James Syme: distinguished Edinburgh surgeon of the 19th century

This year marks the 150th anniversary of the death of James Syme, one of the most distinguished members of the Edinburgh school of surgery in the 19th century.

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James Syme was born in 1799 at 56 Prince's Street, Edinburgh, the second son of a successful lawyer. He was educated at the Edinburgh High School. As a schoolboy he showed a strong interest in science, especially chemistry and natural history. His father provided him with a chemical laboratory in the family home. In the course of young Syme's experiments on the distillates of coal tar, he discovered, at the age of 18 years, the technique of dissolving rubber and using the solution to waterproof cloth. This was later patented by Charles Macintosh.

Syme commenced his studentship at Edinburgh University in 1815, initially studying botany and philosophy. However, 2 years later, in 1817, he attended John Barclay's anatomy classes. Here he met Robert Liston, later himself to become a distinguished surgeon. The following year, Liston set up his own extramural anatomy school and Syme joined him as his assistant. In 1820, Syme was appointed house surgeon at the Royal Infirmary and the following year obtained his Membership of the Royal College of Surgeons of England. In 1823 this was followed by his Fellowship of the Edinburgh College of Surgeons.

Syme first came to notice as a surgical operator in 1825, when he performed the first amputation at the hip joint to be carried out in Scotland. This was to treat an extensive growth at the upper end of the femur. Robert Liston was his assistant. The operation was carried out at great speed, the actual removal of the limb taking no more than a minute. Syme paid no attention to the bleeding until the limb was removed, except that Liston covered the numerous cut vessels with his left hand while compressing the femoral artery at the groin with his right. As soon as the femoral artery was secured, Liston released his hands and Syme later wrote:

> **'And then, had it not been for thorough seasoning in scenes of dreadful haemorrhage, I certainly should have been startled. It seemed, indeed, at first sight as if the vessels which supplied so many large and crossing jets of arterial blood could never all be closed. It may be imagined that we did not spend much time in admiring this spectacle. A single instant was sufficient to convince us that the patient's safety required all our expedition and in the course of a few minutes, haemorrhage was effectually restrained by the application of ten or twelve ligatures'.**

This was not the first such operation to be performed; this had been carried out the previous year at Guy's Hospital, London by Astley Cooper. His patient was a veteran of the Battle of Waterloo, where his left leg had been amputated mid-thigh on the battlefield. The patient was now sinking from chronic osteomyelitis of the femoral stump. Cooper's operation took a total of 35 minutes, with preliminary ligation of the femoral artery and serial ligation of the bleeding blood vessels.

A report of Syme's operation in the *Edinburgh Medical and Surgical Journal* sarcastically compared the time taken by Syme to that by Cooper. In London, *The Lancet* vigorously championed Cooper's meticulous technique by the simple fact that Cooper's patient, survived whereas Syme's unfortunate patient died from 'exhaustion' 7 weeks after surgery.

In 1829, Syme established a private surgical hospital at Minto House in Edinburgh. Here he introduced a novel way of teaching students in the operating theatre rather than on the surgical wards.

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In 1832 came Syme's publication of his authoritative textbook 'Principles of Surgery' and the following year he was appointed Professor of Clinical Surgery at the University, thereby obtaining the use of the wards at the Royal Infirmary. The next year, Robert Liston accepted the chair of Surgery at University College Hospital, London, thus leaving Syme as the undoubted leading surgeon in Edinburgh. A few years later, in 1838, Syme was appointed surgeon to Queen Victoria in Scotland, and in 1850 he was elected President of the Royal College of Surgeons of Edinburgh and played an important part in the medical political scene of those times.

Syme was responsible for numerous advances in surgical technique. He introduced a number of procedures for avoiding amputation by excising diseased joints, notably the elbow and the ankle. His name is associated with the operation of amputation at the ankle joint, Syme's amputation. This uses a long posterior skin flap, which is retracted, and excision of the malleolus of the fibula and of the tibia. These procedures are rarely seen today. The only Syme's amputation that I have seen, and indeed performed, was in 1986. I was lead 'major incident' surgeon at the old Westminster Hospital when, one Saturday morning, we received the casualties from the IRA bombing in Hyde Park. Among these was a Canadian nurse, most of whose foot had been blown off. I removed the remains of the shattered foot by Syme's amputation and then, 5 days later, carried out delayed primary suture of the long posterior skin flap, with satisfactory healing.

Syme married twice. The elder of his two surviving daughters from his first wife, Agnes, married Joseph Lister, who succeeded his father-in-law in the chair of clinical surgery. At the end of his career, Syme warmly advocated Lister's antiseptic surgical regimen.

In April 1869, Syme suffered a stroke, which rendered him hemiplegic and he resigned his Chair of Surgery. The following year he suffered a second stroke and died at his home in Edinburgh on 26 June 1870, 150 years ago.

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