NEONATAL OUTCOME OF BREECH BABIES IN TOA PAYOH HOSPITAL 1984-1989

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ABSTRACT

From 1984 to 1989, a total of 575 breech babies were born out of 21,243 livebirths (2.71%) in the Toa Payoh Hospital, Singapore. There were 259 male and 316 female infants, a sex ratio of 1 to 1.22. There were also no marked differences in the frequency of breech birth among the different racial groups. Many breech babies (385 or 67%) were delivered by Caesarean section and the mortality and morbidity were noted to be low in this series. We had 7 deaths, all weighing below 2000gm and only one, a premature infant, was delivered by Caesarean section.

The majority of the infants had no evidence of asphyxia at birth (87.7%); and for those who had asphyxia (13.3%), two-thirds were delivered vaginally and one-third, by Caesarean section.

The malformation rate in breech babies was twice that of non-breech babies (7.13% vs 3.08%, $p = 10^{-6}$). Most birth defects were minor in nature. Only 10% of birth defects were major malformations.

5.9% (34) of all the breech babies were low birth weight (LBW), 1/3 (11) of them were delivered by Caesarean section with one death. However, there was no increasing trend of Caesarean section for LBW breech infants in the Hospital. Over the past 6 years, out of the 23 LBW breech babies delivered vaginally, 6 deaths were noted.

There were 13 breech stillbirths, the majority of which were macerated (7/13 or 53.8%). The stillbirth rate (SBR) for breech was 22 per 1000 breech livebirths and stillbirths. The SBR for babies born normally was 5.15. The corrected breech SBR was 18.7 after exclusion of lethal malformations.

There was significant difference in lung complications in breech babies, between those delivered vaginally (8.42%) and by Caesarean section (3.38%). ($x^2 = 5.747$, $p<0.05$)

Fourteen or 2.43% of the breech babies had evidence of birth trauma. Birth injury in breech babies delivered by Caesarean section was even less common (only 3 had minor skin lesion).

Keywords : Breech babies, outcome of neonates, Singapore

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INTRODUCTION

It has been reported that infants who begin the birth process in breech presentation are in greater danger of birth trauma and intrapartum death than their cephalic peers[1]. There were more breech babies delivered by Caesarean section in recent years presumably to avoid trauma associated with vaginal delivery[2].

It is the purpose of this paper to review retrospectively the outcome of breech babies over a period of 6 years (1984-1989) in the Toa Payoh Hospital. The neonatal outcome of breech babies born vaginally or delivered by Caesarean section is compared. The outcome of low birth weight breech babies is also discussed.

METHODS AND MATERIALS

Data of all breech births, from January 1984 to December 1989, which include race, sex, birthweight, gestational age, congenital defects, infections, 1 minute Apgar Scores, mode of delivery were recorded in the Department of Neonatology Infant Record Book. All the breech babies were examined within 24 hours after birth by the doctors of the department, if not at birth when they were called to be present because of potential complications. Data of neonatal breech deaths with autopsy reports where applicable, were similarly recorded in the Infant Death Book and data of breech stillbirth were extracted from the Stillbirth Record book as well as the Stillbirth Death Certificate Register. All these data were stored in the Personal Computer (PC) using the DB3Plus programme. They were retrieved from the PC for study. During this period of study, no protocol management of breech presentations was introduced.

Since this is a retrospective study, there are difficulties and shortcomings of data collection. Some of the obstetric records are no longer available. For example, there were incomplete records whether the Caesarean sections were an elective or emergency procedure. Also, most breech babies were seen twice postnatally, once at 2 weeks after discharge and once at 6 weeks.

RESULTS

Incidence, Perinatal Mortality Rate

From January 1, 1984 to December 31, 1989, 21,243 babies were born alive in the Toa Payoh Hospital, Singapore, 575 of them were breech babies. There were 13 breech stillbirths and 7 breech infants died after birth (Table I). Autopsy was performed on 2 breech deaths and the other 5 deaths had no autopsy because of the religious objections.

