

**THE IMPACT OF RICKETS ON CHILDBIRTH
IN THE UNITED KINGDOM**

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Infantile rickets is a metabolic disorder of late infancy, primarily affecting growing bones in which there is impaired deposition of minerals in the bony matrix. As a result, growth is retarded, the joints become swollen and the bones soft and plastic: they then tend to fracture or bend. The first clinical description of this 'new' disease came from an English physician, Daniel Whistler, in 1645. His description was followed in 1650 by a much fuller account by Francis Glisson, regius professor of physic at Cambridge University.



Fig. 1 Dr. Francis Glisson (1597-1677).

Already this new disease had become common-place in the south of England. On the continent it was known as the 'English disease'. In passing, it should be mentioned that Glisson gave credit for help received from a small group of physicians and scientists with whom he had met regularly in Oxford or London. This group later formed the nucleus of the Royal Society when it was founded in the mid-1660s. Glisson himself became President of the Royal College of Physicians in 1667.



Fig. 2 Childbirth in the sitting position (from Eucharius Rösslin, 1470 -1526).

Until the 17th century, childbirth had been entirely supervised by midwives and wise-women. Men were not allowed into the birthing chamber where delivery usually took place with the mother in an upright position, sitting, kneeling or standing (Fig 2). However, from the mid 17th century onwards midwives increasingly

consulted doctors on problems arising during childbirth, especially when there was a failure of labour to progress. At that time, in cases of severe dystocia the alternatives were either to undertake internal version and breech extraction, to destroy the fetus and remove it in parts, or to await a fatal outcome after a long and agonising labour.

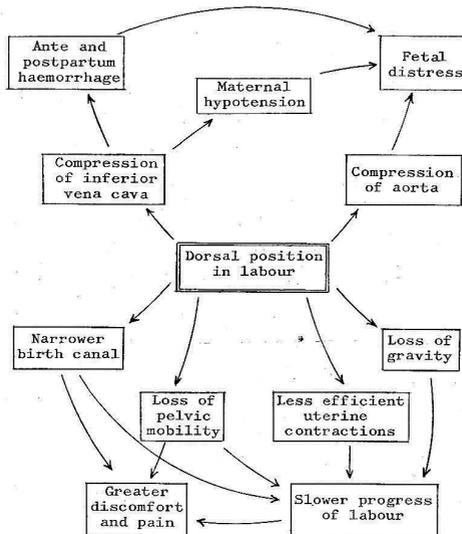


Fig. 3

The influence of the mother's dorsal recumbent position on childbirth.

Among the best known man-midwives in Britain in the 17th century were the Chamberlens, a Huguenot family that had fled from France because of religious persecution. They had invented a new method for delivering women in obstructed labour, the obstetric forceps. However, for commercial reasons, they kept their invention a secret throughout much of the remainder of that century.

One of the outcomes of the entry of man-midwives into the delivery chamber was to cause women to lie down on their backs during labour and delivery so that they might be more easily examined and, if need be, assisted in delivery of the baby. This recumbent position was known as the French position after Francois Mauriceau who first recommended it. Unfortunately, as we now appreciate, the dorsal position robs labour of the force of gravity and also diminishes the strength of uterine contractions, hence compounding the problems of delayed or obstructed labour. It is also responsible for an increased incidence of pain in labour and of fetal distress (Fig 3).

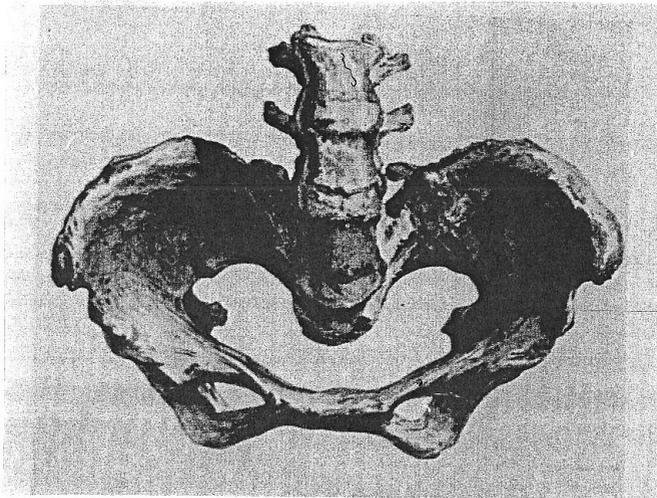


Fig. 4 The rickety flat pelvis of Martha Rhodes (1771).

