Gastroschisis: Case Study

Svetlana Dyshko, Eduard Matsko, Alisha Ritenour

Kent State University at Stark

As a group we chose A.R as the patient for this case study to gain more knowledge of her infant's complex condition, as well as the various underlying social issues. The purpose of this case study is to explore current evidenced based literature relating to this patient and the infant. The patient was a 23 years old, gravida 3 para 2 with a history of one abortion. Her last menstrual period was on January 23, 2012. Her estimated date of delivery was November 13, 2012 based on her last menstrual period. The delivery was a cesarean section. Indications for the cesarean section were arrest of labor and baby with gastroschisis. Her infant was a female weighing three pounds and one ounce.

Content

Patient Profile

The patient's medical and surgical history consists of a breast biopsy due to lump on right breast, which was a benign cyst, chronic low back pain, depression, anxiety, chronic pain medication use, HPV, abnormal PAP, cervical procedure, urinary tract infection, kidney stones, diarrhea, vomiting, asthma, tonsillectomy and adendoidectomy, right knee surgery, nasal reconstruction, abdominal cyst, and umbilical repair. Also a history of acute MRSA, multiple times, Giardia, and LEEP x 3. A.R is allergic to Naproxin, Pitocin, and Tdap stating that this causes a rash and fever. Her vaccines are current. Her significant family history includes heart murmurs, DMC and hypertension on father's side.

Current Pregnancy/Antenatal History

A.R's prenatal record from the medical office lists three visits. She was 19.5 weeks when she started her OB care. Her pre-pregnancy weight was 111 pounds and she gained a total of 18 pounds during her pregnancy, so she was 129 pounds. She was 5'0” and her BMI was 21.64 m2.

No complications of gestational diabetes, chronic hypertension, obesity, urinary tract infections, bleeding, smoking, sexually transmitted infections were noted. She does have a history of domestic abuse from current husband, but the father of the infant is her fiance. Family is very positive and supportive of A.R. No chemical exposures related to job noted because client does not have a job, as she is a stay at home mom. Her highest education is first year of college.

The infant was diagnosed with gastroschisis. This is a congenital defect of the ventral abdominal wall, characterized by herniation of abdominal viscera outside the abdominal cavity through a defect in the abdominal wall to the side (most often to the right) of the umbilicus (Ball, Bindler, and Cowen, 2010, p. 1146). It is becoming a more common birth defect among neonates and has been increasing rapidly. The reason for this defect is unknown, but many hypotheses have been speculated such as young adolescent mothers. Siega-Riz, Herring, Olshan, Smith, and Moore compiled a study that indicate women who are younger and have lower body mass indexes are at greatest risk (2009, p. 51). The risk decreases as the age of the mother increases along with BMI.

The increased risk of low maternal age and pre-pregnancy BMI associated with gastroschisis appears to suggest an etiological role related to biological immaturity for this particular birth defect (Siega-Riz et.al, 2009, p. 51). They believe that there may be some relationship to biological immaturity in the pregnancy state that may lead to the development of this birth defect. The young teen’s body may not be mature enough to produce the correct amount of steroids needed for development. Gastroschisis is thought to occur by the eighth week after conception (Siega-Riz et.al, 2009, p. 53). Another factor associated with the defect is the amount of years it has been since the mother began puberty to her first pregnancy. It is unknown

the role that steroid hormones may play in the pathogenesis of gastroschisis; however, they exert biological effects on cell proliferation and differentiation processes that may be important in the proposed pathogenetic mechanism related to abnormal body wall folding (Siega-Riz et.al, 2009, p. 55).

Young maternal age and body mass index are inversely proportional to the risk of gastroschisis. It cannot be concluded that young girls with a high BMI are at a decreased risk. They would have to be classified as morbidly obese to decrease their chances. This is also true with women who are older with a low BMI. The cutoff limit is not defined as to who is safest. The studies do show that women who are younger and who have a lower pre-pregnancy BMI are at the greatest risk (Siega-Riz et.al, 2009, p. 55). Biological immaturity may help explain the association between maternal age, BMI and gastroschisis. Further studies are needed to examine the biological mechanism associated with low body fat and young maternal age for this particular birth defect (Siega-Riz et.al, 2009, p. 56).

