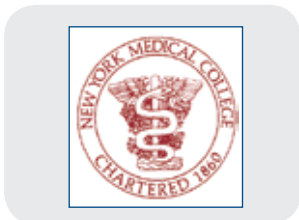


The Perinatal Gazette

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Delivery of Gastroschisis Patients Before 37 Weeks Gestation Is Associated With Increased Morbidities

Gastroschisis is a congenital malformation characterized by eventration of the abdominal contents through a defect in the abdominal wall. The prevalence of gastroschisis is approximately one to four in 5–10,000 live births. Gastroschisis is associated with young maternal age and is more prevalent in males. Compared to the general population, infants with gastroschisis are more likely to have issues with intrauterine growth retardation and intrauterine death and are likely to be small for gestational age. Recent data has shown that the incidence of gastroschisis may be increasing. As understanding of this anomaly has progressed, the management and outcome of infants with gastroschisis has improved. Although gastroschisis is considered to be an isolated malformation, the complications of gastroschisis are numerous and include intestinal atresias, strictures, perforation, sepsis, anatomic or functional short bowel syndrome with dependence on parenteral nutrition, liver dysfunction, and growth failure. These complications are thought to be secondary to interruption in mesenteric blood flow and exposure of the extruded intestines to amniotic fluid. In an attempt to ameliorate this problem, many centers choose to electively deliver preterm neonates with

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A Preconception Health Care Strategy

Julia Lange Kessler, CM, MSM

What is preconception health care (PCC)? PCC is health care for women and men that takes place prior to pregnancy. PCC has grown out of the recognition that pro-active preventative approaches to health are effective and can be successful.

The American Academy of Pediatrics and the American College of Obstetricians and Gynecologists classify the main components of PCC as physical assessment, risk assessment, vaccinations and counseling. For the purpose of this article, the focus will be on the evolution of PCC and the importance of risk assessment throughout life.

In the late 1980's, the Public Health Service convened a multi-disciplinary group of experts in maternal and child health. This panel of experts produced a report, "Caring for the Future: The Content of Perinatal Care." Through a series of observations and experiences, the need for preconception care came to the forefront.

Common medical practices in pregnancy during the preceding decades had produced a negative impact on society. Radiation exposure during pregnancy led to an increase in childhood leukemia. Diethylstilbestrol (DES) increased the rate of cervical cancer in the female offspring of mothers that took DES to prevent miscarriage. It is estimated that 5-10 million people were exposed to DES between 1938-1971. Thalidomide was commonly given for nausea and vomiting during pregnancy but was found to cause severe fetal malformations. This medication is currently used for other conditions.

Legislation was passed in 1962 that allowed the FDA to scrutinize drugs more carefully. A drug classification system was created for pregnancy and lactation. These approaches have improved drug safety in the United States and emphasized the need for vigilance during pregnancy and the preconceptional period.

Although many advances in contraception have been made, fifty percent of all pregnancies remain unplanned. Prior to a woman recognizing that she might be pregnant, (missing her menses), important fetal systems have already formed and are functioning. While early prenatal care leads to better outcomes, early prenatal care is often too late to undo damage that could have been prevented with preconceptional care.

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gastroschisis once lung maturity has been documented via amniocentesis. However, amniocentesis carries its own risks for infection and pregnancy loss. Further, preterm delivery of such infants may result in even higher complication rates by superimposing the morbidities associated with prematurity onto an already complex disease process. Emerging data on late preterm infants indicates that pulmonary morbidities are not the only morbidities experienced by older preterm infants. Late preterm infants are at increased risk for hypothermia, hypoglycemia, hyperbilirubinemia, gastroesophageal reflux, abnormal intestinal motility, and immature suck-swallow reflex. Some of the most important long-term morbidities associated with near term delivery are neurologic, and these may have long term impacts on quality of life. Data has shown that significant brain growth and myelination occur in the late preterm period. The 34-week brain is only 65% the weight of the full-term brain. Synaptogenesis and neuronal organization are major components of the development of late preterm brains. Thus, the developing late preterm brain may be especially susceptible to concurrent metabolic derangements such as hypoxemia, hypothermia, hypoglycemia, hyperbilirubinemia, and electrolyte disturbances; all of which may occur in the perioperative period in infants with gastroschisis. As this new information has emerged it would appear that lung maturity alone should not dictate delivery of infants with gastroschisis and, in the absence of signs of fetal distress, the pregnancy should be carried to term.

