

James Marion Sims (1813-1883) and his successful surgery for vesico- vaginal fistula: An historical review

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Abstract

James Marion Sims was a leading gynecologist in North America in the mid 19th century. He pioneered a successful operation for the closure of vesico-vaginal fistula which incorporated silver wire suture material. Although fistulas are now rare in developed countries they continue to be a major public health issue in the developing world.

James Marion Sims, a native of South Carolina, rose to prominence as a leading gynecologist in New York in the mid-19th century. He has been called 'the father of American gynecology' and as the British Medical Journal recorded in his obituary 'he must be considered as the establisher of that branch of medical science (gynecology) which before his day had been looked upon as a mere accessory of obstetrics.' He is remembered for the development of the Sim's speculum, the application of the knee-chest or 'Sim's position' in surgery as well as the discovery of silver wire suture material.¹ Although he was not the first surgeon to close a vesico-vaginal fistula, his work resulted in major improvements in fistula surgery with successful outcomes in the majority.

In 1852 Sims reported the outcome of surgery for vesico-vaginal fistula in three young slaves, Anarcha, Betsy and Lucy.² After repeated attempts to close the fistulas were unsuccessful, Sims finally succeeded by employing silver sutures aided by improved exposure from the knee chest position and the use of a vaginal speculum of his own design. This landmark work initiated a new era in gynecologic surgery and for the first time offered hope to women afflicted with this previously untreatable scourge.

SIM'S LIFE

James Marion Sims was the first of eight children born in Hanging Rock, Lancaster County, South Carolina on January 25, 1813. He entered the College of South Carolina and graduated in 1832 before commencing his medical training. Initially he studied as an apprentice to Dr G Churchill Jones in Lancaster before enrolling in the medical

college of Charleston two years later. He completed his MD at Jefferson Medical College in Philadelphia in 1835 before returning to Lancaster to enter practice at the age of 22. After moving to Mount Meigs and then Montgomery in Alabama he developed a large surgical practice pioneering new operations for clubfoot and strabismus. Because of chronic dysentery he moved with his wife and six children to New York in 1853 where he found the climate and water more favourable to his condition.³

In New York Sims established a gynecologic hospital which was the first of its kind in America. His hospital for women began in premises at 83 Madison Avenue which was the forerunner of the Woman's Hospital of New York. He became surgeon in charge at this institution which attained considerable renown in treating women's diseases. Sims also spent considerable time in Europe especially London and Paris and served for a time as surgeon in chief of the Anglo-American ambulance corps in the Franco-Prussian war.

After the American civil war he returned to Woman's hospital in New York where he served on its medical board. He became embroiled in controversy with the hospital managers over their policy to refuse admission to women with cancer and eventually was forced to resign in 1874. Soon after he established a separate hospital which later became the Sloan Kettering Memorial Centre for Cancer and Allied Diseases. Sims was reinstated to Woman's hospital board shortly before his death in 1883. He was buried in Greenwood cemetery, New York. A memorial statue was erected in Bryant Park in 1894 and moved in 1936 to its present location in New York central park near the entrance

to the New York Academy of Medicine. Figure 1.

Figure 1

Figure 1: Statue of James Marion Sims Central Park, New York



HISTORY OF VESICO-VAGINAL FISTULA

The topic of obstructed labour has been recorded in literature since antiquity. The oldest evidence for this condition is from the remains of Queen Henhenit, the wife of the Egyptian pharaoh around 2050BC. The Queen's mummy was acquired by the New York Metropolitan Museum of Art in 1903 before it was returned to Cairo in 1923. A detailed anatomical examination revealed a large defect in the bladder communicating directly with the vagina. It was concluded that the queen had an obstructed labour complicated by a vesico-vaginal fistula and that this was likely to have been her cause of death.⁴

In Arabic medicine, Avicenna in the eleventh century made the connection between obstructed labour and vesico-vaginal fistula. He recorded 'In cases which women married too young and in patients who have weak bladders, the physician should instruct the patient in ways of prevention of pregnancy. In these patients the foetus may cause a tear in

the bladder that results in incontinence of urine. The condition is incurable and remains until death.' Hendrik Van Roonhuyze, a Dutch physician authored a text of operative gynecology in 1663 in which he proposed a method of stitching the fistula using needles made of stiff swans quill with the aid of a vaginal speculum.⁵ It is not clear whether Roonhuyze employed the repair himself but for almost two centuries thereafter surgeons remained pessimistic about their efforts to close vesico-vaginal fistulas.

