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Case Report

Left Side Gastroschisis Associated with right Testis Herniation: A Rare Presentation

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Abstract
Gastroschisis is a defect in the abdominal wall which is located almost always to the right of the umbilicus.[1] Left-sided gastroschisis is an extremely rare entity. Only about 20 cases have been reported till date and association of right testis herniating through the defect which is still rarer.
Keywords: *Gastroschisis; Left side Birth defect, Right testis herniation, Primary closure, Antenatal diagnosis*

Case Presentation

A 2hour old male neonate presented to us with abdominal wall defect of 3×3 cms with eviscerated stomach and bowel loops with endotracheal tube in situ. Baby weighed 2300g was delivered to 21year old primigravida mother with uneventful antenatal history by LSCS at 38 weeks of gestation. Antenatal ultrasound scan done at term had revealed omphalocele. Baby didn't cry soon after birth, needing immediate intubation and ventilator support. On physical examination, an abdominal wall defect was identified at the left side of intact umbilical cord along with right testis herniation consistent with the diagnosis of left sided gastroschisis which is an extremely rare entity. The eviscerated small and large bowel loops were thickened with change in colour. No membrane covered the eviscerated bowel loops. Rest of the systemic examination was normal. Echocardiography revealed Ostium secundum Atrial Septal Defect with left to right flow.

Fig1

After initial resuscitation and stabilization baby was connected to ventilator. He was taken to the operating room for repair of the defect at 16 hours of life. The findings at the surgery were abdominal wall defect to left of the umbilicus. The edges of the defect were well formed with eviscerated small and large bowel loops which were oedematous. Right testis herniation, normal 3-vessel cord with two arteries and one vein.

The eviscerated small and large bowel loops were reduced primary closure was done. Right orchidopexy was done and baby was received back to NICU and connected to ventilator. Initially baby was in shock hence resuscitated with fluid boluses and Inotropes were started and baby also had metabolic acidosis, hypoalbum-inemia and hypocalcaemia, which were corrected with sodium bicarbonate, Fresh frozen plasma and calcium supplement respectively. Baby's blood culture grew klebsiella species which was treated with sensitive antibiotics. Baby required 15 days of mechanical ventilation following which he was weaned of ventilator and put on oxygen hood. Gradually started on feeds and was discharged on 40th day of life. Presently he is on on regular follow up.

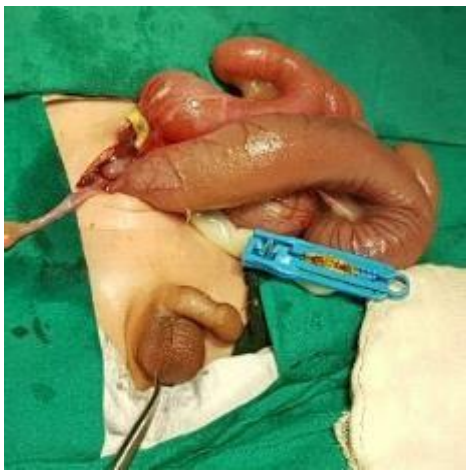

Fig 2

Discussion

Incidence: 1:4,000 live births[2]

In Gastroschisis, the defect in the abdominal wall is located almost always to right of the umbilicus. Left-sided Gastroschisis is a extremely rare entity only 20 cases have been reported till date and association of right testis herniating through the defect which is still more rare.

Theories: [2]

1) Disruption of blood supply to the developing abdominal wall from the omphalomesenteric duct artery by 8 weeks of gestation.
2) Disruption of right vitelline (yolk sac) artery with subsequent body wall damage and gut herniation.
3) Failure of mesoderm to form in the body wall.
4) Rupture of the amnion around the umbilical ring with subsequent herniation of bowel.
5) Abnormal involution of right umbilical vein leading to weakening of the body wall and gut herniation.
6) Abnormal folding of the body wall results in a ventral body wall defect through which gut herniated.

S.No.	Year	Authors	Gestational age (week)	Birth weight (gm)	Sex	Location of the defect	Associated anomalies	Method of closure
1	1988	Blair et al., [1]	-	-	M	Left of umbilicus	None	Primary closure
2	1989	Hirthler et al., [1]	27	900	F	Left of umbilicus	Hyaline membrane disease	Primary closure
3	1989	Hirthler et al., [1]	Term	3800	M	Left of umbilicus	None	Primary closure
4	1993	Toth et al., [1]	35	1540	F	Left of umbilicus	None	Primary closure
5	2000	Thepcharoennirund et al., [1]	36	1700	F	Left of umbilicus	None	Primary closure
6	2000	Thepcharoennirund et al., [1]	40	2450	F	Left of umbilicus	None	Primary closure
7	2001	Pringle KC [2]	34	2065	M	Left of Umbilicus	Left testis herniating through defect	Primary closure
8	2002	Fraser et al., [3]	28	880	M	Left upper quadrant	None	Primary closure
9	2002	Ashburn et al., [1]	37	2800	F	Left of umbilicus	None	Primary closure
10	2004	Ameh et al., [4]	Term	-	M	Left flank	None	Staged closure
11	2004	Orpen et al., [1]	Term	2,750	F	Left of umbilicus	Pseudoexstrophy, ASD, PDA, ureteral reflux	Primary closure
12	2004	Wang et al., [1]	-	-	-	Left of umbilicus	Situsinversus	Staged closure
13	2004	Yoshioka et al., [1]	38	2,604	F	Left of umbilicus	None	Staged closure
14	2004	Yoshioka et al., [1]	34	1700	F	Left of umbilicus	Necrosis of the herniated bowel	Primary closure
15	2006	Gow et al., [1]	39	2,815	F	Left of umbilicus	None	Primary closure
16	2007	Prasun et al., [1]	24 (terminated)	-	M	1.5 cm left and lateral to umbilicus	Multicystic renal dysplasia	-
17	2008	Suver et al., [1]	34	3100	F	Left of umbilicus	Jejunal atresia, microcolon, Absent corpus callosum, optic dysplasia, panhypopituitarism, intestinal atresia	Staged closure
18	2008	Suver et al., [1]	35	2,200	F	Left of umbilicus	Cerebral arterio-venous malformations	Staged closure
19	2008	Suver et al., [1]	34	2200	F	Left of umbilicus	Atrial septal defect, pulmonary valve stenosis	Staged closure
20	2010	Patel et al., [5]	34	2160	F	Left of umbilicus	Small left colon syndrome	Primary closure

Fig 3: Summary of reported cases of gastroschisis[3]

Management

Medical

Infants born with gastroschisis should be carefully handled to avoid injury to exposed bowel loops and minimize fluid losses. Typically, infants are placed in a warm, saline -filled plastic organ bag up to nipple line. IV fluids are started at 1.5 times maintenance along with IV antibiotics .[4]

Surgical

1) Primary closure: Bowel loops are reduced and the fascia and skin are approximated. For defects requiring a prosthetic patch closure, a Gore-Tex patch can be used and skin closed over it.[4]

Fig 4

2) Secondary closure. Astaged approach is frequently required using a silo. As bowel wall edema subsides, bowel will readily reduce into the abdominal cavity. Reduction is aided by having the infant paralysed and receiving endotracheal ventilation to relax the abdominal wall and allow it to stretch and accommodate the bowel. When the bowel has been completely reduced (usually 5-7 days), the silo is removed and abdominal wall is closed. Recently, the use of umbilical remnant patch dressing has been described to allow primary closure without the need for operative intervention. [4]

Baby after closure of defect

Fig 5

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