To increase our understanding on this topic we conducted a study at the RPC at Maria Fareri Children's Hospital, New York Medical College, Valhalla, NY. We compared the outcome and the morbidities in all preterm infants (< 37 weeks gestational age) and in the subset of late preterm term infants (34–36 weeks gestational age) to term infants with gastroschisis. We also sought to determine if our cohort of patients with gastroschisis had additional congenital malformations.

We extracted data from surgical and state perinatal databases and the medical record of all infants with gastroschisis born during the 18-year time period from 1989 to 2007. Data on gestational age, birth weight, discharge weight, weight percentiles, use of a central venous catheter line, culture positive sepsis, catheter-related sepsis, duration of TPN, time to reach full enteral feeds, gastrointestinal obstruction, perforation, necrotizing enterocolitis, TPN cholestasis, incidence of short gut syndrome (defined by functional characterization during surgical exploration and/or TPN duration > 90 days), and associated anomalies was collected. Preterm infants with gestational ages from 26–36 weeks with uncomplicated hospital courses were used as controls for the preterm group.

Thirty-six records out of 49 patients with gastroschisis were available for review. Twenty-four infants were preterm, and 12 infants were term. Fifteen of the 24 preterm infants were late preterm. Overall, the preterm infants with gastroschisis demonstrated a more significant decrease in weight percentile as compared to term neonates (25% + 18 vs. 10% + 10). As a result, the SGA rate at birth was only 17%, but at discharge became 42% as compared to term neonates at 42% and

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It is widely recognized that one of our most teachable moments with female patients takes place when she comes to our office and has a negative pregnancy test. In a study by Jack Brian, MD, et al. in *The Journal of Family Practice*, that teachable moment was used to point out the need for preconceptional care. 179 female patients presented at the clinic for a pregnancy test which was negative. Dr. Brian used that visit to screen for risk factors that would affect a future pregnancy. Factors included: sexually transmitted infections, genetic(s), medical problems, barriers to care, domestic violence, HIV, reproductive issues, hepatitis, psychiatric, fetal exposure to teratogens and family planning issues. Seventy-eight percent of the patients had at least one risk factor addressed within the year following the negative pregnancy test. (1)

A later study in the *Maternal Child Health Journal*, conducted by Atrash et al., recognized the need to implement PCC in all health visits. Dr. Atrash, points to the need to “intervene before pregnancy to detect, manage, modify, and control maternal behaviors, health conditions and risk factors that contribute to adverse mother and infant outcomes.” Just as one is conscious of cholesterol level or blood pressure readings, we must also become aware of interventions and services that are available to couples and women in need that could improve pregnancy outcomes. (2)

The CDC suggests that providing age-appropriate preconception care delivered systematically for all women will lead to an increase in the number of intended pregnancies as well as increasing reproductive awareness and interconception care (health care visits between pregnancies). In order to achieve these goals, the CDC suggests the following:

