

The Impacts of the Prenatal Ultrasonogram on the Pediatric Surgery

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Purpose: Prenatal diagnosis of congenital anomalies provides the information for the perinatal treatment, which can be beneficial to the patients. Yonsei University is one of the largest tertiary referral centers in Korea and its achievement in pediatric surgery is representative figure of pediatric surgery in Korea. This achievement is used to assess the impacts of prenatal ultrasonograms on the outcomes of prenatally diagnosed anomalies in the neonates.

Methods: Between 1991 and 2000, 41,458 prenatal ultrasonograms were performed on the pregnant women and the fetal abdominal abnormalities were suspected in 165 fetuses. Of these, 87 fetuses were delivered and the abnormalities were finally confirmed. These 87 fetuses was the basis of this study in terms of their prenatal and final diagnosis with the outcomes.

Results: Among 87 fetuses, 17 cases were terminated in relation to the maternal health or multiple anomalies. Of the remaining 70 fetuses, 55 patients survived. Among the prenatal diagnoses of 87 fetuses, final diagnosis were made from 75 fetuses and the accuracy of the prenatal diagnosis was found to be 60.0% (45/75). Surgical correction was necessary in 44 cases to confirm the diagnosis and of these, 40 patients survived after the surgical correction.

Conclusion: Prenatal diagnosis of the congenital anomalies will improve postnatal outcomes by proper surgical management. However, it can affect the rate terminations of pregnancies even though its accuracy is not so high. To advance the knowledge of the fetal pathophysiology, pediatric surgeons must play an important role in the prenatal diagnosis

in relation to the postnatal treatment of the anomalies. (J Korean Surg Soc 2002;63:69-73)

Key Words: Prenatal diagnosis, Perinatal care

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가
 (1-3)
 가
 (4-6)
 가
 (7,8). screening
 가

1991	1	1	2000	12	31	10
41,458						
202	0.49%				165	
						87
			119		78	가
						15
			21	24	28	
			42			15

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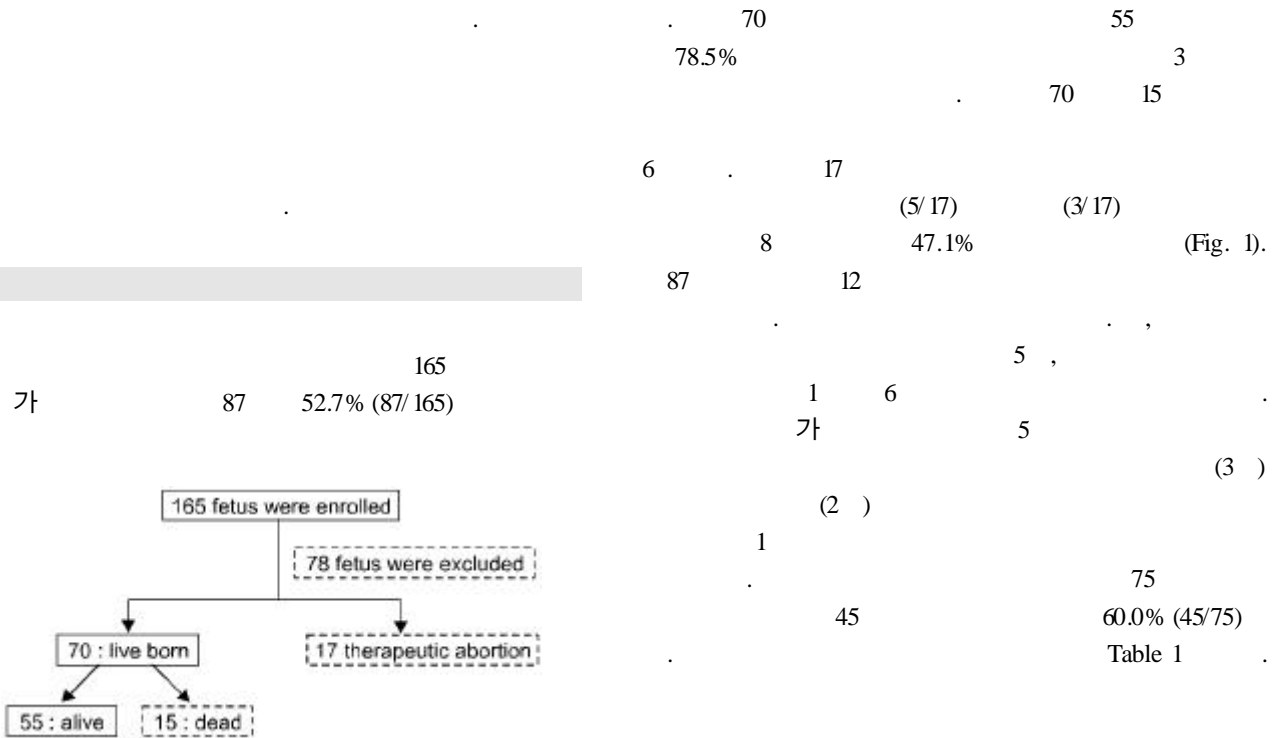


Fig. 1. Patients who reached the primary study line.