The Perinatal Mortality Rate (PNMR) of breech infants was 34 per 1000 breech livebirths and stillbirths. It was 10.6 for babies born normally. The corrected breech PNMR, after exclusion of major lethal congenital malformations was 29.1. (Table II)

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Table I - Livebirth & Stillbirth breech infants 1984–1989 Toa Payoh Hospital

Year	Livebirths		Percentage of Breech Livebirths	Stillbirth Breech	Neonatal Breech Death
	Breech	Total			
1984	105	4518	2.32	2 **	2
1985	118	3939	2.99	2 *	3
1986	92	3325	2.77	3 *	1
1987	117	3456	3.38	3 *	1+
1988	82	3373	2.43	0	0
1989	61	2632	2.32	3 **	0
Total	575	21243	2.71	13 (7*)	7

* Denotes a macerated stillbirth
\+ Delivered by Caesarean section

Table II - Stillbirth rates, perinatal mortality rates and death rates of breech infants & non-breech infants 1984–1989

	Breech Infants	Non-breech Infants
SBR	22.00	5.15
PNMR	34.00	10.60
NMR	12.17	6.90

SBR = Stillbirth Rate
PNMR = Perinatal Mortality Rate
NMR = Neonatal Mortality Rate

Sex and Race

We examined the prevalence at birth of breech babies of the 4 major racial groups in Singapore and there was no significant difference among the Chinese (2.8%), Malays (2.7%), Indians (2.2%) and others (1.8% - Eurasians, other Asians). We also observed that there were more female breech infants in this 6-year period. The female to male ratio was 1.22 : 1.

Birthweight

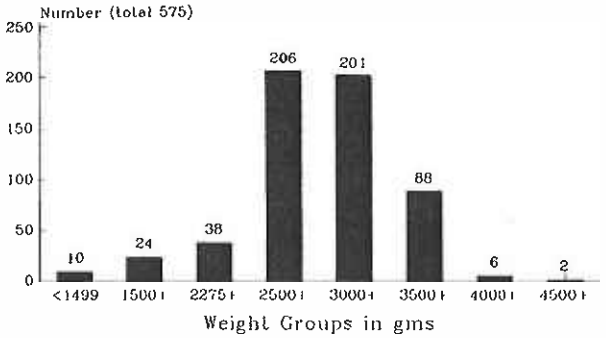
The birthweight distributions of breech babies are shown in Fig 1. There were 72 (12.5%) low birthweight (LBW) infants (2500g or less). Since Asian babies are smaller in size, if a birthweight of 2270g or 5 lbs is taken as the cut off point for LBW only 34 or 5.9% were therefore considered as LBW.

Mode of delivery

Most breech babies were delivered by Caesarean section (385 or 67% of all breech babies) of which 31 or 8% of all Caesarean sections for breech presentations were repeat Caesarean section.

There were 7 breech neonatal deaths, 6 delivered vaginally and one by Caesarean section. (Table I)

Fig I - Breech Babies by Birthweight 1984 – 1989



5.9% of breech babies are < 2270g

Asphyxia neonatorum of breech babies

By considering those babies who had an Apgar Score of 7 or less at one minute of life as asphyxiated birth, 12.3% (71/575) of all breech babies had evidence of asphyxia neonatorum. Among those who were considered as asphyxiated, 2/3 (47/71) were born vaginally and 1/3 were delivered by Caesarean section (Table III). Statistical analysis showed that there were significantly more asphyxiated babies in breech babies born vaginally than those delivered by Caesarean section ($x^2 = 38.55$, $p<10^{-6}$). The issue of the severity of the asphyxia was not addressed in this study.

Congenital Malformations

It has been reported that congenital anomalies were three to five times more common among breech infants[1]. We encountered 41 infants with birth defects, mostly minor in nature. 4/41 had major defects (Table IV). The malformation rates for breech babies (7.13%) and non breech babies (3.08%) are statistically significant ($p<10^{-6}$).

