

TESTICULAR BIRTH INJURY*

* Based on a presentation to the Paediatric Research Society, UK, in 1975

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INTRODUCTION

The Paediatric Research Society was founded by a group of young academic paediatricians in order to provide a forum for debate free of the inhibiting presence of senior colleagues, hence the Society's rules required the resignation of members on reaching the age of forty-five.

I spoke at the inaugural meeting of the Society held at the Birmingham Children's Hospital in 1962 and was a regular attender during the next 13 years, giving a further 10 presentations. On reaching the age of retirement from the Society in 1975, I hosted my last meeting, held in Bristol, and gave a paper on testicular birth trauma⁽¹⁾. It was based on work undertaken 15 years earlier at a time when singleton babies presenting by the breech at delivery were usually born via the vaginal route. Nowadays, rightly or wrongly, singleton breech presentation is widely considered to be an indication for Caesarean delivery. This change in breech management will naturally have had a major impact on the incidence of testicular birth trauma, making the outcome of my study in the early 1960s all the more worth recording.

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All neonatal paediatricians must surely be familiar with the breech born male infant whose scrotum is bruised and oedematous and whose testicles are enlarged (Figs 1 and 2), sometimes several times their normal size.



Fig 1 Frank breech presentation with testicles presenting alongside



Figure 2 Testicular birth injury

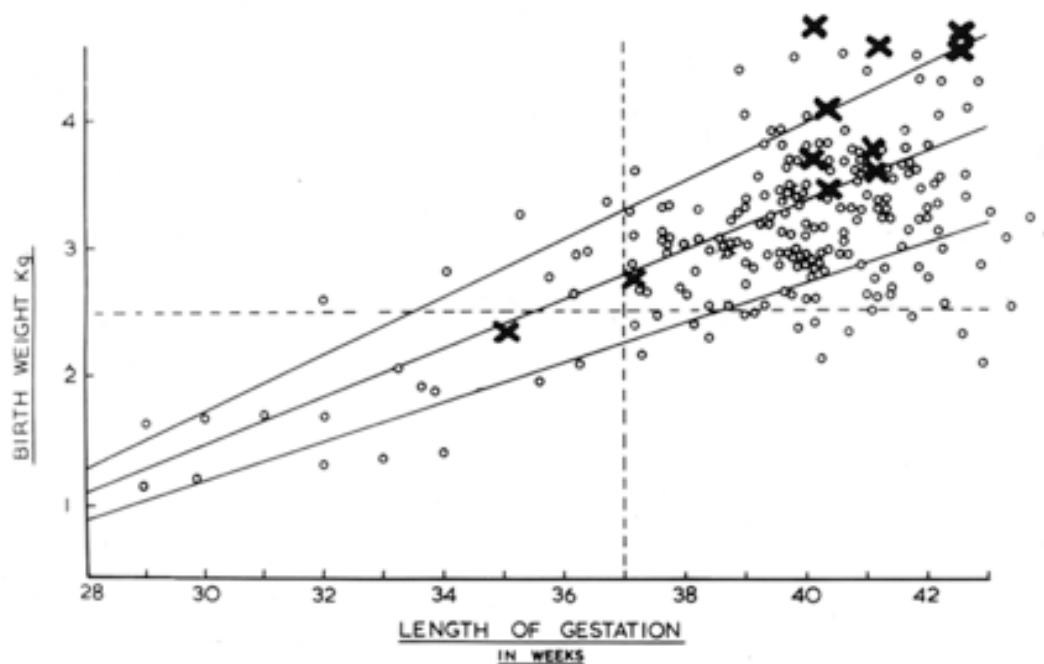


Fig 3 Birthweight for gestational age of 114 normal male singleton infants presenting by the breech at the Birmingham Maternity Hospital during 1960 and 1961. The crosses indicate infants with testicular birth injury

Yet the condition has been strangely neglected or perhaps dismissed as unimportant by most authors writing on the neonatal period. In 1975 I checked four well-known current neonatal paediatric textbooks sharing 2,700 pages; none of them even mentioned the condition. I also reviewed the literature. There were few references to testicular birth injury. Spencer (1891)⁽²⁾ reported 14 cases of testicular haemorrhage among 130 perinatal necropsies, 8 having been born by the breech. Ravich (1947)⁽³⁾ wrote: 'No cases of massive haemorrhagic infarction due to birth trauma are to be found in the literature. The haematomas occurring at birth at silent and apparently resorb

spontaneously.' Campbell (1951)⁽⁴⁾ observed that haemorrhagic infarction of the testicles due to birth injury had been observed in a total of four cases in the newborn period. Yet, as I shall show shortly, testicular birth injury is by no means a rare event.