Table 1. Distribution of the prenatal diagnosis and their final results

Prenatal diagnosis	Number of case	Result of the prenatal diagnosis			Survivor
		True	Unknown	False	
Duodenal atresia	16	12	1	3	15
Omphalocele	8	8	0	0	2
Small bowel obstruction	8	5	0	3	7
Meconium peritonitis	7	3	0	4	6
Tracheoesophageal fistula	7	1	5	1	0
Congenital diaphragmatic hernia	6	6	0	0	3
Large bowel obstruction	6	1	0	5	6
Hydrops fetalis	5	0	5	0	0
Cystic mass	4	2	0	2	4
Ascites	4	0	1	3	3
Cystic hygroma	3	3	0	0	0
Gastroschisis	3	2	0	1	0
Choledochal cyst	2	1	0	1	2
Hepatomegaly	2	1	0	1	2
Abdominal mass	1	0	0	1	1
Congenital cystic adenomatoid malformation	1	0	0	1	0
Mesenteric cyst	1	0	0	1	1
Oligohydroamniosis (maternal)	1	0	0	1	1
Presacral mass	1	0	0	1	1
Renal mass	1	1	0	0	1
Total	87	46	12	29	55

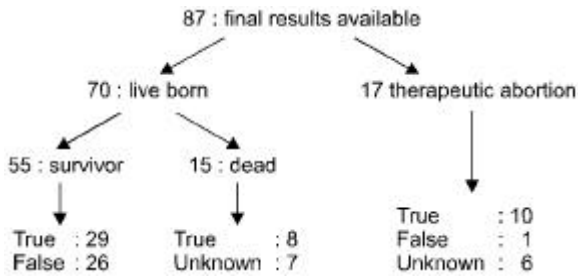


Fig. 2. Accuracy of the prenatal diagnosis.

가
70
26
가 16 ,
가 10
가
40
90.9%
74.1% [40/(10+44)]

(Fig. 2).

44
90.9%
10%
90%
(16-19)
70
78.5%
15

가
(1-3)
24
(11,15)
가

(4,7,20,21)
가

(4,20,21)
14 85%
90% (9,22-26)
가

40 50% (9,24,27)

(1-3)
(1-3)
(5,6,9)
(10)
가
(10)
가
가
(11,12)
가

가
(9)

가 60.0%

(12-14) 가

47%

가 가 20 24
 가 66 80 20 30
 .(28)
 .(13,28)
 .(28)
 가
 가 .(29-31)
 가
 .(1)