Dieffenbach in 1836 gave a vivid portrayal of the grim plight of women afflicted by fistulas. Their horrendous condition and frequent rejection by family members led many to despair and suicide, 'A sadder situation can hardly exist than that of a woman afflicted by vesico-vaginal fistula. A source of disgust even to herself, the woman beloved by her husband becomes in this condition the object of bodily revulsion to him and filled with repugnance everyone else likewise turns his back, repulsed by the intolerable, foul, uriniferous odour... Intolerable burning and itching torment the patients... Even the richest are usually condemned for life to a straw sack (for a bed), whose straw must be renewed daily.'⁶

Medical and surgical approaches to treatment proved futile in the management of fistulas. Various types of intravaginal sponges as well as urinary receptacles, rings, bags and tubes were of limited benefit. Attempts at surgical repair which involved cauterisation, skin grafting or obliteration of the vagina were to no avail. Writing in his text *Operative Surgery* in 1847, Velpeau pessimistically noted, 'To abrade the borders of an opening when we do not know where to grasp them, to shut it up by means of needles or threads when we have no point apparently to sustain them... is calculated to have no other result than to cause unnecessary suffering to the patient.'⁷

SIM'S ACHIEVEMENT

Until the middle of the 19th century attempts at surgical repair for fistulas were hampered by lack of asepsis and absence of anaesthesia. Sims was first introduced to the problem in Montgomery in 1845 when he examined the young slave women, Anarchia, Betsy and Lucy who were sufferers following obstructed labour. Anarchia was a 17-year-old slave girl who had been in labour for three days. After Sim's discovery of silver wire suture he employed this material in his first operation to close her large fistula. It was her 30th operation before success was achieved. Success with Betsy and Lucy followed and in 1852 Sims published

his landmark paper 'The treatment of vesico-vaginal fistulas' in the American Journal of Medical Science.²

Historically this was not the first case recorded as in 1838 Dr John Peter Mettauer wrote a letter to the Boston Medical and Surgical Journal confirming the relationship between fistulas and obstructed labour and reported the successful closure of one. This report went largely unnoticed and it was Sim's paper which popularised the technique. Sims detailed exposition described the improved exposure achieved through knee-chest position with the patient on their side, the 'lateral Sim's position.' He also described the vaginal speculum of his own design fashioned from a pewter spoon.⁸ Figure 2.

At Woman's Hospital Sims taught the operation to his colleague Nathan Bozeman who began to treat numerous patients in New York. Their success led to great acclaim and the procedure was taken up throughout North America and worldwide. Sims paper records the elation in the successful operation on Anarchia and reveals something of his motivation, 'I thought only of relieving the loveliest of all God's creation of one of the most loathsome maladies that can befall poor human nature... Full of sympathy and enthusiasm, thus I found myself running headlong after the very class of sufferers that I had all my life most studiously avoided.'⁹

Sims emphasised the importance of silver sutures in his paper and subsequent presentations. He had experimented with a range of materials chiefly silk which proved unsatisfactory for fistulas. His oration at the New York Academy of Medicine in 1857 was entitled 'Silver sutures in surgery.' He declared 'So far as it concerns my experience, personal narrative, claims as discoverer, or defence against aggression, I have a right to declare them openly from the housetops: I declare it as my honest and heart felt conviction, that the use of silver as a suture is the great surgical achievement of the 19th century.'¹⁰