By 1700 studies of the anatomy of the pelvis made by a Dutch physician, Hendrik van Deventer, revealed that the most common cause of obstructive labour was pelvic deformity, typically narrowing of the pelvic inlet, the so-called rickety flat pelvis (Fig 4). By 1730 the obstetric forceps were well known

and widely used. Many new types were manufactured, notably those of William Smellie which had gained a pelvic curve to the blades. With man-midwives such as William Smellie, William Hunter, Charles White and Thomas Denman, their professional status rose throughout the 18th and 19th centuries. From being derided by their colleagues as man-midwives they eventually became recognised and respected as physician accoucheurs.

As urbanisation and industrialisation progressed throughout the 18th and 19th centuries our cities became overcrowded, polluted and smoky. Poverty increased and with it the malnutrition of children. Nowadays we appreciate that most rickets is due to a nutritional deficiency and/or a lack of sunlight. Not surprisingly the incidence of rickets rose steadily to reach epidemic proportions by the end of the 19th century. At the start of the 20th century Sir Robert Hutchison, doyen of British paediatrics, recorded that some 70% of children admitted to the Hospital for Sick Children in London exhibited signs of rickets, past or present. The impact of rickets on the female pelvis was often so terrible that labour and delivery became events to be greatly feared. In some of our cities such as Glasgow, around 3% of all pregnancies ended in the destruction of the fetus and its extraction using instruments such as the basiotribe. However, a solution was on its way. The introduction of anaesthesia into obstetrics by James Young Simpson of Edinburgh in 1847 and then the development of antiseptic and aseptic surgery by Joseph Lister in the 1880s made it possible to operate safely within the abdomen. At last women might be delivered by Caesarean section without in all probability killing both mother and child (Fig 5). In the 1890s Professor Murdo Cameron of Glasgow reported a series of 14 'safe' Caesarean sections, most of them rickety dwarfs with deformed pelvises.

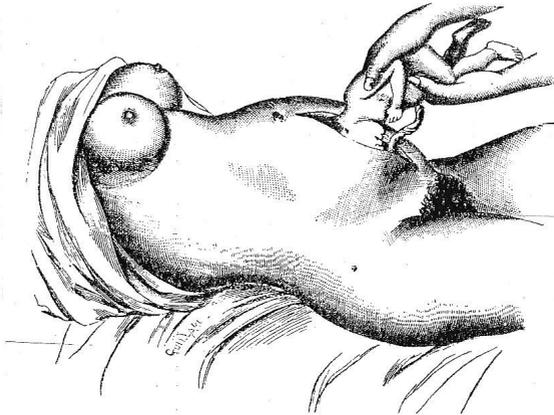


Fig. 5 The classical Caesarean section.

As physician accoucheurs were not permitted to undertake surgery, there was now a profound change in medical training for an obstetric career. The physician accoucheurs of the 19th century gave way to the surgeon gynaecologists of the 20th (Fig 6). They became members of the Royal College of Surgeons rather than of the Royal College of Physicians.

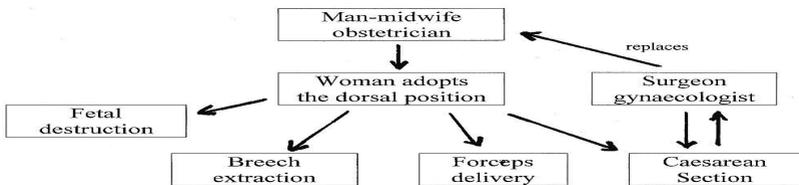


Fig. 6 Obstructed labour and the transfer of responsibility for child-birth from physician-accoucheurs to surgeon-gynaecologists.

Thirty years later this change prompted the formation of the Royal College of Obstetricians and Gynaecologists in 1929 and from the start, the new College was dominated by gynaecology.

In 1918 Dr. Edward Mellanby finally persuaded a reluctant medical profession to appreciate that rickets was caused and could be prevented by the use of the newly discovered vitamin D. Shortly afterwards in the 1920s, Sir Leonard Parsons of Birmingham, wrote: “We can look forward with sure and certain hope to the day, perhaps no further distant than the tercentenary of Glisson’s work (1950), when rickets will ... present no terrors to ill health”. He was correct in his prediction.

Led by the Public Health Service and its Chief Medical Officer, Sir George Newman, children were provided with daily supplements of vitamin D. By 1950, apart from the rare case, this terrible scourge had been eliminated. Indeed, the general health and nutrition of the population had steadily improved and with it the normal growth of children including, of course, the next generation of child-bearing women. The rickety pelvis had become increasingly rare. In addition, the safety of childbirth had also been dramatically improved by the introduction of drugs such as John Chasser Moir’s (1900 – 1977) ergometrine. Introduced in the 1930s, this drug dramatically reduced the incidence of postpartum haemorrhage. Also, that terror of childbirth, puerperal sepsis, was virtually eliminated in the 1930s, first by the use of sulphonamides introduced by Leonard Colbrook and then shortly afterwards by the penicillin of Alexander Flemming. Furthermore, urged on by Munroe Kerr of Glasgow, the classical vertical incision Caesarean section finally gave way to the much safer lower segment operation.