*Birmingham Maternity Hospital Survey,
1960-1961*

As paediatric registrar to the Birmingham Maternity Hospital (B.M.H.), Loveday Street during 1960 and 1961, I examined all 4,754 newborn infants at birth. One of the conditions recorded during this survey was the presence of testicular birth injury. In all there were 11 cases. All 11 were associated with breech presentation, 9 being delivered by the breech and 2 by Caesarean Section following failure to progress in labour. Among the 181 male infants in the survey that presented by the breech at delivery, there were 114 singleton infants and 67 twins. There were no cases of testicular birth injury among the twins; all 11 cases being among the singletons (9.6%) ($p < 0.05$). Among the singleton infants, 54 (47%) were first born and 60 (53%) later born; 8 of the cases of testicular birth injury were first born and 3 later born ($p < 0.2$, n.s.).

The birth weight and gestational age of all singleton breech born infants in the survey is shown in Fig 3. The crosses in the diagram indicate the infants with testicular birth injury. Analysis of the data in this figure revealed that infants with testicular birth injury were 1.7 times more

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TESTICULAR BIRTH TRAUMA

B.M.H. 1960-61

NON-MALFORMED MALE SINGLETON INFANTS
PRESENTING BY THE BREECH AT DELIVERY

(N = 114)

| <u>Birthweight/ Gest. Age</u> | <u>Exp.</u> | <u>Obs.</u> | <u>Exp/Obs.</u> | <u>P. Value</u> |
|--------------------------------------|-------------|-------------|-----------------|-----------------|
| 40 weeks + | 47% | 82% | 1.7 | < 0.05 |
| 3630g + or 8lb + | 14% | 45% | 3.2 | < 0.01 |
| Heavy-for-dates | 9% | 45% | 5.0 | < 0.001 |
| Heavy-for-dates and 40 weeks + | 4% | 55% | 13.8 | < 0.001 |

Fig 4

Analysis of data in Fig. 3 in relation to the birthweight and gestational age of infants with or without testicular injury

likely to be born after a gestation of 40 weeks than might happen by chance; they were 3.2 times more likely to weigh 3.6 Kg (8 lbs) or more at birth and were 5 times more likely to be 'heavy for dates' (defined as being above the 90th percentile of weight for gestation). All these differences reached statistical significance (Fig 4).

It is relevant to point out that the B.M.H. was a referral hospital with an incidence of breech delivery twice the national average. Therefore, it can be calculated that on the basis of this survey in which breech presentation was not an indication for Caesarean delivery, testicular birth injury might be expected to occur approximately once in every thousand births (both sexes) and in 10% of singleton, breech born, male infants.

Differential Diagnosis

With a history of breech presentation the diagnosis of testicular birth injury with fresh livid bruising of the penis and scrotum, and with enlargement of the testicles, is straightforward. Bruising of the scrotum at birth may, of course, occur rarely as part of a congenital bleeding diathesis. It may also occur in association with congenital torsion of the testicle (Fig 5). This rare condition was first described by Taylor in 1897⁽⁵⁾ since when there have been some 30 case reports in the literature. As only one testicle is usually involved, the bruising tends to be unilateral,



Fig 5

Neonatal torsion of the right testicle at operation

less marked and of a blue/brownish colour rather than an angry red. The affected testicle is moderately enlarged, firm and unless the torsion is of very recent origin, painless. A hydrocele may be present around the contralateral testicle. In the great majority of cases, delivery will have been by the vertex. One case of bilateral neonatal torsion of a testicle was reported in 1967⁽⁶⁾.

Discussion

A year ago a distinguished paediatrician wrote: 'Testicular haemorrhage is common in breech presentation. The scrotum may appear black and pre-necrotic and the penis may have vesicles from ischaemia. No treatment is necessary and recovery is uncomplicated without apparent impairment of fertility'. I disagree with this statement. In the first place, these infants are clearly in great pain. They require gentle handling and the provision of pain relief (the same may apply to breech-born female infants with trauma to their external genitalia) (Fig 6).



Fig 6

Bruised female external genitalia following breech delivery

Consideration may also perhaps be given in severe cases of testicular enlargement to incision of the tunica albuginea in order to release pressure within the testicle and prevent or reduce the likelihood of testicular necrosis. Although none of the papers on male infertility that I have studied mention testicular birth injury as a cause, this may be because no follow-up studies have been undertaken to investigate this possibility. One lad that I followed-up for 10 years suggests that it may well happen in severe cases.

