Received: 22.12.2015 - Accepted: 06.01.2016

A CASE REPORT: GASTROSCHISIS

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ABSTRACT

Aims: Anterior abdominal wall defects are one of the frequently encountered congenital anomalies. The prenatal diagnosis is important in terms of giving birth in optimal conditions. In this paper, it is aimed to report a case with gastroschisis operated in our hospital, also utilizing the current literature.

Case Report: During the ultrasonography examination performed to the mother in the fourth month of pregnancy, followed up in Lüleburgaz Public Hospital regularly, an image associated with anterior abdominal wall defect was detected and prenatal diagnosis was established. Thereupon transferred to our center, the pregnancy of the patient was followed up cautiously and the baby was born at 38th week. The patient followed up after birth in the newborn intensive care unit, was operated in postnatal first day considering the diagnosis of gastroschisis. When the patient came for follow-ups at postoperative 1st and 3rd months, patient's health was good.

Conclusion: With our case it was aimed to emphasize the importance of delivering these babies before their 40th week by diagnosing them in their prenatal early period and transferring them to an experienced center regarding health of both mother and the baby.

Keywords: Gastroschisis, prenatal diagnosis, congenital abnormaties

INTRODUCTION

Gastroschisis is a congenital anterior abdominal wall defect characterized by evisceration of intra-abdominal organs without covering membrane through a defect in form of cleft on the right side of umbilical cord.

It means "cleft belly" in the Ancient Greek language and was first defined by Calder in 16th century in the medical literature. There were no reports of survivors until Watkins closed the defect on a baby with gastroschisis in 1943 (1, 2).

In cases with gastroschisis the localization and development of the umbilicus remains normal. However, due to failure of the right omphalomesenteric artery a full-thickness anterior abdominal wall defect arises in this area, thus abdominal organs herniate through this defect (3).

In our case, the diagnosis of gastroschisis is established at the prenatal fourth month by the detection of right paraumbilical defect.

CASE REPORT

A female baby from her 25-year-old mother's first pregnancy was born by caesarean section (c-section) as 2005 gr at her 38th gestational week. During the USG examination performed at the prenatal 4th month on the mother followed up regularly in Lüleburgaz Public Hospital, the localization of the baby's intestines was noticed to be outside of the abdomen. The mother was advised about the necessity of removing the fetus. The patient was also examined in Department of Gynecology and Obstetrics, Trakya University School of Medicine and informed about the feasibility of a controlled delivery without terminating the pregnancy. There were no findings in amniocentesis performed at prenatal 5th month.

According to the past medical history of the patient, the mother's pregnancy were following up regularly and she encountered urinary tract infection two times. There was no history of gestational diabetes mellitus, gestational hypertension, vaginal discharge and vaginal bleeding. Both mother and father were smokers-smoking 10

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cigarettes per day. Informed consent was obtained from the parents regarding using the medical records and documents of the baby for scientific purposes.

C-section was performed on the patient in the operation room and after that, she was taken under radiant heater. The baby did not cry at the moment she was born, thus oxygen is delivered to the baby with an estimated cardiac apex beat of 96/min through a mask who had not recovered in spite of tactile stimulus applied. The APGAR score was 6. As arterial oxygen saturation (SpO2) measured as 70%, the baby was intubated and applied positive pressure ventilation with self-expanding balloon. During airway suctioning green colored fluid discharge was observed. The baby was extubated as spontaneous ventilation of the baby recovered and SpO2 value became 99% after aspiration.

Having applied wet dressing to the intestines outside, the case was transferred to newborn intensive care.

The patient was operated due to gastroschisis at postnatal 1st day. As the operating field is cleaned with Batticon, the patient was covered as sterilized in the operation (Figure 1A), umblical cord was tied and cut by 2/0 silk. The intestines eviscerating through approx. 1.5 cm sized right paraumbilical defect were explored (Figure 1B). Stomach, duodenum and appendix were identified, the caecum was mobile. Liver and spleen were observed as localized in intra-abdominal area. The intestinal mucosa was pink colored and in a lifelike manner. No atresia was detected on the intestines by controlling the passage from proximal to distal was controlled. At that moment, stools discharge from rectum was observed. The defect on the abdomen was extended 1 cm more on the mid-line towards cranium, thus the intestines placed into the abdomen following flexing the abdomen skin by stretching (Figure 1C). Fascia is closed by using 3/0 Vicryl® (Edinburg, UK) with running suture method, while skin and abdomen by 3/0 Prolene® (Edinburg, UK) (Figure 1D). The incubated patient was taken to newborn intensive care unit. No postoperative complications have been observed.