Table IV - Congenital Malformations in breech infants 1984-1989 Toa Payoh Hospital

Type	Number	Outcome
Major	(4)	
Achondroplasia	1	Died
Hydrops Fetalis	1	
Down Syndrome	1	
Congenital Heart Disease	1	
Minor	(37)	
Deformation of Limbs	13	
Genital Defects	12	
Dislocation of Joints	7	
Oral/Cervical	5	
Total	41	

Malformation rate for breech babies = 7.13%(41/575)
Malformation rate for non-breech babies = 3.08%
$p<10^{-6}$

Table III - Complications of breech babies

Complications	No. of breech babies delivered vaginally	%	No. of breech delivered by LSCS	%	Total	% of all breech babies (575)	p value
Asphyxia	47	66.2	24	33.8	71	12.3	$<10^{-6}$
Birth Injuries	11*	78.6	3	21.4	14	2.4	= 0.00005
Respiratory Disorders	16	55.2	13	44.8	29	5.0	<0.05

* = including 1 case of subarachnoid haemorrhage

Birth Injuries

Birth injuries are defined as injuries associated with mechanical forces producing haemorrhage, oedema, tissue disruption or alteration of organ function during the intrapartum period. Fourteen (2.43%) breech babies had evidence of birth injuries at birth.

Most of the birth injuries were minor in nature (Table V). Of all the breech infants delivered by Caesarean section, only 3 had evidence of birth injuries. However, they sustained only minor skin abrasions. Also most of the birth injuries occurred in babies born vaginally (p = 0.00005, Table III).

We have not seen any case of umbilical cord prolapse or trauma in the 6-year period.

Table V - Birth Injuries in breech babies

Site	Number
Localised Injuries of Genitalia	6
Skin Abrasion or Bruises of Limbs, Buttocks	4*
Nerve Palsies (Brachial Plexus)	3
Subarachnoid Haemorrhage	1
Total	14

* 3 babies were delivered by Caesarean section

Table VI - Respiratory Disorders of breech infants

Mode of Delivery	Total Breech Babies	TTNB	MAS	Pneumonia	Total	% with Respiratory Disorders
Caesarean Section	385	3	2	8	13	3.38%
Vaginal Delivery	190	8	3	5	16	8.24%
					29	p<0.05

TTNB = Transient Tachypnoea of newborn
MAS = Meconium Aspiration Syndrome

Respiratory Disorders in Breech Infants

Twenty-nine breech infants had respiratory disorders after birth. However, there was significant difference in their mode of delivery (Table VI). 8.42% of the breech babies delivered vaginally had respiratory disorders but only 3.38% of breech babies delivered by Caesarean section developed such complications ($x^2 = 5.747$, $p<0.05$) (Table III).

Low Birth Weight (LBW) Breech Infants

LBW infants are those whose birthweight is less than 2270gm (5 lbs) at birth. 5.9% (34/575) of the breech babies were LBW or premature. 1/3 (32.3%) or 11 of these LBW breech infants were delivered by Caesarean section. The number of LBW infants delivered by Caesarean section is shown in Table VII. There was no increasing trend of Caesarean section for LBW infants over the 6-year period. As a comparison 4.2% of the non breech babies were premature (p = 0.057).

Mortality

Seven LBW breech infants died postnatally, only one was delivered by Caesarean Section (Table VII). The principal cause of most breech deaths, except one with malformation, were related to prematurity and not to the modes of delivery. Only two had autopsies, both were premature and the causes of deaths were birth asphyxia and pneumothorax with intraventricular haemorrhage.

Table VII - Low Birthweight breech infants (1984 - 1989)

Year	Total No. of LBW Breech Infants	Total No. Delivered By Caesarean Section	Total Deaths of LBW Breech	Cause of Death
1984	8	2	2	Asphyxia(VLBW)
				VLBW & RDS
1985	11	2	3	Hydrops Fetalis
				VLBW & RDS
				VLBW & RDS
1986	6	3	1	ELBW & RDS
1987	5	3	1*	VLBW & RDS
1988	1	0	0	
1989	3	1	0	
Total	34	11(32.2%)	7(20.6%)	

$x^2 = 3.628$
$p = 0.057$
Significantly more LBW babies in Breech infants than in term infants

LBW = Low Birthweight
VLBW = Very Low Birthweight (1000-1500g)
ELBW = Extremely Low Birthweight (<999g)
* = Delivery by Caesarean Section

DISCUSSION

Breech babies are known to have higher risk of birth trauma and intrapartum death than the cephalic babies. Neonatal outcome of breech babies delivered vaginally or by Caesarean section in the Toa Payoh Hospital is studied. Our findings confirmed that breech babies have higher perinatal mortality rate than the cephalic babies, even after exclusion of lethal congenital malformations.