- **Individual Responsibility Across the Lifespan**
 - Care providers (family practice, OB/GYNs, pediatricians, midwives, nurse practitioners, physician assistants) to focus individual attention on reproductive health
- **Increase Public Awareness of the Importance of Preconception Health Behaviors and Services**
 - Tag reproductive health messages onto other campaigns such as: Reduction of smoking, Alcohol & Obesity
- **Preconception Visits**
 - Integrate preconception components into primary care visits
 - Provide risk assessment
 - Education and health promotion to all women of childbearing age
- **Interventions for Identified Risks**
 - Increased follow-up for women in need of interventions (as identified during risk screening)
- **Interconception Care**
 - Use the interconception period to provide additional intensive intervention for women who have had a previous pregnancy that ended in an adverse outcome (low birth weight, preterm birth, infant death, fetal loss birth defects)
- **Pre-Pregnancy Check-Up**
 - Offer as a component of maternity care for couples or women planning a pregnancy
 - Risk assessment
 - Health promotion
 - Specific interventions depending on circumstances

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58% respectively. The anticipated intestinal salvage by early delivery was also not achieved as these preterm infants had longer duration of TPN-dependence (38 + 30 vs. 16 + 7) and longer length of hospitalization (54 + 44 vs. 20 + 8). Further, the preterm infants with gastroschisis had a higher incidence of culture positive sepsis overall, as well as catheter related sepsis.

There was a more significant decrease in weight percentile in the late preterm as compared to the term infants with gastroschisis (Figure 1). When compared to late preterm neonates without gastroschisis, late preterm infants with gastroschisis had longer length of stay, which can be explained by their higher sepsis rate, duration of TPN, and delayed ability to achieve full enteral feeds. When compared to the term gastroschisis patients, the late preterm subset had significantly higher postmenstrual age at discharge, leading to higher cost of care (Figure 2). Two of the thirteen late preterm infants had abnormalities on the head ultrasound. There were no associated congenital malformations in our cohort of patients with gastroschisis.

In conclusion, our study showed no benefit of preterm delivery in reducing the morbidities in neonates with gastroschisis. The anticipated bowel protection by early delivery was not achieved as demonstrated by longer time to reach full feeds. In the absence of fetal distress, we do not advocate preterm delivery in infants with gastroschisis. Attempts should be made to avoid preterm delivery, and meticulous attention should be given to the nutritional needs of patients with gastroschisis to prevent growth deficiency.

Figure 1

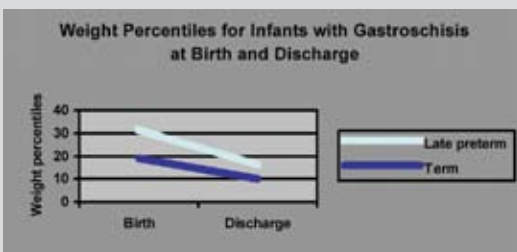
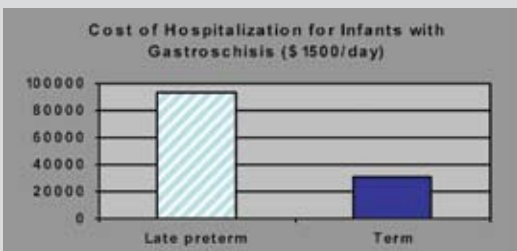


Figure 2



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- **Health Insurance For All Women With Lower Outcome**
 - Improve access to preventive women's health, preconception and interconception care
- **Public Health Programs**
 - Integrate components of preconception health into existing local public health and related programs, including emphasis on interconception
- **Research Needs To Continue To:**
 - Assess effectiveness of interventions
 - Increase the evidence base
 - Promote the use of evidence to improve preconception health
- **Monitoring Improvement**
 - Maximize public health surveillance and related research mechanisms to monitor preconception health (3)

Implementing these suggestions could improve pregnancy outcomes in this country. There is ample evidence that preconception care works. The National Office of Vital Statistics reports that the rate of prematurity in the United States has increased more than 30% since 1981.(4) Given this reality, improvement will require a commitment to preconception care for all women and men of reproductive age. It has been suggested that we engage those of reproductive age where they are the most attuned; on the computer. Consumer awareness messages on MySpace, Facebook, YouTube, eHarmony, Match.com and other sites could be helpful. The March of Dimes has moved in that direction by providing a message about folic acid supplementation on YouTube. More knowledge is needed to establish the most effective practice.

