



WILLIAM SANDS COX AND THE STOICISM OF ELIZABETH POWIS*

by

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ELIZABETH POWIS is commemorated in a beautiful lithograph, a copy of which one may occasionally encounter divorced from its explanatory text. The tragedy of the scene is arresting. One observes the sad and resigned countenance and placid demeanour of this unfortunate young woman as she reclines exposing the scars imposed upon her by our surgical ancestor of four generations ago. She is composed, indeed she has dignity, for the expression in her dark eyes betokens courage and faith.

One might wonder how she came to have this tremendous feat of surgery performed upon her. What underlying disease necessitated so severe an operation, or was it an accident? Who was the surgical hero and where had the operation taken place? He had surely possessed great courage and the decision to operate must have been arrived at only after much careful thought and consultation with colleagues, for this was no battle casualty to excuse heroic measures in surgery. But above all, one thinks of the gallant spirit of the poor woman. She must have suffered greatly, not only in the agony of the operation, but during those dreaded and protracted weeks of septic convalescence which almost inevitably followed the pre-Listerian knife.

A chance perusal of the *Lancet* for 1845 provided the answer, for here can be found an account of the operation. The surgeon was William Sands Cox, the founder of the Birmingham School of Medicine. The story is as follows:

Elizabeth Powis, sempstress, aged 23, was admitted to the Queen's Hospital (then in its fourth year), Birmingham, on the 1st July 1844, under the care of Mr. William Sands Cox, complaining of pain and ulceration of an amputation stump.

History. 16 years previously the left leg had been amputated above the knee in consequence of disease of the knee joint. She remained in the General Hospital for two months, by which time the stump had almost healed. Unfortunately, the skin around the cicatrix ulcerated a month later and a painful substance appeared on the posterior surface of the stump. In the course of the next five or six years the integuments became very hard and thick causing a distressing sensation as though pins and needles were sticking into the stump. Still later a fungus growth appeared.

She was treated locally with lotions of dilute nitric acid, nitrate of silver, diacetate of lead and Lugol's iodine, and internally with tonic and alterative medicines.

Family History. The father died asthmatic with a tumour in the axilla (the nature of the tumour was not known to the patient). Her mother died 'in a decline'. One sister also died 'in a decline', but her three brothers were alive and well.

On Examination. The integuments extending upwards anteriorly for about 3" and posteriorly for about 4½" were noted to be of a dull white colour and of cartilaginous hardness. Patches

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of fungus growth of a livid colour protruded for a distance of $\frac{1}{4}$ " or more from the surface and from these excrescences blood was occasionally noted to exude and would appear on the slightest touch. These swellings were exquisitely tender and the patient experienced a constant dull aching pain which, however, was sometimes throbbing in character. There was no enlargement of the cutaneous veins or of the inguinal or femoral glands. She had a mild and placid disposition with a fair complexion. Her hair and eyes were black. Her general health was good. She had a well-developed chest and was inclined to embonpoint. Her menses were regular.

Opinion

After careful consideration and consultation with his colleagues Sands Cox recommended amputation through the hip joint. To this the patient readily consented, and her determination was fortified by her friends. Indeed the patient had come into hospital anxious that amputation should be performed.

The Operation

The operation was performed on 1 November 1844, and the decision to operate excited lively interest. Already there were records of seventy-seven previous amputations through the hip joint, twenty-six of them having been successful. Sands Cox would remember that Sir Benjamin Brodie, Liston and Clot Bey had each lost their only patient; that Syme had lost his two cases and that Baron Larrey, whose clinic he had visited, had lost six out of his seven cases, although they had all been battle casualties. He would be heartened, however, by the knowledge that Astley Cooper had published a successful case in 1824, but he remembered too advice given to him by that distinguished surgeon in a letter written in 1831: 'Never,' said Astley Cooper, 'do this operation if there is a chance of your successfully sawing through the femur as an alternative procedure.'

The urinary and intestinal secretions were ascertained to be normal and the bowels were regulated for a few days with castor oil. The patient was given to drink half a pint of port wine.

William Sands Cox was now ready to perform the operation; it was half-past eleven. We can picture the steel instruments set out on a chenille-covered table. Upwards of fifty students were present and in addition Professor Birt Davies, Professor Melson, Edward Townsend Cox, the father of Sands Cox and himself a surgeon of the hospital, Mr. Richard Wood of the General Hospital, who appears to have been concerned in the original operation and who attended on this occasion on request ('most handsomely' we are told), Dr. Annersley, late of the Scots Guards, Dr. Warren of the 7th Hussars and Dr. Mair of the 39th Regiment of Foot, and four "respectable" surgeons from the outlying towns were also there. Sands Cox was assisted by Professors Knowles and Langston Parker.