Another trend was that mothers of gastroschisis cases were more likely to be of Hispanic and other racial and ethnic groups, to have incomes less than $20,000 in the birth year, to be smokers, to not have taken multivitamin or mineral supplements between three months before to the end of the first trimester, and to have used a vasoconstrictor medication during the first trimester (Siega-Riz et.al, 2009, p. 53).

Because greater than 95% of patients born with gastroschisis can expect to survive, further improvements in the care of these neonates should focus on in-hospital morbidity and mortality (Lao et.al, 2009, p. 97). Their child will spend a median of 35 days in the hospital with the majority of that time spent in the ICU. During the hospital stay, almost one-third of these

children will develop some form of infectious sepsis, and in-hospital mortality would average 3.6% (Lao et.al, 2009, p. 101). Sepsis is the most common complication and care should be taken to decrease this incidence. Sepsis is more likely to occur in patients that have a more complicated surgery, such as a bowel resection, rather than just transferring the abdominal contents back in the abdominal wall.

The main priority of a neonate is to cover the exposed organs from infection and injury. Heat loss will also be greater than normal. Moist sterile gauze should cover the protruding organs and place the infant feet first into a bowel bag that extends up to the nipple line and is secured with ties (Ball et.al, 2010, P. 1147). The infant is taken into surgery right away. Nursing management requires keeping the infant wrapped and placed under a warmer to replace the heat that is lost through the exposed viscera. Starting an IV to infuse lost fluids is also a priority.

During the surgery the nurse is required to educate the family on the birth defect. They will be anxious for updates on the infant's progress. After the surgery is complete, the nurse will be providing post-operative care and inserting a nasogastric tube. One of the most difficult challenges with these infants is their lack of eating. Most are not able to eat or eat enough to provide the correct amount of nourishment. Their bodies will need a supplement to prevent any infections and to heal.

Laboratory Data

Prenatal Tests	Norms	Patient Results	Analysis
Type & Rh	----------	A+	----------
Hemoglobin & Hematocrit	12.6-16.1 g/dL 38-47.7%	14.1g/dl 40.8%	Within normal range Within normal range

Prenatal Tests	Norms	Patient Results	Analysis
VDRL/RPR	----------	Negative	Patient does not have syphilis
Rubella	----------	Immune	Patient immune to rubella
Urine C & S	----------	Negative	Patient does not have a UTI
Chlamydia/Gonorrhea	----------	Negative	Patient does not have chlamydia or gonorrhea
PAP test	----------	LGSIL	Could mean patient has mild dysplasia of the cervix probably due to HPV

Diagnostic Tests (ultrasounds, amniocentesis)

No record of diagnostic tests for A.R.

Prenatal Medications

No record of prenatal medication used. A.R denies use of prenatal medications.

Labor and Delivery Information

A.R had a cesarean section so the length of the first, second and third stage of labor is not applicable. No procedures such as foley bulb, amniotomy, late or early decelerations noted. During the whole pregnancy, she received 1000mL of LR, 0.25mg of Duramorph, 2g of Ancef, and 30mL of Bicitra. The anesthesia medications administered was spinal epidural with astromorph. Patient was negative for Group B Beta Strep.

Postpartum Information

Vitals

Temperature	Heart Rate	Respirations	Blood Pressure	Pain
98.7 F	76	16	118/68	Burning, cramping, and sharp pain of 8 at incision, lower abdomen, and back

Assessment

Breast	Soft, Firm, Non-tender
Uterus	Firm, midline, U 0
Bowel	Abdomen soft, non-distended, BS present REEDA: appropriate
Bladder	Voiding x2
Lochia	Moderate, rubra
Episotomy	Not applicable due to cesarean section.
Homan's Sign/Hemorrhoids	Negative for Homan's sign and hemorrhoids
Emotions	Appropriate
Bonding	Child Not available

