecologists of Canada.

29. Detection of foetal growth restriction using third trimester ultrasound.

Author(s): Bricker, Leanne; Mahsud-Dornan, Samina; Dornan, James C

Available in print at Patricia Bowen Library and Knowledge Service West Middlesex university Hospital - from Best Practice and Research Clinical Obstetrics and Gynaecology

Abstract: Foetal growth restriction is an important contributor to perinatal mortality, being responsible for up to 50% of stillbirths. Optimal prevention and accurate detection enabling timely intervention remain elusive, particularly in presumed low-risk pregnancy. Third trimester ultrasound seems a logical solution, but systematic review of evidence from randomised trials has shown that third trimester ultrasound does not have a significant impact on perinatal mortality but may increase interventions such as caesarean delivery. However, the evidence is difficult to interpret in the context of current obstetric practice as the evolution of ultrasound technology and rapid assimilation of newer techniques has resulted in questionable validity of the findings. If third trimester ultrasound were introduced routinely, there is a need to decide the optimal timing and number of examinations and what ultrasound parameters should be used to identify the foetus at risk.

30. Routine Third Trimester Ultrasound: What Is the Evidence?

Author(s): Ray C.L.; Lacerte M.; Iglesias M.-H.; Audibert F.; Morin L.

Source: Journal of Obstetrics and Gynaecology Canada; 2008; vol. 30 (no. 2); p. 118-122

Publication Date: 2008

Publication Type(s): Article

Abstract: Policies for routine third trimester obstetrical ultrasound examinations differ among countries. In Canada, a routine third trimester ultrasound scan is not offered in the low-risk pregnancy population. This practice is based mainly on results of a meta-analysis published in 2001 that concluded "routine late pregnancy ultrasound in low-risk or unselected populations does not confer benefit on mother or baby." We reviewed in detail each study included in this meta-analysis in order to re-evaluate the Canadian practice regarding routine third trimester ultrasound in the low-risk pregnant population. The meta-analysis included outdated techniques and ultrasound examinations performed in the late 1970s and early 1980s. To assess the effect of routine third trimester ultrasound on perinatal outcome, the interventions prompted by an abnormal diagnostic test result must be considered. None of the trials included in the meta-analysis evaluated the effect of routine third trimester ultrasound on perinatal outcomes in a low-risk population when ultrasound assessment was followed by an altered perinatal management plan. Our assessment of the published evidence regarding routine third trimester ultrasound puts in question the contemporary validity of the conclusion of the 2001 meta-analysis. In fact, the 2001 meta-analysis has recently been withdrawn by the authors.Copyright © 2008 Society of Obstetricians and Gynaecologists of Canada.

31. Screening for fetal growth restriction.

Author(s): Chauhan, Suneet P; Magann, Everett F

Source: Clinical obstetrics and gynecology; Jun 2006; vol. 49 (no. 2); p. 284-294

Publication Date: Jun 2006

Publication Type(s): Journal Article Review

Available in full text at Clinical Obstetrics and Gynecology - from Ovid

Abstract: Since antenatal detection of fetal growth restriction, defined as birth weight <10% for gestational age, can reduce perinatal morbidity with antepartum testing and use of Doppler, it is imperative that there be a greater effort to detect the growth abnormality. According to a well-conducted randomized clinical trial, all uncomplicated pregnancies should have sonographic assessment of birth weight at 30-32 weeks and at 36-37 weeks. An increased awareness not only of the risk factors but also of the associated probability of abnormal growth can identify the cohorts that would benefit from uterine artery Doppler in 2nd trimester. Among patients at risk for suboptimal growth, Doppler of the umbilical artery improves the detection rate.

32. Routine ultrasound screening in the third trimester: A population-based study

Author(s): Sylvan K.; Rydhstroem H.; Ryding E.L.

