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Neurological follow-up of 281 children born in breech presentation: a controlled study

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Abstract

A study was conducted of all children delivered in breech presentation from 1969 to 1977 in the university's department of obstetrics. One-fifth of the deliveries were by caesarean section. Perinatal mortality was high (13.2%) but was due almost exclusively to causes other than the birth itself. The 256 surviving children and their matched controls were neurologically examined at 18 months or at ages varying between 3 and 10 years. The attrition rate was 5.7%, but in most cases data on development were available. Significant differences between the study and control groups existed for only minor neurological dysfunctions.

It is concluded that the main danger of breech presentation is in the associated complications of pregnancy and that there is no reason to advocate a higher frequency of abdominal delivery than the 20% found in this study.

Introduction

To be born in breech presentation is considered a hazardous event for the fetus. Perinatal mortality is considerable, and some reports suggest a high rate of handicap.¹ Some obstetricians therefore regard breech presentation as an indication for caesarean section, whereas others advocate a more selective use of caesarean section. Reported rates for abdominal delivery vary from 10% to 70%.^{2,3}

It is, however, questionable whether it is the delivery in breech presentation itself or rather concomitant variables which affect fetal outcome and sequelae.⁴ Prospective long-term follow-up studies in which these variables are taken into account are scarce.

We have studied perinatal mortality and late neurological morbidity to try to evaluate a fairly conservative obstetric approach in which about one-fifth of deliveries were by caesarean section. Effects of pre-existing complications, such as preterm birth and twin pregnancy, and of interval complications were analysed separately.

Subjects and methods

From 1969 to 1977, 348 infants with a gestational age of 28 weeks or more and weighing over 1000 g were born in breech presentation in the department of obstetrics at this hospital. They represented 5.6% of all infants delivered at the hospital during the period and included 28 twin pregnancies in which one fetus was in breech presentation and the other in vertex presentation. Since the purpose of including the twin pregnancies was to have a highly comparable vertex-born control for each breech-born infant, multiple pregnancies and double breech twins were excluded.

Forty-five of the singletons and one of the twins died in the perinatal period, and four singletons died later. Fifteen singletons and two twins could not be examined (5.7%), but in most cases data were available on their development (table I). Thus the study group comprised 256 singletons and 25 twins (table II).

For each of the singletons we sought a matched control born in the same year. Matching criteria were sex, birth weight, and gestational age of the infant and age, parity, and diastolic blood pressure of the mother. Drop-outs during follow-up (9.4%) were replaced by others. Matching was completely successful in 60% of pairs, but in 15 cases more than one matching criterion did not tally.

Obstetric management was based on fetal size and condition, pelvic capacity, obstetric history, and—after labour had started—rate of

TABLE 1—Details of 17 infants delivered in breech presentation who could not be examined for the study

	No of children
Neonatally normal, no follow-up (two preterm)	8
Complicated neonatal period, no follow-up	1
Congenital anomalies (2 chondrodysplasia; hip dysplasia excluded)	3
Elective caesarean section, abnormal behaviour later	3
Preterm, abnormal behaviour later	1
Assisted breech, 3400 g. Apgar scores 2 and 6, resuscitation. At 6 weeks hyperexcitable. Later squint, speech therapy	1

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TABLE VI—Neurological findings in 72 vaginally born pairs with optimal matching and without congenital abnormalities or interval complications in history. Results expressed as number (%) of children

Vertex presentation	Breech presentation			Total
	Normal	Suspect	Abnormal	
Normal	24 (62)	10 (56)	13 (87)	47
Suspect	9 (23)	5 (28)	2 (13)	16
Abnormal	6 (15)	3 (17)		9
Total	39 (100)	18 (100)	15 (100)	72

Wilcoxon: $z = 1.44$; $p > 0.05$; one-tailed.

TABLE VII—Neurological findings in matched pairs. Figures are numbers of children

Vertex presentation	Breech presentation			Total
	Normal	Suspect	Abnormal	
Normal	28	2	3	33
Suspect	3			3
Abnormal	1	2		3
Total	32	4	3	39

Wilcoxon: $z = 0.31$; $p > 0.05$; one-tailed.

TABLE VIII—Neurological findings in boys and girls

	Vertex presentation				Breech presentation			
	Normal	Suspect	Abnormal	Total	Normal	Suspect	Abnormal	Total
Boys	81	23	33	137	71	36	29	136
Girls	110	26	8	144	96	32	17	145
Total	191	49	41	281	167	68	46	281

controls was diplegic. The proportion of neurological dysfunctions in this group was noticeably lower than that in the older group. The probable explanation is that choreiformity and difficulties in co-ordination, while forming a substantial portion of dysfunctions in the 3-10-year-old children, were either absent or escaped diagnosis in the 18-month-olds. Choreiformity does not manifest itself until the age of 2 or 3,⁷ and co-ordination difficulties are difficult to detect in younger children.

Twins—In the group of 25 twins no significant differences were found. In only two pairs was there a different neurological diagnosis. In both pairs the control was suspect and the breech-born child normal. Contrary to the belief that twins are suitable for comparative investigations of this type, in retrospect even the results of the matching appeared to be worse than those in the singletons. This was due to differences in sex and birth weight. Also 17 of the breech-born infants were second twins, as against eight of the controls.

Sex—Both in breech-born and vertex-born children neurological dysfunction was more common in boys (table VIII). The difference between breech and vertex was small in the boys and larger in the girls, which may be further evidence that dysfunction is more frequent in boys.