Postpartum Laboratory Data

CBC	WBC: 3.3-8.7 K/uL	WBC: 17.98*10^3	High: Body went through "trauma" during cesarean section. Body is releasing WBC to fight off any foreign agents protecting itself against infection.
	RBC: 3.93-5.69 M/uL	RBC: 3.73	Low due to blood loss during cesarean section.
	HGB: 12.6-16.1 g/dL	Hgb:12	Low due to loss of blood. Hct is usually three times the Hgb. So, as Hct drops so does the hemoglobin.
	HCT: 38-47.7%	Hct: 34.5%	Low as a result of blood loss during cesarean section.
	Platelets: 147-347 K/uL	Platelet: 259	Within normal range.
Other	136 -145 mEq/L	Na: 134	Within normal range
	96-106 mEq/L	Cl: 101	Within normal range
	< 140 mg/dL	Glucose: 72	Within normal range
	5-20	BUN: 8	Within normal range
	0.6 – 1.2 mg/dl	Cr: 32	High: Possible indication of renal dysfunction.

Postpartum Medications (only list the meds the patient took during your sift)

Medication	Action	Dosage/ Route	Side Effects	Nursing Intervention
Acetaminophen Type: Antipyretic	Decrease mild pain and fever	325mg/ Oral	● GI: Hepatic failure, hepatotoxicity (overdose). ● GU: Renal failure (high doses/chronic use). ● Hemat: Neutropenia, pancytopenia, leukopenia. ● Derm: Rash, urticaria (Deglin, Vallerand, & Sanoski, 2010).	● Assess type, location, and intensity prior to and 30–60min following administration. ● Administer with a full glass of water. ● May be taken with food or on an empty stomach (Deglin, Vallerand, & Sanoski, 2010).
Sertraline	Antidepressant	50mg/	● CNS: Dizziness, drowsiness, fatigue,	● Monitor appetite and

(Zoloft) Type: Antidepressant/ SSRI	action	Oral	headache, insomnia, agitation, anxiety, confusion, emotional lability, impaired concentration, manic reaction, nervousness, weakness, yawning. ● EENT: Pharyngitis, rhinitis, tinnitus, visual abnormalities. ● CV: Chest pain, palpitations. ● GI: Diarrhea, dry mouth, nausea, abdominal pain, altered taste, anorexia, constipation, dyspepsia, flatulence, increased appetite, vomiting. ● GU: Sexual	nutritional intake. ● Monitor mood changes. ● Assess patient for frequency of OCD behaviors. ● Assess frequency and severity of panic attacks. ● Assess patient for feelings of fear, helplessness, and horror. ● Periodically reassess dose and continued need for therapy. ● Administer as

			dysfunction, menstrual disorders, urinary disorders, urinary frequency. ● Derm: Increased sweating, hot flashes, rash. ● MS: Back pain, myalgia. ● Neuro: Tremor, hypertonia, hypoesthesia, paresthesia, twitching. ● Misc: Fever, thirst (Deglin, Vallerand, & Sanoski, 2010)	a single dose in the morning or evening (Deglin, Vallerand, & Sanoski, 2010).
Multivitamin	Vitamin	1tab/ Oral	● GI: Constipation, dark or discolored stools, blood in the stool, diarrhea, nausea, upset	● Check stool and bowel sounds to see if multivitamin is

			stomach, vomiting ● Misc: Severe allergic reactions including rash, hives, itching, difficulty breathing, tightness in the chest, and swelling of the mouth, face, lips, or tongue ("Prenatal multivitamins," n.d.).	affecting patient. ● Check respirations.

Postpartum Nutritional Assessment

The patient displayed an overall physical appearance that was healthy and strong. Her BMI was 21.7 m2, pre-pregnant weight was 111 pounds and weight gain in pregnancy was 18 pounds, weighing her in at 129 pounds during pregnancy. The recommended weight gain for her BMI is between 25 to 35 pounds (Weight Gain During Pregnancy, 2012). Her BMI was below the recommended but this was due to the fact that she gave birth preterm. The client states she does the cooking and shopping for the household. She does receive assistance from food stamps and WIC. Her 24 hour diets consists of a large portion of protein such as deer meat, hamburger, steaks and occasional snacks. No specific cultural considerations noted. The patient states she typically intakes 32 ounces of fluid and her exercise consists of caring for her six year old child,

chasing the dog and taking care of six horses. Patient states that she will be bottle feeding, which should not change her nutrition at all.