Source: Acta Obstetricia et Gynecologica Scandinavica; Dec 2005; vol. 84 (no. 12); p. 1154-1158

Publication Date: Dec 2005

Publication Type(s): Article

Available in full text at Acta Obstetricia et Gynecologica Scandinavica - from John Wiley and Sons

Abstract: Background. No population-based study has evaluated the effects of third trimester ultrasound screening on prognosis. Objective. To study the effects of routine ultrasound screening in the third trimester on perinatal/infant mortality, prevalence of small for gestational age infants (SGA) and low Apgar score. Study design. Two university clinics using routine ultrasound screening in the third trimester were compared with seven county or district hospitals with no routine screening. Deliveries between 1985 and 1996 were included. In all, 16 municipalities including 56 371 pregnancies with routine screening were compared with 59 municipalities and 153 355 pregnancies without third trimester screening. An observational design was applied, using data stored during pregnancy, delivery, and during the first year (infant mortality) at the Swedish Medical Birth Registry, The National Board of Health and Welfare. Odds ratio with 95% confidence interval was used in the evaluation. End-points included incidence of SGA, perinatal/infant mortality, Apgar score at 5 min, cesarean section and instrumental delivery in areas with versus without routine third trimester screening Results. No significant difference was seen in the prevalence of the most extreme SGA (< -3 SD from the mean), perinatal complications including cesarean section or instrumental delivery, or perinatal/infant mortality between units with versus without routine ultrasound screening in the third trimester. Conclusion. Added to the findings of previous small randomized studies, it seems as if routine third trimester ultrasound screening in an unselected population does not reduce perinatal mortality or early neonatal morbidity, expressed as Apgar scores or SGA. © Acta Obstet Gynecol Scand 2005.

Database: EMBASE

33. Ultrasound scans reduced the risk of small for gestational age infants and increased antenatal interventions in low-risk pregnancies

Author(s): Young D.; McKenna D.; Tharmaratnam S.; Mahsud S.; Bailie C.; Harper A.; Dornan J.

Source: Evidence-based Obstetrics and Gynecology; Mar 2004; vol. 6 (no. 1); p. 6-7

Publication Date: Mar 2004

Publication Type(s): Short Survey

Database: EMBASE

34. A randomized trial using ultrasound to identify the high-risk fetus in a low-risk population.

Author(s): McKenna, Daniel; Tharmaratnam, Suresh; Mahsud, Samina; Bailie, Carolyn; Harper, Ann; Dornan, James

Source: Obstetrics and gynecology; Apr 2003; vol. 101 (no. 4); p. 626-632

Publication Date: Apr 2003

Publication Type(s): Research Support, Non-u.s. Gov't Randomized Controlled Trial Clinical Trial Journal Article

Available in print at Patricia Bowen Library and Knowledge Service West Middlesex university Hospital - from Obstetrics and Gynecology

Available in full text at Obstetrics and Gynecology - from Ovid

Abstract:OBJECTIVETo evaluate the effect of introducing two biophysical ultrasound examinations in a low-risk antenatal population. Scans were performed at 30-32 weeks' gestation and 36-37 weeks' gestation.METHODSScans assessed placental maturity, amniotic fluid volume, and estimated fetal weight. One thousand nine hundred ninety-eight low-risk patients were randomized at 30 weeks' gestation to a control group receiving standard antenatal care, or to the study group who also received an ultrasound scan. Outcome measures were frequency of small for dates (less than 10th percentile at birth), intervention rates, and admissions to neonatal intensive care.RESULTSThe proportion of infants assessed as small for dates at birth in the study group was 6.9% (69 of 994) compared with 10.4% (104 of 999) in the control group (P =.008). The rates of intervention in the study and control groups were 31.3% (313 of 999) and 16.9% (169 of 999), respectively (P <.001). Twenty-eight (2.8%) neonates in the study group were admitted to the neonatal unit compared with 34 (3.4%) in the control group (P =.532).CONCLUSIONIntroduction of an ultrasound scan at 30-32 weeks' and 36-37 weeks' gestation may reduce the risk of a growth-restricted infant and increases antenatal interventions. Rates of admission to a neonatal unit are not significantly affected.