The breech perinatal mortality rate (PNMR) of 34 per 1000 births was much higher than a PNMR of only 8.32 for the entire population of babies born during the same period in the Toa Payoh Hospital[3]. It is also higher than a PNMR of 10.6 for babies born normally (Table II).

More and more obstetricians have resorted to Caesarean section as the route of choice for delivery of almost all viable breech presentations presumably to avoid the excessive perinatal morbidity and mortality rates associated with vaginal delivery of breech presentation[4]. In this hospital, 2/3 of the breech babies were delivered by Caesarean section and 1/3 by vaginal route. The complications encountered in these 2 groups of babies are shown in Table III.

There were 7 neonatal deaths and 13 stillbirths. Of the 7 neonatal deaths, one had hydrops fetalis not compatible with life and six were VLBW weighing 1500gm or less. Only one was delivered by Caesarean section.

Although our weight specific mortality rates have improved over the past 8 years and more VLBW infants survived[3], we have not seen an increase in the use of Caesarean section for LBW or premature breech babies delivered by Caesarean section.

It was reported that congenital anomalies had an associated increased incidence of three to five times more common among breech infants[1]. Our malformation rates for breech babies was about 2.3 times that of cephalic babies ($p<10^{-6}$). Most congenital birth defects were minor in nature.

Low Birthweight Infants

Preterm infants presenting as a breech in labour have the serious dangers of umbilical cord prolapse and trapping of the head behind an incomplctely dilated cervix. These possibly explained an increase in the use of Caesarean section for preterm breech delivery and retrospective controlled study in the late 70s suggested that Caesarean section for preterm breech presentation will result in fewer deaths, less intracranial haemorrhage, and fewer infant with long term traumatic scquelae than if the infants had been delivered vaginally[5].

The premature rate in breech presentation is three times that of cephalic presentations according to Morgan & Kane[6]. From 1984 - 1989, 5.9% of our breech babies were premature and 4.2% of cephalic babies were premature (p=0.057). Al-

most 1/3 of these LBW breech babies were delivered by Caesarean section and only one baby (9.1%) died from Respiratory Distress Syndrome (RDS). However, 6 other babies (26%) belonging to the group of LBW breech babies who were delivered vaginally died, majority of them had RDS. The outcome of these LBW babies therefore depends largely on the neonatal management of RDS.

Many breech stillbirth deaths were unavoidable as more than half of which were macerated stillbirths. Two breech babies had lethal birth defects (one a thanatophoric dwarf, the other had congenital hydrocephalus). We had not encountered major complications such as prolapse of umbilical cord, serious birth injuries etc in our study. If one wants to see a further decline in PNMR in breech babies, avoidance of birth asphyxia and further improvement of management of prematurity (with prevention of preterm births also) and RDS should be able to assist us to achieve the goal.

Caesarean section minimises the potential for trauma and hypoxia in breech presentations, but it does not eliminate it, even if every breech could be delivered by Caesarean section, as observed in Gimovsky and Petrie's recent review[7]. They have developed a protocol for a trial of labour for some carefully selected patients. However, one should follow up further results of this regime to see whether it is practical to adopt in the developing countries.

References

1. Brenner WE, Bruce RS, Hendricks CH. The characteristics and perils of breech presentation. Am J Obstet Gynecol 1974; 118: 700-12.
2. Goethals TR. Cesarean section as the method of choice in management of breech delivery. Am J Obstet Gynecol 1956; 71: 536-52
3. Ho NK. A Study of 8 Year Neonatal Deaths (1982-1989) of Toa Payoh Hospital, Singapore. Singapore Med J 1991; 32: 138-41.
4. Green JE, McLean F, Smith LP et al. Has an increased Cesarean section rate for term breech delivery reduced the incidence of birth asphyxia, trauma, and death? Am J Obstet Gynecol 1982; 142: 643-8.
5. Duenhoelter JH, Wells CE, Reisch JS et al. A paired controlled study of vaginal and abdominal delivery of the low birth weight breech fetus. Obstet Gynecol 1979; 54: 310-3.
6. Morgan HS, Kane SH. An analysis of 16,327 breech births. JAMA 1964; 187: 262-4.
7. Gimovsky ML, Petrie RH. The intrapartum management of the breech presentation. Clin Perinatol 1989; 16: 975-86.