

Patient Care > Gastroschisis

Introduction

Gastroschisis is a defect in the development of the abdominal wall of the fetus. This opening of the abdominal wall, usually to the right of the umbilicus (belly button), allows variable amount of intestine to protrude into the amniotic fluid. This defect occurs once every three thousand live births.

Prenatal Diagnosis

Gastroschisis is usually detected by ultrasonography. Early detection allows for proper preparation of the parents, obstetrician or perinatologist, neonatologist, and pediatric surgeon.

Associated Anomalies

Fortunately, few additional defects appear with gastroschisis, and those that do appear are usually limited to the intestine. These defects are usually stenosis (narrowing), atresia (absence of a section), or shortened overall bowel length. Rarely, in cases with a particularly small abdominal wall defect, the blood supply of the entire intestine may be compromised, leading to loss of nearly all of the bowel and the condition called short gut syndrome.

Treatment

Delivery is arranged by the obstetrician or perinatologist at around 36 or 37 weeks of gestation. Our experience shows that a scheduled delivery facilitates the overall care and often results in intestine that is not as edematous (swollen) than seen after spontaneous delivery. Moreover, a scheduled delivery time allows the neonatologist to prepare everything the baby will need in advance. Meanwhile, and the pediatric surgeon can have the operating room already scheduled for an appropriate time for the surgery.

After the baby is born, the exposed bowel is immediately protected by sterile saline soaked dressings covered by a plastic wrap, minimizing infection and heat loss. A naso-gastric tube will be placed to keep air and secretions from going into the intestine and to prevent vomiting and aspiration (material going into the lungs). An intravenous line will be placed and antibiotics started. Although, associated anomalies are unusual, a pediatric cardiologist may be consulted.

There are two methods for restoring the intestine to the abdominal cavity and closing the defect — immediate repair or gravity reduction.

Immediate Repair

If no other problems are found which would delay surgery, the baby is taken to the operating room and placed under general anesthesia.

First, a central line is placed. This usually involves a small incision in the neck to locate a neck vein, A catheter tunneled from the chest wall (to minimize the risk of infection) is inserted into the vein. The end of the catheter sits near or in the right atrium (first chamber of the heart). The purpose of This catheter allows intravenous nutrition, which is too concentrated for a regular I.V. in a hand or foot, to be given until the baby can feed normally. Intravenous nutritional support may be needed for a month or more.

If there is no stenosis or atresia of the intestine, the intestine is gently placed back into the abdominal cavity and the defect closed. Occasionally, the amount of protruded swollen intestine cannot be initially replaced because the abdominal cavity does not have the capacity to accommodate the volume of intestine. The intestine pushes up on the diaphragm (muscle separating the chest and abdomen) causes respiratory distress, compromises blood flow to the intestine, and prevents return of blood from the lower body. If he finds that the abdomen is too tight, the surgeon has a couple of options:

A synthetic sac may be sewn to the abdominal wall thereby protecting the protruded intestine. Then in the next 7 to 14 days, the sac is made smaller thereby gradually pushing the intestine back into the abdomen allowing time for the abdominal cavity to enlarge and preventing compression of the lungs. When the intestine is nearly all back into the abdomen, the baby is taken back to the operating room and the abdominal wall is closed.

A small amount of synthetic material is sewn to the abdominal wall and the skin is sewn over the synthetic material. The baby is allowed to grow and the synthetic material may or may not be removed later.

If there is a segment of bowel which is narrowed or absent, immediate repair or a delayed repair may need to be performed. Perforated bowel (ruptured) intestine may need to be brought to the skin surface which complicates the repair and requires additional operations.

Gravity Reduction

Soon after birth, the surgeon gently places the intestines into a clear, sterile silicon sac. The sac has a spring gasket that slips into the abdominal wall defect. Next, the bag is suspended from the baby's bed. While the swelling in the bowel fades and the abdominal wall gradually stretches, the intestines gradually drop back into the abdominal cavity. This process takes about five days. Placement of the bag and the ensuing gravity reduction take place in the NICU. Little sedation is required.

After the bowel has dropped back into the abdomen, the baby is taken to the operating room and the defect is repaired with several absorbable sutures to close the fascia. Whenever possible, the skin is closed around the umbilical

stump to approximate the look of a normal belly button. A central line is placed as described above.

Gravity reduction avoids high pressure in the abdomen. High pressure in the abdomen ("abdominal compartment syndrome"), makes ventilation very difficult, decreases blood flow to the kidneys, and may damage the intestine. And while this method takes more time, the overall risk and time-to-feed seems to be less than with immediate repair. However, defects to the bowel are detected much later. In any case, most babies are now being treated with the gravity reduction method unless the surgeon sees that immediate repair can be accomplished easily.

The time for patience is after the surgery is completed. The intestine that was exposed in the amniotic fluid may be quite edematous (swollen) and may take three to six weeks for bowel function to return. Then it may take more weeks before the baby will be able to take enough oral nutrition for growth.

Complications and Outcome

Any baby undergoing general anesthesia and abdominal surgery has the risks of the anesthesia, bleeding, infection, and intestinal obstruction from scarring.

The primary risk of a central line is infection. As pediatric surgeons, we place hundreds of such lines each year for this purpose as well as for the administration of drugs. The long term metabolic effects of intravenous nutrition on the liver will be explained to you by the neonatologist.

The major complication of the abdominal wall closure as mentioned above is bleeding, infection, bowel injury, and abdominal compression resulting in respiratory compromise (in addition to any intrinsic respiratory problems), bowel compromise, and low blood pressure, all of which may require re-operation

Bowel obstruction from scarring within the abdomen is less than 3%. Gastroesophageal reflux is not unusual in these babies. Most may be managed medically but occasionally surgery is necessary.

Incisional hernias (weakening of the incision) with separation of the abdominal wall muscle occurs in approximately 10% and will require re-operation to repair the defect.

Because of the protruded intestine, the bowel may not be properly rotated (see Malrotation). While malrotation in association with abdominal wall defects rarely causes volvulus, there may be other problems. For example, if the child develops appendicitis, the appendix-and the pain!-may appear anywhere in the abdomen, not just the right lower area. Parents should always mention the history of gastroschisis to the child's care givers.

Most babies with gastroschisis do quite well. Without associated anomalies, one can expect a 95-97% survival.

Disclaimer: Your child's condition is unique. The information contained on this web site is not intended to substitute for advice from a doctor or nurse. If you are unsure about any aspect of your patient's care, please contact us at 303-839-6001, or talk to your pediatrician.

©2005 Rocky Mountain Pediatric Surgery. All rights reserved