When I was training to become a doctor in 1950 the Caesarean section rate in Britain was just 2%. Now, sixty years later, it is at least 25% and still rising.

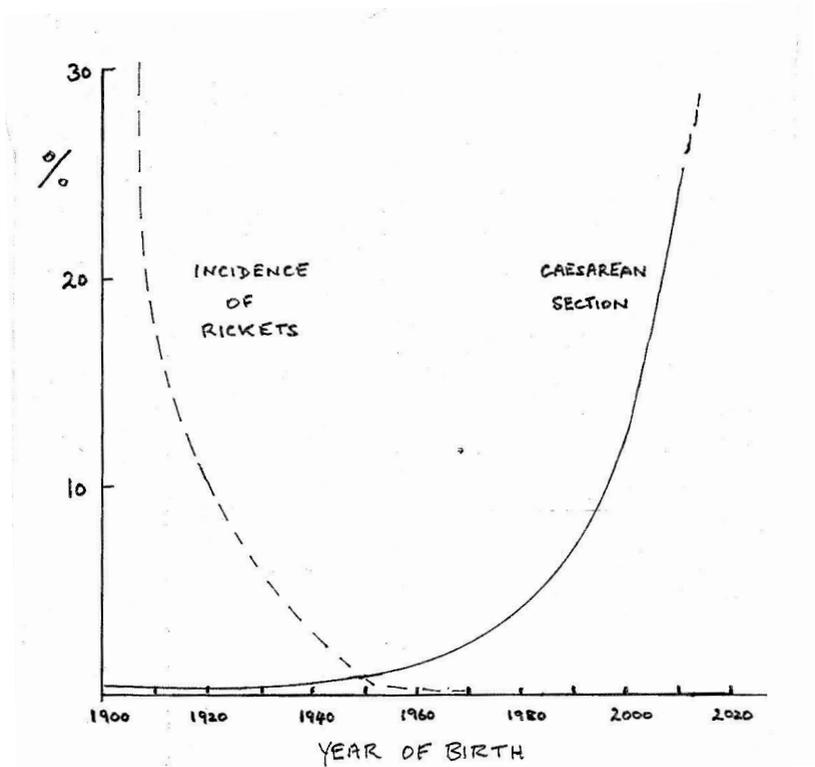


Fig. 7 The paradoxical rise in the Caesarean section rate following the eclipse of rickets.

This extraordinary paradox is illustrated in a graph (Fig 7). On the one hand, rickets, the main original need for Caesarean section, had virtually disappeared by the second half of the 20th century, just at the time when the section rate began to accelerate upwards – a fourteen fold increase in the last sixty years. There were, of course, a number of other contributory explanations for this rise in the Caesarean section rate (Fig 8).

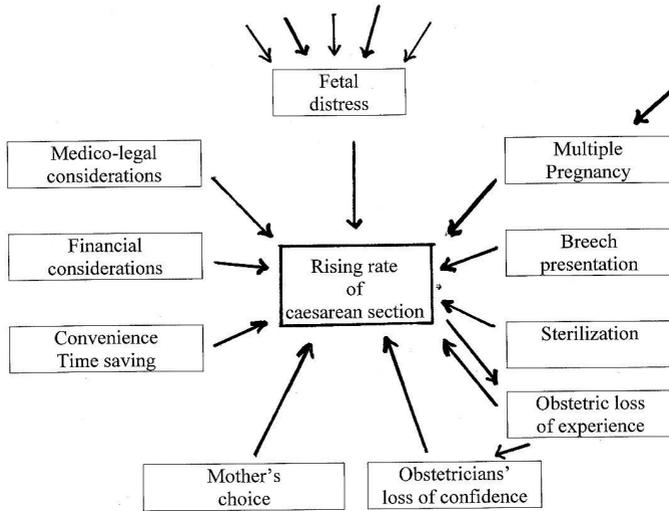


Fig. 8 Some factors contributing to the rise in the Caesarean section rate since 1950.