Figure 2

Figure 2: Sim's speculum and Sim's position, from text , 1858



CURRENT PERSPECTIVES

Improvements in obstetric care and surgical advances which began with Sim's operation have reduced the problems associated with obstructed labour and vesico-vaginal fistulas in the developed world. In contrast in the developing world it is estimated that 8% of maternal deaths are due to obstructed labour whereas it plays an almost negligible role in maternal deaths in developed countries.^{11,12} The gynecologic sequelae of obstructed labour include a number of well recognised features including fistulas as well as increased risk of infections including pelvic inflammatory disease, whilst genital tract scarring results in a high rate of secondary infertility. Bony abnormalities are also common as demonstrated in a recent study of 312 Nigerian women with fistulas, 32% revealed radiologic abnormalities including bone resorption, fractures, bone spurs, obliteration of the symphysis and symphyseal separation.¹³ Neurologic features include injuries to the sacral nerve plexus with foot drop in up to 20% of patients.¹⁴ Dermatologic complications associated with fistulas include vulvular excoriation and ammoniacal dermatitis from continuous urine leakage.¹⁵

The mechanism of vesico-vaginal fistula relates to tissue ischaemia and necrosis during prolonged labour. During normal labour the bladder is displaced upwards and the anterior vaginal wall, bladder base and urethra are compressed between the foetal head and posterior pubis.¹⁴ The duration of this pressure is related to the risk of necrosis and fistula formation. In an Ethiopian study the average length of labour was 3.9 days with some as long as 6 days.¹⁶ The ischaemic process is compounded by the fact that

women in developing countries marry young and many commence childbearing before growth is complete. In a Nigerian study 9% of girls suffering from fistulas married before menarche.¹⁷

In western developed countries vesico-vaginal fistulas are rare and are usually related to surgical injury or radiation. The UCLA study reported only 43 cases over a 20-year period and only 2 were related to obstetric complications.¹⁷ In a recent UK study, 21 of 166 fistulas had obstetric causes but only 4 were directly linked to obstructed labour and the remainder were from complications of caesarean section. In contrast, data from Nigeria have indicated 369 out of 377 fistulas were obstetric from prolonged labour.¹⁸

The true incidence of vesico-vaginal fistulas in the developing world is unknown as many women reside in remote areas isolated from medical and obstetric care. Some estimates suggest that there may be 2 million sufferers worldwide.¹⁹ The fistula hospital operated by Australian gynecologists Reginald and Catherine Hamlin in Addis Ababa treats approximately 700 patients annually. The hospital opened in 1975 and the surgical outcomes recorded are over 90% success. In a 1994 study, Elkins reported 100 operations in 82 patients with a 95% successful fistula closure.²⁰

CONCLUSION

The pioneering work of James Marion Sims represents a pivotal chapter in the history of gynecologic surgery with his successful treatment of women with vesico-vaginal fistulas. Although Sims was not the first to repair a fistula he systematically developed a procedure which incorporated the use of silver wire sutures which was taken up worldwide. During his lifetime Sims was the recipient of numerous awards both in America and Europe. In 1875 he became president of the American Medical Association and in 1880 was elected president of the American Gynecologic Association. The Sim's speculum and lateral Sim's position are part of modern gynaecologic practice.¹

Sim's contribution to gynecology and fistula repair has been questioned by some historians and feminist writers of the twentieth century. The criticisms relate to his early experimental work on slave women and that he operated without anaesthesia.² In Sim's defence it may be argued that the young women were condemned to a life of misery without surgery and his biography and papers strongly express his compassion for the sufferers. In his writings he

emphasises that he explained the nature of the operation to the women and they participated without coercion.³ Although his practice in New York catered for the wealthy elite, the Woman's hospital he founded also treated many poor Irish immigrants. The original operations were performed without anaesthesia although Opium was administered before and after. It was not until the 1850's that ether was introduced for surgery whilst chloroform was slowly accepted in obstetrics from the 1870's. It is not surprising that Sim's did not use anaesthesia in his early operations for fistula repair. He was however known for his meticulous cleanliness and hand washing even before the era of Listerism.⁴

Currently vesico-vaginal fistula is a rare occurrence in the west but still represents a major public health issue in developing countries. In an historical context the pioneering work of Marion Sims laid the groundwork for those dedicated gynecologists who continue to treat fistula sufferers throughout the world.

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