REFERENCES

- 1) Harrison MR. The Fetus as a Patients. In: O'Neill JA Jr, Rowe M, Grosfeld JL, Fonkalsrud EW, Coran AG. Pediatric Surgery 5th Edition. St Louis: Mosby Year Book 1998. 33-42.
- 2) Bulas DI. Fetal Ultrasonography in: Avery GB, Fletcher MA, MacDonald MG. Neonatology 5th Edition. Philadelphia: Lippincott Williams & Wilkins 1999.143-159.
- 3) 出生前 診断: 鈴木宏志, 横山?太郎, 岡田 正: 42-48 標準小兒外科學 第3版 第3章 醫學書院.
- 4) Cromie WJ, Lee K, Houde K, Holmes L. Implications of prenatal ultrasound screening in the incidence of major genitourinary malformations. J Urology 2001;165:1677-80.
- 5) Bucher HC, Schmidt JG. Does routine ultrasound improve outcome in pregnancy? Meta-analysis of various outcome measures. Br Med J 1993;307:13-7.
- 6) Ewingman BG, Crane JP, Frigoletto FD, et al. Effect of prenatal ultrasound screening on perinatal outcome. New Engl J Med 1993;329(26):821-7.
- 7) Cacciari A, Pilu GL, Mordenti M, Ceccarelli PL, Ruggeri G. Prenatal diagnosis of bladder extrophy: what counseling? J Urology 1999;161:259-62.
- 8) Baronciani D, Scaglia C, Corchia C, Torcetta F, mastroiacovos P. Ultrasonography in pregnancy and fetal abnormalities: screening or diagnostic test? IPIMC 1986-1990 register data. Prenatal Diag 1995;15:1101-8.
- 9) Queisser-Luft A, Stopfkuchen H, Stolz G, Schlaefer K, Merz E. Prenatal diagnosis of major malformations: Quality control of routine ultrasound examinations based on a five-year study of 20248 newborn fetuses and infants Prenat. Diagn 1998;18:567-76.
- 10) Bagolan P, Giorlandino C, Nahom A, Bilancioni E, Trucchi A, Gatti C, et al. The management of fetal ovarian cayst. J Pediatr Surg 2002;37:25-30.
- 11) Skarsgard ED, Meuli M, Vanderwall KJ, Bealer JF, Adzick NS, Harrison MR. Fetal endoscopic tracheal occlusion (Fetendo-PLUG) for congenital diaphragmatic hernia. J Pediatr Surg 1996;31:1335-1338.
- 12) Harrison MR, Adzick NS, Flake AW, Jennings RW, Estes JM, MacGillivray TE, et al. Correction of congenital diaphragmatic hernia in utero (VI): Hard-earned Lessons. J Pediatr Surg 1993;28:1411-8.
- 13) Ewingman BG, Crane JP, Frigoletto FD, Lefevre ML, Bain RP, Mcnellis D for RADIUS Study Group. Effect of prenatal ultrasound screening on perinatal outcome. New Engl J Med 1993;329:821-7.
- 14) Harrison MR, Mychaliska GB, Albanese CT, Jennings RW, Farrel LA, Hawgood S, et al. Correction of congenital diaphragmatic hernia in utero IX: Fetuses with poor prognosis (liver herniataoin and low lung-to-head ratio) can be saved by fetoscopic temporary tracheal occlusion. J Pediatr Surg 1998;33:1017-23.
- 15) Stolar CJH, Dillon PW. Congenital diaphragmatic hernia and eventration. In: O'Neill JA Jr, Rowe M, Grosfeld JL, Fonkalsrud EW, Coran AG. Pediatric Surgery 5th Edition. St Louis: Mosby Year Book 1998, 819-37.
- 16) Engum SA, Grosfeld JL, West KW, Rescorla FJ, Scherer LR, Eugum SA. Analysis of morbidity and mortality in 227 cases od esophageal atresia and/or tracheoesophageal fistula over two decades. Arch Surg 1995;130:502-8.
- 17) Spitz L. Esophageal atresia: past, present, and future. J Pediatr Surg 1996;31:19-25.
- 18) Grosfeld JL, Rescoria FJ. Duodenal atresia and stenosis : reassessment of treatment and outcome based on antenatal edianosis, pathologic variance, and long-term follow up. World J Surg 1993;17:301-9.
- 19) Dalla-Vecchia LK, Grosfeld JL, West KW, Rescorla FJ, Scherer LR. Engum SAIntestinal atresia and stenosis: a 25-year experience with 277 cases. Arch Surg 1998;133:490-6.
- 20) Nichola VG, Bianchi DW. Prenatal Pediatrics: Traditional specialty definitions no longer apply. Pediatrics 1996;97:729-32.

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- 21) Dominique B. Fetal anomalies and the pediatrician. *Ann NY Acad Sci* 1998;847:3-9.
- 22) Crombleholme TM, D'Alton M, Cendron M, Alman B, Goldberg MD, Klauber GT, et al. Prenatal diagnosis and the pediatric surgeons: The impact of prenatal consultation on perinatal management. *J Pediatr Surg* 1996;31:156-63.
- 23) Redkar R, Davenport M, Howard ER. Antenatal diagnosis of congenital anomalies of the biliary tract. *J Pediatr Surg* 1998;33:700-4.
- 24) Luck CA. Value of routine ultrasound scanning at 19 weeks: a four-year study of 8849 delivers. *BMJ* 1992;304:1474-8.
- 25) DW Skupski. Prenatal diagnosis of gastrointestinal anomalies with ultrasound. *Ann NY Acad Sci* 1998;847:53-8.
- 26) Dillom E, Walton SM. The antenatal diagnosis of fetal abnormalities: A 10 year audit of influencing factors. *Brit J Radiol* 1997;70:341-6.
- 27) Pheps S, Fisher R, Partington A, Dykes E. Prenatal ultrasound diagnosis of gastrointestinal malformation. *J Pediatr Surg* 1997;32:438-40.
- 28) . (, ,), 1992.
- 29) Fisher R, Attach A, Partington A, Dykes E. Impact of antenatal diagnosis on incidence and prognosis in abdominal wall defects. *J Pediatr Surg* 1996;31:538-41.
- 30) Holgersen LO, Subramanian S, Kirpekar M, Mootabar H, Marcus JR. Spontaneous resolution of antenatally diagnosed adrenal masses. *J Pediatr Surg* 1996;31:153-5.
- 31) Bagolan P, Giorlandino C, Nahom A, Bilancioni E, Trucchi A, Gatti C, et al. The management of fetal ovarian cysts. *J Pediatr Surg* 2002;37:25-30.
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