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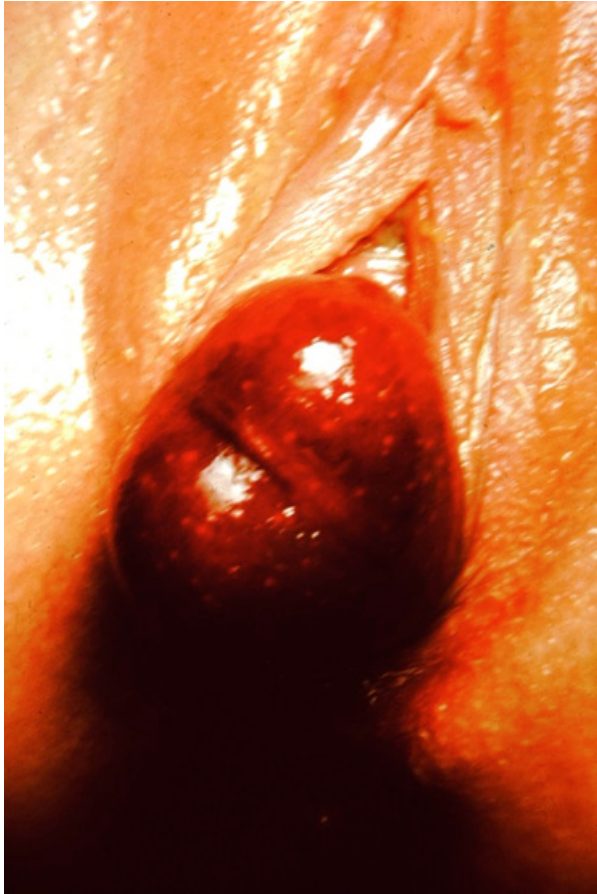


Fig 7a
Case UP: Testicular presentation at delivery



Fig 7b
Case UP: Severely bruised external genitalia following breech delivery



Fig 7c
Case UP: Aged 10 years with small, soft hypotrophic testicles

Case history: UP

The mother was a 16 year old primigravida at 41 weeks gestation. Labour lasted twelve hours. The baby presented as a frank breech with the testicles in advance of the buttocks (Fig 7a). The baby weighed 2.98 Kg and was normally formed apart from severe oedema and bruising of the penis, scrotum and testicles. The latter were firm, enlarged

(3.5 x 2.5 cm) and very tender (Fig 7b). The oedema and bruising slowly subsided over the next 3 weeks. The child was followed-up and was last seen at the age of 10 years. He appeared a normal lad for his age. However, both testicles were small and soft (Fig 7c). The right testicle measured 1.0 x 0.5 cm and was indeed quite difficult to palpate. The left testicle was marginally larger at 1.5 x 1.0 cm. Unfortunately this child was lost to further follow-up.

In my view, there is little doubt that the infant just described is likely to prove sterile. Settling the problem of whether testicular birth trauma is a significant cause of male infertility will require the collection of a large number of cases with a 30 year or more follow-up. An alternative approach would be to analyse the birth history of a large cohort of infertile male adults to determine whether breech delivery (and testicular birth trauma) had occurred more often than expected.

SUMMARY

In a survey of male, singleton, breech born infants 10% showed evidence of testicular birth trauma. The majority of affected infants were first born, delivered at or after a gestation of 40 weeks and were heavy for dates. There is acute haemorrhage and oedema of the external genitalia and the testicles are enlarged. The condition is intensely painful

and requires gentle handling and pain relief. Follow-up of a single case suggests that testicular necrosis may lead to subsequent infertility in severe cases. This possibility suggests that consideration should be given in such cases to immediate post-delivery incision of the tunica albuginea in order to relieve intra-testicular pressure.

Addendum

Since completing this report, I have come across a 17th Century case history of an infant with testicular birth injury remarkably similar to the infant shown in figure 7. It was reported by a man-midwife of Derby, Dr. Percivall Willughby (1596-1685)⁽⁷⁾. He wrote: "In the year 1646 this midwife was called to one Isabel Carter, whose child came by the buttocks ... The child's cods were pressed forth, and did hang out of the woman's body above an inch and half, very flamp and black, and the doubled body was fixed in the birth. The woman in distress desired mee to help her. After placing her kneeling on a bolster, I put her in a bending posture descending. I removed the child upwards into the hollowness of her body. I fetched the feet down, and, through God's great mercy, and permission, I quickly delivered the woman of a living child, by the feet. This woman, and her husband, with their son, were living in Darby, 1660, and hee is a handsome young youth, yet living in Anno 1670. The blacknes and bruising of the cods were cured with oile of egges."

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