However, there are three additional factors not shown in the diagram, that were to a large extent, I believe, attributable to the previous epidemic of rickets during the period, 1650 – 1950. These are namely, the dorsal delivery position, the surgical approach to delivery, and the widespread fear of childbirth. First, there was the adoption by mothers of the dorsal position in labour following the entrance of doctors into the delivery room. As has been noted, it is now well established that the dorsal position, in contrast to an upright posture, causes labour to be longer, more painful and more hazardous to both the mother and the baby. Second, there was the entry and gradual take-over of midwifery and obstetrics by surgeon gynaecologists. Surgeons are men of action, trained to solve problems with a knife, in contrast to the more contemplative

and patient physican accoucheurs of the past. And third, there was the profound fear of childbirth, the fear of long-lingering labours, of suffering, of surgical manoeuvres, of complications and of death. This fear, propagated by old-wives tales, had reached mythical proportions by the 20th century and cast its influence over doctors as well as mothers as they contemplate childbirth. The fact that the major dangers of childbirth had been removed by the introduction of vitamin D, of ergometrine and of antibiotics did little to mitigate the deeply ingrained fear built up during the previous three centuries. It had become deeply imbedded in the human psyche. Fear is, of course, not only itself capable of impairing normal labour and delivery but also encouraged the introduction of a whole range of obstetric interventions such as, for example, surgical induction, augmentation of labour and the wide-spread use of opiates and epidurals. Natural childbirth, without intervention, has indeed become a rarity in our maternity hospitals today.

In summary, three hundred years of rickets led to a profound fear of childbirth which has persisted long after the end of the epidemic through the use of vitamin D. It has influenced the management of labour to such an extent that very few women, instead of an anticipated 80%, have a normal, natural delivery without intervention, and an increasing proportion undergo obstetric surgery such as the forceps delivery or the Caesarean section (Fig 9). The suggestion is made that we should regain our confidence in the wonderful natural physiological process of childbirth, honed over millions of years, and only intervene in the 10% to 20% of deliveries that may require our assistance.

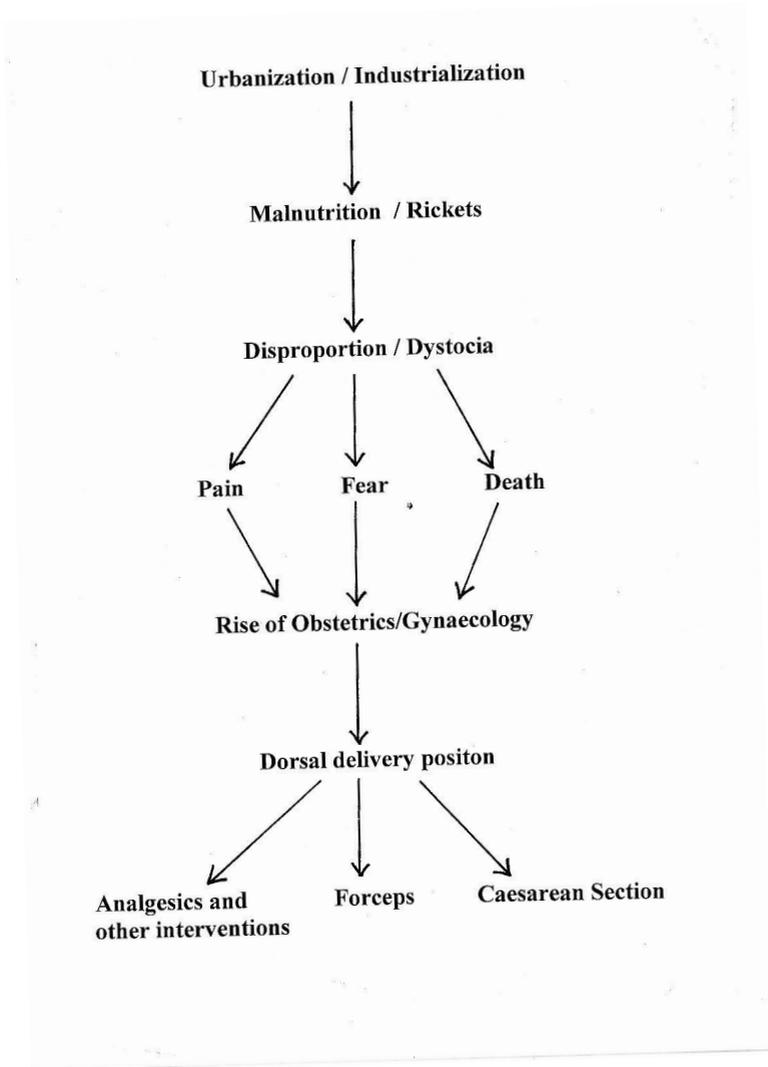


Fig. 9 The impact of rickets on childbirth since 1650.

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