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THE ROLE OF PERINATAL CENTER ON NEONATAL SURGERY FOR LUNG

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Many congenital defects can now be detected before birth. Fetal anatomy, normal and abnormal, can be accurately delineated by prenatal ultrasound. Prenatal diagnosis and treatment has decreased mortality rate in some life-threatening thoracic malformations, such as congenital diaphragmatic hernia (CDH) and congenital cystic adenomatoid malformation (CCAM) of the lung.

Although less severely affected babies survive with modern postnatal surgical care, including extracorporeal membrane oxygenation support, many neonates with CDH defect die despite all intervention because of underdeveloped (hypoplastic) lungs and associated pulmonary hypertension. These lesions, when first evaluated and treated postnatally, demonstrate a favorable selection bias because the most severely affected fetuses often die in utero or immediately after birth. Salvage of these severely affected babies remains an unsolved problem. It has been shown experimentally that repair before birth, allowing the lungs to grow while the fetus remains on placental support, is physiologically sound and technically feasible. Fetal intervention may be recommended in the fetuses of <32 weeks' gestation who in the poor prognosis group (herniated early in gestation, herniated liver, low lung-to-head ratio, severe mediastinal shift, dilated intrathoracic stomach). Presently, fetal intervention for CDH consists of endoscopic (FETENDO) tracheal occlusion to induce lung growth; the hernia is repaired postnatally.

Although CCAM often presents as a benign pulmonary mass in infancy or childhood, some fetuses with large lesions die in utero or at birth from hydrops or pulmonary hypoplasia, or both. Differences in the survival rate of patients with CCAM are related to the associated hydrops. The potentially fatal outcome with large CCAM lesions may also be related to lung hypoplasia secondary to prolonged compression in utero. Most lesions can be successfully treated after birth, and that some lesions resolve or significantly regress before birth. Less than 10% of all fetuses with CCAMs can be successfully treated by emergency resection of the cystic lobe in utero. For lesions with a single large cyst, percutanous thoracoamniotic shunting may be successful.

Mild hydrothorax especially when unilateral is relatively benign. The diagnosis of severe pleural effusion, particularly bilateral once, before 32 weeks' gestation may be associated with considerable morbidity and mortality. A small number of these lesions may progress rapidly and cause lung hypoplasia secondary to prolonged compression. In such cases, if fetal needling fails, thoracoamniotic shunting may improve the outcome by preventing lung hypoplasia and hydrops.

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FETAL WEIGHT ESTIMATION IN DIABETIC PREGNANCIES: THE REAL FACTS

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Ultrasound plays a crucial role in the management of diabetic pregnancies. Among its aims is the correct estimation of fetal weight, especially when suspicion of either macrosomia or IUGR develops during pregnancy. Although ultrasound can detect in many instances the macrosomic fetus, still a debate exists regarding the use of EFW in preventing adverse outcome. A macrosomic fetus may be defined as one whose absolute weight is of 4000-4500 grams and in the diabetic patient the macrosomia is asymmetric (AC>HC), leading to an increased risk of shoulder dystocia. Therefore, US prediction of fetal weight in extremely important.

The question to be asked is: is US a goof tool for EFW in utero? Several methods for EFW exist: clinical, maternal, sonographic (2D, 3D) and by MRI. Over the last 30 years, numerous formulas for EFW have been suggested using sonographic measurements of fetal organs with consideration of AFI and obesity. The predictive accuracy of these formulas varies from +/- 14.8% to +/- 20.2%, and the accuracy is related to the size of the fetus. It was found by many investigators that formulas incorporating AC alone are

better than those using measurements of BPD. Regardless of the formula used, the accuracy of the EFW decreases with increasing BW. In most recent published articles it was found that only 50-100% (median 62%) of macrosomic fetuses are successfully predicted by sonographic measurements, and 15-81% (median 67%) predicted to be macrosomic are confirmed to be macrosomic at birth.
3D US may help assessing fetal BW offering some superiority to standard 2D techniques, but we have to wait for results of studies in progress attempting to establish its clinical relevance in the practice of obstetrics.
In conclusion, it was found that sonographic estimated are no more accurate than clinical estimates of fetal weight. Regardless of method used – the higher the actual BW, the less accurate the BW prediction. To date, no management algorithm involving selective interventions based on EFW, demonstrated efficacy in reducing the incidence of either shoulder dystocia or brachial plexus injury.

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PREVENTION OF MACROSOMIA, CUT-OFF FOR C/S

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For decades Obstetricians have long debated the dilemma of how best to anticipate and manage a mother whose fetus weighs more than 4,000 gr. Macrosomia is defined as an estimated fetal weight or actual birth weight in excess of a threshold value, typically between 4000 and 4500 grams. A common recent definition is a weight of >4500 gr. Using such a definition 1.5% of births will be macrosomic, where if 4000gr is used it will be 9.9%. In contrast to macrosomia which uses an absolute cutoff, large for gestational age (LGA) is defined as actual or estimated weight in excess of a certain value standardized for gestational age. Such results are usually reported as greater than a cut-off percentile (often the 90 th percentile). A fetus at an early gestational age can be estimated to be LGA but not (yet) macrosomic. Because morbidities are related to absolute rather than relative size, macrosomia may be more important to identify than LGA.
All techniques for diagnosing macrosomic fetus has limitations. An accurate diagnosis of macrosomia can be made only weighing the newborn after delivery. Unfortunately, the prenatal diagnosis of fetal macrosomia remains imprecise.
The main risk factors for macrosomia are: prior history of macrosomia (5-10x relative risk); maternal obesity; excessive weight gain during pregnancy; multiparity, gestational age >40 weeks; ethnicity: latinas appear to be at increased risk; maternal birtweight in excess of 4000-5000gr.; age <17 years and male fetus.
There has been a great effort to prevent and predict fetal macrosomia specifically in diabetic mothers. Induction of labor is also a common aproach for prevention of suspected fetal macrosomia and in order to reduce the risk of difficult operative delivery. Compared to expectant management, induction of labour for suspected macrosomia did not reduce the risk of cesarean section (odds ratio 0.85, 95% confidence interval 0.50 to 1.46) or instrumental delivery (odds ratio 0.98, 95% confidence interval 0.48 to 1.98). Perinatal morbidity was similar between groups induction of labor for suspected fetal macrosomia in non-diabetic women does not appear to alter the risk of maternal or neonatal morbidity (Cochrane 2000;2).
For non-diabetic mothers, no clinical interventions designed to treat or curb fetal growth when macrosomiais suspected have been reported.
With the exception of optimal blood glucose management in pregnancies complicated by diabetes, little is known about the prevention of macrosomia. The association between maternal weight, weight gain during pregnancy and macrosomia has led to a proposal that the optimization of maternal weight before pregnancy and limitation of weight gain during pregnancy would be useful strategies. The impact of maternal weight restrictions or outcomes is unclear.
Macrosomia remains a common complication of pregnancy; its prediction is imperfect, and there are no reliable interventions to improve outcome in uncomplicated pregnancies. Elective cesarean section is seldom a suitable alternative, and elective induction of labor appears to increase rather than decrease the cesarean section rate. Uncertainty surrounds the management of suspected fetal macrosomia in pregnant patients with diabetes concerning elective cesarean section or elective induction versus expectant management.