The patient was placed on the table with the nates slightly projecting over its edge. Mr. Knowles held the right leg, and Mr. John Moore, the R.M.O., took charge of the stump. Mr. Parker applied the horseshoe compressor, designed by Dr. Segnoroni of Padua, to the external iliac artery as it passed

over the body of the *os pubis*. Mr. Cox chose a knife 12 in. long which was narrow throughout its length and double-edged.

The knife was introduced an inch below the anterior superior spine and carried across the neck of the femur parallel with and a little below Poupart's ligament, beneath the anterior group of muscles and the femoral vessels, and brought out about an inch below the margin of the anus. It was now carried downwards on a line with the anterior surface of the femur for $3\frac{1}{2}$ " and then brought obliquely downwards and forwards through the integuments. The flap was immediately thrown back and the capsule of the joint exposed. Mr. Parker retained the flap and controlled the vessels. The stump being now slightly depressed and abducted, the capsule of the joint was opened, and, rotation outwards and depression being simultaneously effected, the head of the femur slipped, without any force, from the acetabulum. The ligamentum teres was divided and the external muscles of the hip and the small rotators were separated from the great trochanter, and the knife passed downwards close against the posterior surface of the femur for about three inches and then carried downwards and backwards through the integuments posteriorly. Mr. Knowles immediately covered the flap with a sponge. The posterior arteries were secured, two muscular branches and the descending branch of the ischiatic artery. The compressor was now released and blood spouted from the superficial and deep femoral arteries; the latter covered by a sponge and the former seized with a tenaculum and a ligature applied. All haemorrhage had ceased.

The timekeeper recorded that this whole operation was completed in under 35 seconds. The flaps were apposed and retained in contact with strips of adhesive plaster.

During the dressings the patient became very faint and was placed horizontally and carried on the table to the bed. Scarcely 5 oz. of blood had been lost, but she was extremely collapsed, blanched, cold and clammy, and complained of much aching pain in the cavity of the hip joint. She was given a hot bottle and cold tea to drink.

At 2 p.m. she was still pallid and anxious and had begun to hiccough, so was given camphor and henbane. At 4 p.m. she complained of a headache (a histamine headache presumably or maybe just bad port) and of great pain in the stump, which appeared to extend to the absent toes. By midnight she was tortured by 'darting' and 'tugging' pains in the stump, but she fell asleep after twelve minims of a sedative solution of opium administered by the R.M.O., who seems to have been quite devoted to his patient. At noon on 2 November, that is to say 24 hours after the operation, she passed 8 oz. of urine, and although still pallid was fairly comfortable and cheerful. On the third day the flaps were inspected and the edges of the wound sponged. She complained of abdominal pain and her tongue was furred: at 10.30 p.m. after some relief of the pain following an enema she was given weak tea, toast and lemonade. On the fourth day she appeared to be in much pain, both in the stump and in the abdomen, while her facies betrayed anxiety. Her pulse was steady at 120. The administration of senna was pressed, and on the fifth day her bowels acted. She was rewarded with a bowl of mutton broth, and on the following day promoted to boiled chicken. The pain in the stump was always worse at night and an opiate was often necessary: to offset its binding action she was given effervescing mixtures with calomel and ginger. By the tenth post-operative day she was eating chicken or fish followed by jelly or light puddings.

Subsequent Progress

On the evening of the twelfth day, however, the nurse summoned Mr. Moore to the bedside because poor Elizabeth was in a fit. Her teeth were set, her hands clenched, countenance wild, pupils dilated and pulse quick. They sponged her forehead and she recovered. Mr. Moore, who was evidently well versed in contemporary developments in clinical medicine, examined her urine. It was acid: the specific gravity was 1038: it was non-coagulable by heat or nitric acid. Microscopy revealed a copious deposit of crystals of lithate of ammonia.