Newborn Data

No information available on infant. Infant taken to Akron General immediately after birth.

Care Plan

Nursing Diagnosis: 1	Risk for infection related to gastroschisis as evidenced by exposed abdominal organs
Short Term Goal	Patient will not show any signs of fever during shift (8 hours).
Long Term Goal	Patient will recover without any signs of infection during the stay in the hospital (Approximately 35-40 days)
Nursing Interventions and Rationales	● Administer antibiotics because they are given prophylactically to treat and prevent infections. ● Monitor lab studies, such as WBCs, because elevated WBCs are an indicative of infection. ● Assess vital signs q1hr because they are suggestive of the infection and sepsis
Evaluation of Goal	Short-term Goal and Long-term Goal: Patient was not in our care, as she was transported to Akron General, so no evaluation of goals were able to be made.

Nursing Diagnosis: 2	Risk for injury related to domestic violence as evidenced by periorbital contusions
Short Term Goal	Patient will verbalize resources that are available to her for treatment of domestic violence by end of shift.
Long Term Goal	Patient will verbalize a plan of action to keep herself and infant safe from abuse by end of hospital stay.
Nursing Interventions and Rationales	● Intervention #1: Educate patient about resources available in the community and online about domestic violence. ■ Rationale: Providing the patient with multiple resources increases the likelihood of following through with the care plan. ● Intervention #2: Identify and prioritize patient's fears, dangers, and needs. ■ Rationale: This will help patient prioritize which needs have to be dealt with immediately, and which can be temporarily left until later. ● Intervention #3: Connect patient to professional help or a support system. ■ Rationale: It takes many months to unravel the abusive

	relationship and rebuild a new life. Domestic violence is usually a violent regime in which the victim is trapped, double trapped, and triple trapped. Patient will need help from various people over an extended period of time (Wild, 2010).
Evaluation of Goals	● Short-term: Patient verbalized resources available for domestic violence in the community and online by end of shift. ● Long-term: Patient accesses and uses resources available to her in the community and online. ● Ongoing evaluation will be needed to determine if their is abuse at home. Many abused pregnant mothers have poor prenatal care, physical trauma, and stress and anxiety. Also, their baby is more likely to be be preterm and have low birth weight (Shah & Shah, 2010, p. 2017). The patient had poor prenatal care, a periorbital ecchymosis, as well as she was taking many depression drugs in the past. The baby had a low birth weight, 3.1 lbs, and was preterm at 34 weeks and 3 days. Further care will also be needed to make sure the patient uses available resources for domestic violence.

Nursing Diagnosis: 3	Pain related to cesarean section as evidenced by a pain level of 8/10.
Short Term Goal	Patient will state a pain of less than 5 by the end of shift (8 hours).
Long Term Goal	Patient will demonstrate and verbalize pain management techniques by end of hospital stay.
Nursing Interventions and Rationales	● Assess pain, noting location, characteristics, and intensity (using a 1-10 scale), because this helps determine the degree of discomfort, effectiveness of medication, and might reveal developing complications. ● Administer medications, such as analgesics and opioids, as indicated, because they relieve pain, enhance comfort, and promote rest.
Evaluation of Goals	● Patient did not meet meet short term goal. ● Patient verbalized use of medication and position changes, as well as ice, to help alleviate pain at the incision. ● Ongoing evaluation would be to keep checking on the pain, as about 17% proportion of mothers, who had a cesarean section, have reported having chronic pain after the cesarean section for 6 months and 33% said that their postpartum pain was was major (Declercq, Cunningham, Johnson, & Sakala, 2008, p. 23-

	24). It would also be important to reinforce pain relieving techniques, as well as try different ways to alleviate pain like using music as a therapy for pain, which has shown to be an effective pain intervention that is cheap, as well as non-pharmacological and non-invasive, and it can also help reduce stress and anxiety (Economidou, E., Klimi, A., Vivilaki, V. G., & Lykeridou, 2012, p. 373)