Discussion

Perinatal mortality in this group of breech deliveries was very high (13.2%) compared with that among all deliveries in our hospital in the same period (about 2%). The birth process, however, played a smaller part in the deaths. This illustrates that the common practice of distinguishing breech deliveries as a high-risk group should be replaced by considering as such all pregnancies associated with breech position or breech delivery, or both. In our series this group was heavily weighted by an excess of preterm births, intrauterine growth retardation, multiple pregnancies, etc—all of which are important and well-known risk factors for perinatal mortality and for morbidity both in the perinatal period⁸ and subsequently. The small

differences in late neurological morbidity found in this controlled study may as well be attributed to these concomitant variables as to the breech presentation itself, the more so since the study group was at a disadvantage even as compared with the matched controls.

The marginal significance in the original group of 3-10-year-old children disappeared after correcting for residual differences in the matched group. Within the limitations of this study it may be concluded that the relative risk of minor and minimal neurological dysfunction of vaginal birth in breech presentation does not exceed 2.0. Handicap also appeared to occur rarely—though the relative handicap rate may still be high.

Other reports are often difficult to interpret and contradictory. First and foremost in prospective studies, the attrition rate is often high. Our relatively small group of 17 drop-outs included at least one child probably abnormal as a consequence of the breech delivery, three with major congenital anomalies, and three with abnormal behaviour development not due to vaginal breech delivery. They were certainly not comparable with the study group, though had inclusion been possible the results would not have been altered substantially.

In a collaborative project the neurological condition of breech-born children up to one year after birth was worse than that in controls, albeit only in children with low birth weights

(1000-2500 g).^{9,10} Neligan¹¹ found no excess of gross and a doubtful excess of mild neurological abnormalities attributable to breech delivery in 5-year-old children. Hochuli *et al*¹² found about twice as many breech-born infants with early morbidity (acidosis, birth traumas, and congenital anomalies) after vaginal delivery than after caesarean section. Late morbidity—psychomotor retardation, cerebral palsy, and behavioural abnormalities at 4 years—occurred with roughly the same frequency in the two groups.

Manzke *et al*¹³ followed the development of 58 breech-born children up to the age of 6 years (15 delivered by caesarean section). They included a control group of 58 spontaneously and vaginally born children delivered in vertex presentation. Matching was applied for sex, birth weight, and social class. Analysis of motor development up to the age of 3 years showed hardly any differences between the breech-born children delivered vaginally or by caesarean section and their controls. Applying the Wilcoxon test for matched pairs yielded significantly lower scores for all variables studied among vaginally breech-born children than among their controls ($p < 0.05$), but there were only slight differences between the groups as a whole. There was no significant difference between infants delivered by caesarean section and their controls. Of the vaginally breech-born children, the boys scored worse than the girls in the neurological and motor-development tests. Manzke *et al* concluded that the prognosis for vaginally breech-born children is on the whole marginally less favourable than it is for breech-born children delivered by caesarean section. Although the numbers were smaller, the design of their study was comparable to ours, and so were the results.

Collea *et al*¹⁴ published a preliminary report of a prospective randomised follow-up study of frank breech presentations. Only neonatal outcome was evaluated. Two infants sustained a brachial plexus lesion, possibly—as the authors suggested—due to the routine practice of partial breech extraction. In this important

aspect of management—besides many others—their study differed from ours; in our series half of the deliveries were conducted with Bracht's manoeuvre.

Given adequate management based on the principle of selective caesarean section, the belief that to be born by the breech is highly dangerous appears to be untenable. Arguably either a better selection or a higher section rate might have reduced the slight functional impairment that did occur in the breech-born children in our series. It should be remembered, however, that this may well have been caused by variables other than breech delivery. From our results we see no reason to advocate a higher section rate, though we think that selection might well have been better, both for caesarean section and for vaginal delivery.

The concept of breech delivery as a highly dangerous event probably stems from two origins—firstly, the high rate of pregnancy complications and fetal abnormalities associated with breech position, which results in high perinatal mortality and morbidity; and, secondly, the fact that even an accepted vaginal breech delivery may very well in rare cases be difficult and result in severe birth trauma. The danger associated with breech position, however, should not be projected on the mechanics of birth in breech presentation.

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Laser treatment for carcinoma of the bronchus

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Abstract

Laser treatment in carcinoma of the bronchus is essentially palliative and is suitable for only a few patients. Patients selected for laser treatment must have predominantly endobronchial growth with normal bronchial anatomy still identifiable and symptoms due to the obstruction or to haemoptysis. A total of 34 patients with carcinoma of the bronchus were treated with argon gas or neodymium yttrium aluminium garnet crystal lasers. Good palliation was obtained in just over half the cases of partial obstruction of the trachea or main bronchus, but best results were obtained in lesions of the trachea or

main carina. Re-expansion of the collapsed lung was achieved in some cases but with considerable risk of pneumonia. Haemoptysis was controlled at least partly in several cases.

Laser treatment has the advantage of having no toxicity or dose limit and may be used in cases of poor respiratory function. The procedure was better tolerated than radiotherapy or chemotherapy and its relatively lower cost may justify setting up laser units in major cities.

Introduction

Though there have been some improvements in recent years in the treatment of bronchial carcinoma, most patients can hope only for a brief prolongation of survival and palliation of symptoms. The side effects of radiotherapy and chemotherapy may be severe and their toxicity limits their usefulness. We believe there is therefore a place for new methods of treatment of bronchial carcinoma, even if these are only intended for palliation, providing they are well tolerated and have few side effects. Laser treatment potentially fulfils these requirements. In early 1980 we set out to modify a laser system, originally intended for gastroenterological use, for the fiberoptic bronchoscope. We have also used this system for other non-malignant

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