She soon recovered from the pulmonary embolus and 48 hours later was eating sweetbreads for dinner. On the eighteenth day, however, she had severe pain and tenderness on the left side of her abdomen, and her countenance was excited. Her pulse varied between 100 and 110. She appears to have got over this too, and no symptoms of interest were reported until the twenty-ninth day when, while the wound was being examined and dressed, the young woman's courage seems to have failed her, and she became hysterical. Meanwhile the wound continued to heal. By the sixth week the raw area measured only $3\frac{1}{2}$ in. in diameter and the discharge on the dressings was healthy. She was up in a chair for Christmas Day, but her good leg used to swell up towards night. By the ninth week the ulcerated area was reduced to the size of a sixpence and her pain was much relieved. Her periods returned to normal. By the fourteenth week she was walking on crutches, and on the Sunday was grateful to attend Divine Service. A few days later she was discharged. A Mrs. P——, of Warley Hall, Salop, most kindly looked after her for two months, and on 12 August, nine and a half months after the operation, she was reported to be in robust health: by the kindness of friends she was enabled to support herself by her own industry.

But Sands Cox determined he would do more for her. The *Lancet* article appeared in February 1845. He would publish a rather fuller account of this remarkably successful case, and the proceeds of the sale would be devoted to the needs of his brave patient. This memoir entitled 'On amputation of the Thigh at the Hip Joint' (with a successful case) was published in folio by Reeve Brothers of the Strand later in the year 1845. The 262 subscribers included Prince Albert, the Marquis of Lansdowne, Lord Burlington, Sir Robert Peel, Sir Benjamin Brodie, Sir James Clark, and sundry bishops and gentry. That Sands Cox was a good business man is evident from the fact that he succeeded in persuading not only the Prince Consort to subscribe, but also Mr. Anson, the Prince's private secretary.

The operation of amputation through the hip joint was, according to Sands Cox, first performed in 1748 by La Croix. The patient was a boy with 'mortification of both thighs' attributed to eating spurred wheat. The operation was technically not difficult because the limbs were already nearly separated, requiring only division of the soft parts with scissors. The boy died of typhus fifteen days later.

The first successful case was reported in 1774 by Perault on a man with compound fracture of the thigh. Successful operation had been reported by

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seven British surgeons prior to Sands Cox (Brownrigg in 1812, Guthrie in 1815, Orton in 1826, Bryce in 1827, Macfarlane in 1831, Jaeger in 1832 and Mayo in 1841).

Although shy, awkward and retiring in nature, Sands Cox appears to have had a way with him. He possessed, it seems, indomitable perseverance, for it was not without opposition that he succeeded in 1825 in launching his project of forming a medical school in Birmingham modelled on the Webb School. Although he left £50,000 when he died, he appears not to have exerted himself unduly as a surgeon, being keener to attend to the administration of the Queen's College and of the Queen's Hospital which he also founded. It was therefore unfortunate that his intentions to render help to Elizabeth Powis were misconstrued. Did he really wish to help her, asked his enemies and critics? If so, then why go to the expense of this luxurious monograph with its costly lithographs? Why had he not been content with a much less ambitious publication and so reserved more for the unfortunate patient? No, they reasoned, his motive in issuing this reprint had been purely selfish. Who could doubt, they said, that he was a flagrant example of the 'puff direct'. Sir John Forbes, in his *British and Foreign Medical Review* joined in the criticism and implied that the author was sailing near the wind. The illustrations, he said, rather unkindly, must have 'made a hole in her share'. The reviewer in the *London Medical Gazette* acknowledged the surgical skill of Mr. Cox but could not conceive that the importance of his practical remarks was increased in proportion to the width of the margins of the paper upon which they were recorded. The value of the essay would have been as great had it been published in the form of a moderate sized pamphlet. As for the frontispiece it was showily coloured, useless and in decidedly bad taste. But the *Lancet* remained silent. The fact that Thomas Wakley made no effort to vindicate him suggests perhaps that he too had his suspicions. But Sands Cox was a man of high principles, a Conservative and an active churchman. He had simple tastes and was unostentatious, but he fished, enjoyed a game of whist and kept a tame monkey. He did not marry until his retirement. He could, we are told, have been more successful as a surgeon had he devoted less time to his medical school and hospital. But this operation on Elizabeth Powis shows that he possessed the attributes of a great surgeon, and deserves our admiration.

Let us in conclusion pay tribute to Elizabeth Powis and many other brave patients like her who believed in our surgeons, and who calmly submitted to ordeals of suffering which to us a century later seem unthinkable.

REFERENCES

- British and Foreign Medical Review*, 1846, xxxi, 111.
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