1. Brain, et al. The Journal of Family Practice. 47(1), July 1998, p.33-38.
2. Atrash HK, Johnson K, Adams MM, Cordero JF, Howse J. Preconception Care for Improving Perinatal Outcomes: The Time to Act. Matern Child Health J. 2006 June 14.
3. <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5506a1.htm>
4. Martin, J.A., et al. Births: Final Data for 2004. National Vital Statistics Reports, volume 55, number 1, September 29, 2006.

SAVE THE DATE

7th Annual Regional Perinatal Forum Conference

Obesity, Preconception Health, Pregnancy & Lactation: The Impact of Bariatric Surgery, Nutrition & Exercise

November 12, 2008 • 8:30 a.m. - 3 p.m.

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Keynote Speaker: David A. Kessler, Md, Former Commissioner
Of The United States Food & Drug Administration (FDA)

Guest Speaker: Joseph R. Wax, MD,
Maine Medical Center, Portland, ME

Early Bird Registration Fee: \$45.00
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Addressing the Risk: A Preconception/ Interconception Focus on STIs and Other Infections

Approximately 100 health care providers from Westchester, Rockland, Putnam, and Dutchess counties attended The Lower Hudson Valley Quarterly Education and Networking Conference on April 22, 2008, held at the Chalet on Hudson in Cold Spring, Putnam County. The conference hosted a variety of speakers, including physicians, midwives, and nurses. Welcome remarks were given by Dr. Sherlita Amler, Commissioner of the Putnam County Department of Health. Presentations focused on ways in which we can minimize the risk from STI's during pregnancy, and spoke specifically about Hepatitis B, HPV, and syphilis. Dr. Amler used the example of syphilis to demonstrate the impact that STIs can have on pregnancy and lifelong health. Primary, Secondary, and Tertiary stages of syphilis and the prevalence of this illness throughout history were discussed. Dr. Amler also spoke about many of the risks of congenital syphilis, including the risk of stillbirth and infant death within the first few weeks of conception. Ethical dilemmas and stigmas associated with discussing STIs were addressed, and Dr. Amler emphasized the importance of addressing STIs and syphilis before and during pregnancy.

Julia Lange Kessler, CNM, MSM, emphasized the importance of addressing STIs by both men and women as a part of preconception care well before pregnancy. Ms. Kessler discusses The AAP and ACOG guidelines for physical assessment, risk screenings, vaccinations, and counseling as well as the FDA regulations and pregnancy drug classifications. Ms. Kessler discussed the risks of STIs before and during pregnancy, which include ectopic pregnancy, cervical cancer, and HIV/AIDS. Recommendations for managing gonorrhea, chlamydia and bacterial vaginosis were made. Finally, the 10 CDC recommendations regarding preconception care were outlined.

Lynn Pollock, RN, MSN presented on Perinatal Hepatitis B in pregnancy. Ms. Pollock discussed the prevalence of Hepatitis B (HBV) in the United States and outlined the Perinatal Case Identification procedure during pregnancy. Information on HBV screenings, modes or transmission, and preventative strategies were presented. Ms. Pollock also provided information on HBV serology as well as how to detect acute vs. chronic HBV. Prophylaxis guidelines for mothers, fathers, and infants were also discussed.

Dr. Christine Herde presented on cervical cancer and HPV in pregnancy. Dr. Herde provided algorithms for Pap and HPV screening guidelines, screening guidelines for women with hysterectomy and older women, age-specific management of ASC-US Pap findings, management of ACC Paps and management of other Pap findings. Distinctions between various Pap readings, low vs. high grade dysplasia and Atypical Glandular Cells (AGC) were outlined. Gardasil® prophylaxis for HPV strains 6, 18, and 11 was also discussed. The conference concluded with round table discussions, where representatives from each of the four counties provided feedback on a preconception health screening tool.

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