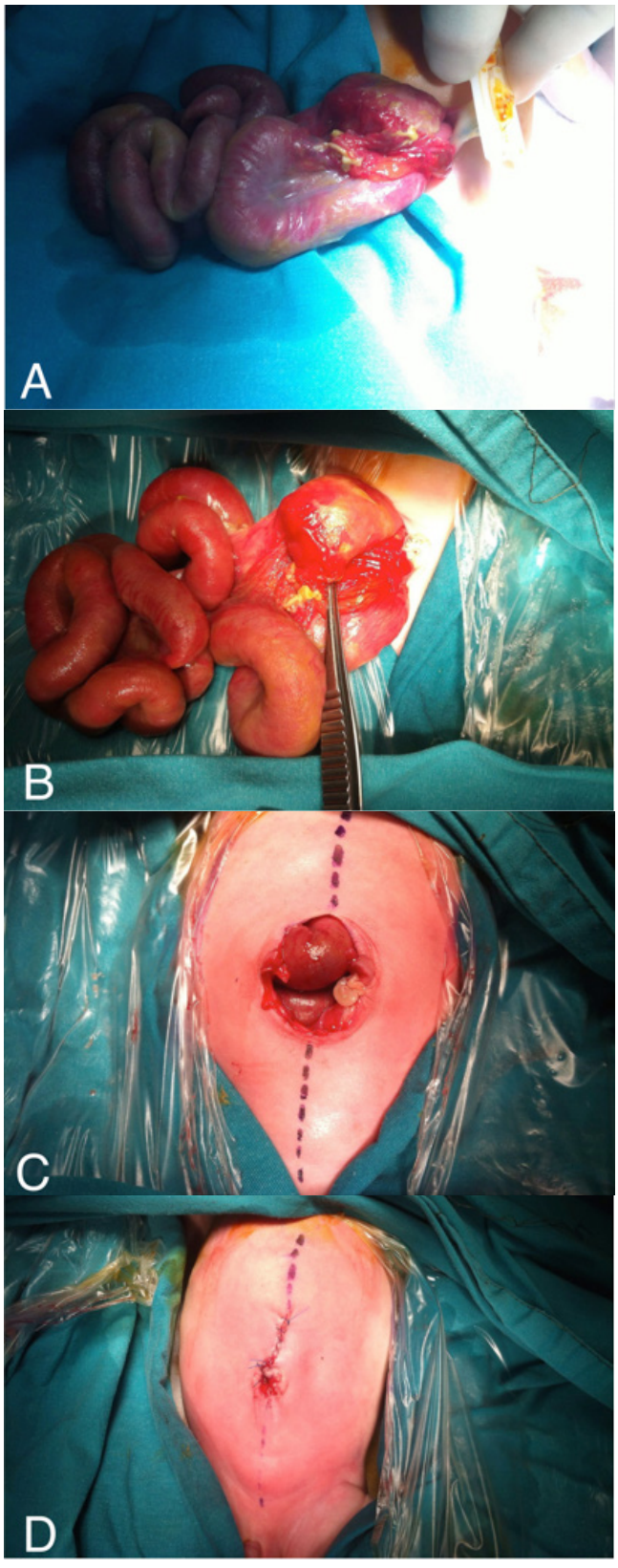

Figure 1: A. Preop image of the intestines B. Exploration of the intestines eviscerating thrpugh approx. 1.5 cm sized right paraumbilical defect C. Placing the intestines into the abdomen D. The image of the defect after primer closure.

DISCUSSION

Gastroschisis remains as one of the congenital abdominal wall defect. Anterior abdominal wall muscles develop from muscle cells migrating from myotomes into the somatic mesoderm, which appears in the end of the 2nd week of intrauterine life. There are various theories established to explain the embryopathogenesis related to the appearance of the anomaly. These theories contain possible pathologies such as a vascular accident associated with right umbilical vein or right omphalomesenteric artery, a rupture occurring on the bottom of umbilical cord during the physiologic herniation of intestines. No matter which of them occurred, the primer cause for the appearance of the anomaly is the inconsistency of the interaction between ectoderm and mesoderm which is normally supposed to compose anterior abdominal wall in the end of the 3rd week of intrauterine development (4).