Nursing Diagnosis: 4	Risk for imbalanced nutrition related to opening in abdominal wall as evidenced by herniation of abdominal organs.
Short Term Goal	Patient will display no signs or symptoms of imbalanced nutrition during 8 hour shift.
Long Term Goal	Patient will maintain an adequate diet during hospital stay.
Nursing Interventions and Rationales	● Intervention #1: Take appropriate measures to decompress the intestines ■ Rationale: To prevent reflux of gastric contents into the lungs ● Intervention #2: Careful positioning of the infant ■ Rationale: This is critical for the maintenance of adequate

	blood flow to the intestines (Gastroschisis, 2012, para. 13).
Evaluation of Goals	● Short-term Goal: Unable to access. Patient taken to Akron General Hospital. ● Long-term Goal: Will need more time to access the effectiveness of this goal. ● On going evaluation is needed to make sure the baby is getting adequate nutrition because an important factor in postnatal growth of gastroschisis baby's is nutrition. If the nutrition is suboptimal, then the baby might show impaired growth (South, Marshall, & Laughon, 2008, p. 705)

Conclusion

As a group we had some ongoing concerns for this patient. Some of this issues include handling the domestic abuse situation, newborn feeding, anxiety, and depression of the mother Through this case study and researching the evidenced based practice we were able to become much more familiar with the topic of gastroschisis, a diagnosis none of us had ever heard of before. I believe the next time we come across a patient with this diagnosis we will be much more comfortable taking care of the infant.

References

Ball, J., Bindler, R., & Cowen, K. (2010). Alterations in gastrointestinal function. *Child health nursing* (pp.1146-1148). Upper Saddle River, NJ: Pearson Education.

Declercq, E., Cunningham, D., Johnson, C., & Sakala, C. (2008). Mothers' reports of postpartum pain associated with vaginal and cesarean deliveries: Results of a national survey. *Birth: Issues In Perinatal Care, 35*(1), 16-24.

Deglin, J. H., Vallerand, A. H., & Sanoski, C. A. (2010). *Davis's drug guide for nurses* (12th ed.). Philadelphia, NY: F.A Davis Company.

Economidou, E., Klimi, A., Vivilaki, V. G., & Lykeridou, K. (2012). Does music reduce postoperative pain? A review. *Health Science Journal, 6*(3), 365-377.

Lab Values. (2007). Retrieved from http://web.missouri.edu/~proste/lab/

Lao, O., Larison, C., Garrison, M., Waldhausen, J., & Goldin, A. (2009). Outcomes in neonates with gastroschisis in U.S. children's hospitals. *American Journal of Perinatology, 27*, 97-101. doi:http://dx.doi.org/10.1055/s-0029-1241729.

Olshan, A., Smith, J., & Moore, C. (2009). The joint effects of maternal prepregnancy body mass index and age on the risk of gastroschisis. Pediatric and Perinatal Epidemiology, 23, 51 57. doi:10.1111/j.1365-3016.2008.00990.X

Patient Education: Understanding Your Complete Blood Count. (2008). Retrieved from http://www.cc.nih.gov/ccc/patient_education/pepubs/cbc97.pdfSiega-Riz, A., Herring, A.,

Prenatal multivitamins. Retrieved from http://www.drugs.com/mtm/prenatal-multivitamins.html

Shah, P., & Shah, J. (2010). Maternal exposure to domestic violence and pregnancy and birth outcomes: A systematic review and meta-analyses. *Journal Of Women's Health (15409996), 19*(11), 2017-2031. doi:10.1089/jwh.2010.2051

South, A., Marshall, D., Bose, C., & Laughon, M. (2008). Growth and neurodevelopment at 16 to 24 months of age for infants born with gastroschisis. *Journal Of Perinatology, 28*(10), 702-706.

Wild., H. (2010). Tips for Social Workers, Counselors, Health Workers, Teachers, Clergy, and Others Helping Victims of Rape, Domestic Violence, and Child Abuse. Retrieved from http://justicewomen.com/help_tips_10_02.html