Database: Medline

35. Failure of intensive fetal monitoring and ultrasound in reducing the stillbirth rate.

Author(s): de la Vega, Alberto; Verdiales, Maribelle

Source: Puerto Rico health sciences journal; Jun 2002; vol. 21 (no. 2); p. 123-125

Publication Date: Jun 2002

Publication Type(s): Journal Article

Available in full text at Puerto Rico Health Sciences Journal - from Free Access Content

Abstract: Although highly popularized among obstetricians, there are conflicting results regarding the efficacy of high-resolution ultrasound and other fetal well-being tests on improving neonatal outcome and morbidity. To assess the impact of unrestricted fetal well-being tests and sonographic evaluations on the stillbirth rate, we evaluated a total of 1,810 pregnancies 20 weeks of gestation or more from a single private clinic serving a mixed population of high and low-risk patients. All patients were performed high-resolution sonography during each trimester of pregnancy. In addition, on each prenatal visit, fetal heart rate, position and amniotic fluid index were documented by a limited sonographic scan. Further sonographic studies were done whenever deemed necessary depending on the clinical situation. Biophysical profiles were performed in the third trimester at any time a risk factor was identified, and repeated as frequently as estimated necessary. All cases of fetal death in utero were documented and the associated maternal risk factors assessed. A total of 14 stillbirths occurred among the 1,810 patients. The stillbirth rate for this population was determined to be 7.7/1000 births (U.S. national average of 6.7-7.8/1000 births). The most common associated maternal complications were Diabetes (4 cases) and Antiphospholipid syndrome (3 cases). All except

for one fetus lost at 37 weeks had at least one identifiable maternal risk factor. These results prove that intensive fetal surveillance, even when unrestricted by economic concerns, has limited effectiveness in avoiding fetal demise. This is most probably due to acute placental and cord accidents that cannot be detected promptly enough or that are simply unavoidable.

Database: Medline

36. Fetal growth velocity in the prediction of intrauterine growth retardation in a low risk population.

Author(s): Owen, P; Khan, K S

Source: British journal of obstetrics and gynaecology; May 1998; vol. 105 (no. 5); p. 536-540

Publication Date: May 1998

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article

Available in print at Patricia Bowen Library and Knowledge Service West Middlesex university Hospital - from British Journal of Obstetrics and Gynaecology (BJOG)

Abstract:OBJECTIVETo determine whether fetal growth velocity derived from two antenatal ultrasound measurements in the third trimester, 28 days apart, can identify infants born with anthropometric features of intrauterine growth retardation.DESIGNProspective observational study.SETTINGDepartment of obstetric ultrasound, Ninewells Hospital, Dundee.SUBJECTSTwo hundred and seventy four low risk women participating in a longitudinal study of serial fortnightly ultrasound in pregnancy.METHODSGrowth velocities of the fetal abdominal area and bi-parietal diameter were calculated from the third from last and last measurements prior to delivery. Receiver Operator Characteristics curves were employed to determine an optimal cutoff point for velocity to predict intrauterine malnourishment.MAIN OUTCOME MEASURESLikelihood ratios for fetal abdominal area and bi-parietal diameter growth velocity in the prediction of growth retarded infants with skinfold thickness 10 generates significant changes in the pre-test probability of growth retardation, whereas a likelihood ratio of 5 to 10 generates only moderate changes.RESULTSFetal abdominal area velocity predicted growth retardation with likelihood ratio 10.4 (95% CI 3.9 to 26) for skinfold thickness; likelihood ratio 9.5 (95% CI 4.6 to 19) for ponderal index; a likelihood ratio 4.7 (2.3 to 8.4) for MAC:OFC. Bi-parietal diameter velocity predicted growth retardation with likelihood ratio 6.5 (95% CI 1.9 to 20) for skinfold thickness but did not predict low ponderal index or MAC:OFC ratio.CONCLUSIONSFetal abdominal area velocity is useful in identifying infants with reduced skinfold thickness or low ponderal index. Prospective evaluation of serial ultrasound and velocity calculation in a selected population at increased risk of growth failure and a clearer understanding of the relative significance of the different neonatal anthropometric measures of impaired growth achievement is necessary before the estimation of growth velocity can be recommended in clinical practice.

Database: Medline

37. Routine examination by ultrasound for the detection of fetal malformations in a low risk population.

Author(s): Brocks, V; Bang, J

Source: Fetal diagnosis and therapy; 1991; vol. 6 (no. 1-2); p. 37-45

Publication Date: 1991

Publication Type(s): Journal Article

Abstract:A low risk population was offered screening for malformations in the second and third trimesters of pregnancy. Of 16,763 scans of pregnancies in the second trimester, 61 malformations were identified (0.36%). In the third trimester, scanning of 10,752 pregnancies revealed 24 malformations (0.22%): in all, in a low risk population 0.58% major malformations were found. The sensitivity for noncardiac malformations of the second trimester scanning was 54.3 with a specificity of 99.9%. The malformations overlooked was a more benign spectrum than the cases diagnosed. The sensitivity for cardiac malformations was less than 20%.