Gastroschisis, also known as "laparoschisis", is encountered in one of 10000 newborns. The incidence does not vary concerning race or gender. However, it is indicated that being a mother in a very young age rises the risk of gastroschisis (5-7). Another aspect regarding the disease is that for mother to be a smoker. It is shown that smoking increases the risk of encountering anterior abdominal wall defect by 2.1 times (7). Werler et al. (8) reported taking pseudoephedrine increases the risk of gastroschisis by 3 times, while salicylate and acetaminophen by 11 times.

The defect on anterior abdominal wall is a 2-4 cm sized full-thickness abdominal wall defect located on mostly right, rarely left lateral side of umbilical cord. The location of umbilical cord remains unchanged. Frequently intestines and sometimes stomach, colon herniate towards the outside of abdomen. In some cases; bladder, uterus, tubes even testicles and overs may also eviscerate thorough the defect. If liver occasionally is located outside of the defect, this indicates poor prognosis (4).

The organs herniating outside are not covered by membrane. Due to this fact and chemical effect of amniotic fluid, the intestines are inflamed. The quality of the intestines is the major factor, which determinates the prognosis of a patient with gastroschisis. The intestines become thicker due to the contact with amniotic fluid, sometimes they even could contain calcifications. Detection of calcification could lead to the consideration of intestinal perforation. Observing the expending intestinal diameter and the increase of wall thickness in the USG examination demonstrates intestinal damage. Polyhydramnios could be considered if intestinal obstruction occurs.

One of the major techniques contributing to antenatal diagnosis of gastroschisis is to determine alpha-fetoprotein (AFP) and amniotic-fluid acetylcholinesterase levels in mother's blood. Fetal ultrasonography and/or magnetic resonance imaging brings significantly benefit to diagnosis. The fact that AFP level could also rise in fetal anomalies such as spina bifida should always be taken into consideration, thus it is recommended to determine the acetylcholinesterase/pseudocholinesterase ratio in amniotic fluid if encountered with these situations. Valid USG results could only be achieved after 14th-17th gestational week. The ultrasonography image of gastroschisis is seen as small anterior abdominal wall defect located right lateral side of the umbilical cord and intestines dangling from this area to amnion space (4). Colored Doppler Ultrasound could be used to demonstrate normal umbilical cord access (3). The safest transport of newborn is done in mother's abdomen. That is why fetuses, who are expected to be born at risk, should be delivered in centers providing newborn intensive care unit.

There is no consensus about delivering babies antenatal diagnosed with gastroschisis by planned c-section. Furthermore, delivering the baby by c-section does not affect the prognosis significantly except the reduction of the risk of intra-abdominal organ trauma and infection. Predating the birth to a very early date does not bring significant benefit, rather causes problems related to prematurity. If there are no problems associated with fetal distress or intestinal damage, delivering the baby in around 37th week could be relevant (4). The transfer of the baby to a center in time providing antenatal, obstetric, neonatal and pediatric surgery care coordinately remain as the important issue in the management of the disease.

As for babies born with anterior abdominal wall defect, the measures that must be taken and life support given after the birth immediately affect mortality and morbidity significantly. Following the birth of the baby, the segments of the intestines located outside of the abdomen should be covered by sterile wet gauze bandage or plastic film, thus baby should be kept warm and fluid, electrolyte replacement should be applied.

Due to localization of the intestines outside the ventral cavity, these babies are in tendency to lose their body fluids and their body temperature tend to be lowered easily. In order to provide adequate urine output and

maintain the acid-base equilibrium, fluid a few times more than the essential amount for an ordinary newborn could be necessary to replace into the babies with gastroschisis (150-200 ml/kg).

Treatment modalities such as primary closure, establishing a ventral hernia to be closed later, silastic silo are preferred recently (9). the prognosis is considered as good because of the frequency of having associated anomaly is low among the babies with gastroschisis. The mortality rate is known as between 5%-15%, mean 7.7%, provided respiratory circulatory insufficiency, sepsis or complications regarding total parenteral nutrition were not encountered (4). The survival rate is stated as 96% in cases with isolated gastroschisis treated in sufficient centers (10).

Consequently, babies with gastroschisis represent an improved prognosis, parallel to advances in medicine in recent years. We are of the opinion that terminating these pregnancies is not a necessity. Therefore, diagnosing these babies in their prenatal early periods and transferring them to an experienced medical center containing multidisciplinary working facilities will contribute to the health of both mother and the baby.

Ethics Committee Approval: N/A
Informed Consent: Written informed consent was obtained from the participants of this study.
Conflict of Interest: The authors declared no conflict of interest.
Financial Disclosure: The authors declared that this study received no financial support.

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