

PERINATAL LESSONS FROM THE PAST

Dr John Snow (1813-58) of London: pioneer of obstetric anaesthesia

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Born in York on 15 March 1813, John Snow was the eldest of nine children. The family lived in a poor area of the city alongside the River Ouse. His father, a wharveside labourer, was determined to give him a good start, and John received his early education in York. In 1827, at the age of 14, he was apprenticed to Dr William Hardcastle, an established practitioner in Newcastle-upon-Tyne. On completing his apprenticeship, Snow spent the next three years in family practice in Yorkshire before setting out on foot for London. There, he studied at the Hunterian School of Medicine and walked the wards of the London teaching hospitals. Granted membership of the Royal College of Surgeons and the Society of Apothecaries in 1838, he then entered practice in Soho.

Snow was a quiet, shy man with a husky voice; he loved the countryside and had a deep religious faith. He had adopted vegetarian and temperance causes, and with his rigid bachelor habits, did not make friends easily. As a practitioner he was conscientious and very hard working. A careful observer of clinical signs and a deep thinker, he brought a scientific and experimental approach to his work. In 1839 he joined the Westminster Medical Society (and soon became its president) and contributed papers on subjects as diverse as chest and spinal deformities in children, the capillary circulation, paracentesis of the thorax, and the resuscitation of stillborn babies. In 1843 he obtained an MB from the University of London, an MD the following year, and in 1850 he became a licentiate of the Royal College of Physicians (London).

In December 1946 Robert Liston had first operated on an anaesthetised patient at University College Hospital. Snow, with his special interest in respiratory disease, at once appreciated the need to base anaesthesia on sound physiological principles. He pondered the ways in which anaesthetics were inhaled and affected sensibility, and set about constructing ether and, later, chloroform inhalers capable of being regulated to deliver the required dose of vapour. Experiments conducted on animals and on himself ensured their safety. By so doing, Snow established anaesthesia as a medical science. Within a very short time he was pre-eminent in the field, with an entrée to all

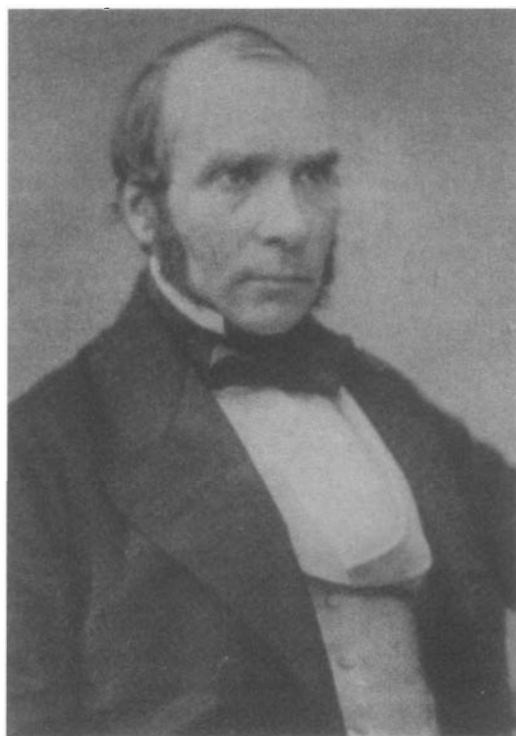


Figure 1 Dr John Snow, 1813-58.

the teaching hospitals, and provided a service for all the leading London surgeons of his day. Of 4285 chloroform anaesthetics over the next decade, he had only one death, though it affected him deeply.¹ His youngest patient, operated on for hare-lip, was just 8 days old. Snow also pioneered the use of inhalational remedies for a variety of chest diseases at the Brompton Hospital in 1849-50. As well as attending operating sessions, he also had a large dental and obstetric anaesthetic practice and continued work as a family doctor. Recently Snow's case books have been published.² They make fascinating reading:

Friday November 16, 1849

"Mrs Duhy. Arm presentation. Half past 9 in the evening. Mr Marshall had been in attendance 2 or 3 hours and the membranes had been ruptured since just after he arrived. The pains were not very strong. On making an examination the elbow was found to be the presenting part. The os uteri was almost

fully dilated, and quite dilatable. Chloroform was administered till she was rendered insensible. There was one "pain" during the inhalation before the sensibility of the conjunctivae was diminished. When the insensibility was about equal to that required for an operation I proceeded to introduce the hand and turn the child. In this there was no difficulty and the patient was perfectly passive, and no uterine contractions were excited. Mr Marshall gave a little chloroform during the operation. A single leg only was drawn down and in a few minutes some slight uterine contractions came on which assisted the delivery of the breech. The funis was not examined for its pulsation whilst the hand was in the uterus, and when it came down its arteries were found to be pulsating very feebly, a little more chloroform having been given on account of the patient's crying out when the breech was expelled. This seemed to prevent any further pains for a time and there was a delay of a few minutes before the child was removed, as it was not easy to extract it in the total absence of all uterine contractions. When born the arteries of the funis pulsated just perceptibly close to the abdomen, and the heart could be heard to beat slowly on applying the ear, but the child made no efforts to breathe and no voluntary or respiratory motion of any kind had been observed in it at any time either during the turning or afterwards. Sprinkling cold water on it had no effect, nor had dipping it in warm water, but the pulsation of the heart continued. Artificial respiration was performed by introducing the female catheter within the glottis and blowing gently through it, alternately pressing the chest. The heart continued to beat feebly and slowly, and at one time the pulsations improved a little both in force and frequency, but the child made no attempt to breathe. The catheter did not pass well into the larynx, and it was found that Mr Marshall could inflate the lungs better by closing the nostrils and blowing through the mouth than I had been doing with the catheter. He persevered in this way for some time - I holding the larynx gently back, and pressing out the air from the chest after each insufflation. Soon after he began the pulsation of the heart and the arteries of the cord became very strong, the latter extending to the ligature, but the child showed no other signs of life whatever and the pulsation again diminished (although the body was kept in a warm bath) and finally ceased about half an hour after the birth. The placenta was expelled while these attentions to the child were going on. Mother recovered very favourably."

In 1850 discrete inquiries were made to Snow on behalf of Queen Victoria before the birth of Prince Arthur. Three years later he was

summoned to the palace to give chloroform to Her Majesty during the birth of Prince Leopold.

Thursday 7 April, 1853

"Administered chloroform to the Queen in her confinement... At a twenty minutes past twelve... I commenced to give a little chloroform with each pain, by pouring about 15 minims by measure on a folded handkerchief. The first stage of labour was nearly over when the chloroform was commenced. Her Majesty expressed great relief from the application, the pains being very trifling during the uterine contractions, and whilst between the periods of contraction there was complete ease. The effect of the chloroform was not at any time carried to the extent of quite removing consciousness... The infant was born at 13 minutes past one... the Queen appeared very cheerful and well, expressing herself much gratified with the effect of the chloroform."

Snow also attended the Queen during her next and last labour on 14 April 1857. Such royal patronage, of course, gave immense support to obstetric anaesthesia.

Snow's second great contribution concerned cholera, which he first encountered in Newcastle in 1831. Observations made during a second epidemic in London in 1849 led him to conclude that the disease was spread by polluted drinking water. He published his findings,³ but his theory was not accepted until epidemiological studies undertaken during a third epidemic in 1854 established beyond doubt that his theory was correct. Besides his classic research on the Broad Street pump in Soho, he was able to show that in an area of London supplied by two water companies, the mortality from cholera was 8.4 times greater among those drinking water drawn from the Thames nearby, compared with those supplied with cleaner water from further upstream. His studies remain a model of scientific enquiry and his conclusions were, of course, of the greatest importance to public health and the prevention of water borne disease.

In 1844 Snow became ill. Tuberculosis was suspected. He was seen by Dr Richard Bright, who diagnosed a kidney lesion. Thereafter, his health was never good. Hypertension developed and on 16 June 1858 he died at the age of 45 after a sudden stroke. His passing caused little contemporary comment and it was left to later generations to recognise the remarkable contributions that this quiet man of humble origin had made in just 10 years.

1 Snow J. *On chloroform and other anaesthetics: with a memoir of the author by Benjamin W Richardson*. London: Churchill, 1858.

2 Ellis RH. The case books of Dr John Snow. *Med Hist* 1994; **Suppl 14**.

3 Snow J. *On the mode of communication of cholera*. London: Churchill, 1849 (2nd Edn, 1855).