Database: Medline

Strategy 219069

#	Database	Search term	Results
1	Medline	("34 weeks" OR "thirty four weeks" OR "36 weeks" OR "thirty six weeks").ti,ab	15075
2	Medline	exp "ULTRASONOGRAPHY, PRENATAL"/	28811
3	Medline	("growth scan*").ti,ab	56
4	Medline	((ultraso* OR songra*) ADJ2 (prenatal OR antenatal OR preg*)).ti,ab	5140
5	Medline	(2 OR 3 OR 4)	31434
6	Medline	(1 AND 5)	1250
7	Medline	("low risk").ti,ab	47537
8	Medline	(6 AND 7)	81
9	Medline	("still birth" OR stillbirth).ti,ab	6444
10	Medline	(1 AND 5 AND 9)	19
11	Medline	(late* ADJ2 pregnancy).ti,ab	11246
12	Medline	(5 AND 11)	362
13	Medline	(7 AND 12)	21
14	Medline	exp "PREGNANCY TRIMESTER, THIRD"/	13254
15	Medline	("third trimester" OR "3rd trimester").ti,ab	14290
16	Medline	(14 OR 15)	23330
17	Medline	(5 AND 16)	2271

18	Medline	(7 AND 17)	102
19	Medline	(routine* ADJ3 (ultras* OR sonogra*)).ti,ab	3257
20	Medline	(7 AND 16 AND 19)	25
21	Medline	(low* ADJ2 risk*).ti,ab	104224
22	Medline	(5 AND 16 AND 21)	108
23	EMBASE	exp "FETUS ECHOGRAPHY"/	20983
24	EMBASE	((ultraso* OR songra*) ADJ2 (prenatal OR antenatal OR preg*)).ti,ab	7761
25	EMBASE	(23 OR 24)	25787
26	EMBASE	(low* ADJ2 risk*).ti,ab	136149
27	EMBASE	(unselected OR "un selected").ti,ab	26131
28	EMBASE	(26 OR 27)	161580
29	EMBASE	("third trimester" OR "3rd trimester").ti,ab	20244
30	EMBASE	exp "THIRD TRIMESTER PREGNANCY"/	22130
31	EMBASE	(29 OR 30)	30880
32	EMBASE	(25 AND 28 AND 31)	85
33	EMBASE	(routine* ADJ3 (ultras* OR sonogra* OR echogra*)).ti,ab	5209
34	EMBASE	(28 AND 31 AND 33)	36
35	EMBASE	(routine*).ti	35114
36	EMBASE	(25 AND 31 AND 35)	25

37	EMBASE	(26 AND 36)	9
38	EMBASE	(late* ADJ2 pregn*).ti,ab	13128
39	EMBASE	(25 AND 28 AND 38)	21
40	EMBASE	(normal* ADJ2 pregn*).ti,ab	21692
41	EMBASE	("not high risk").ti,ab	105
42	EMBASE	(40 OR 41)	21797
43	EMBASE	(25 AND 31 AND 42)	78
44	Medline	(unselected OR "un selected").ti,ab	18624
45	Medline	(normal* ADJ2 pregn*).ti,ab	15343
46	Medline	("not high risk").ti,ab	71
47	Medline	(44 OR 45 OR 46)	34005
48	Medline	(5 AND 16 AND 47)	132
50	Medline	exp "MASS SCREENING"/	111376
52	Medline	(universal*).ti,ab	88387
53	Medline	(50 OR 52)	197297
54	Medline	(5 AND 16 AND 53)	35
55	Medline	(uncomplicated OR "un complicated").ti,ab	30783
56	Medline	(5 AND 16 AND 55)	91
57	EMBASE	(universal*).ti,ab	101008
58	EMBASE	(uncomplicated OR "un complicated").ti,ab	40844
60	EMBASE	(57 OR 58)	141685

61 EMBASE   (25 AND 31 AND 60)   64