

# JOHN HUNTER'S POST-MORTEM EXAMINATION OF GEORGE GRENVILLE (1712–1770)

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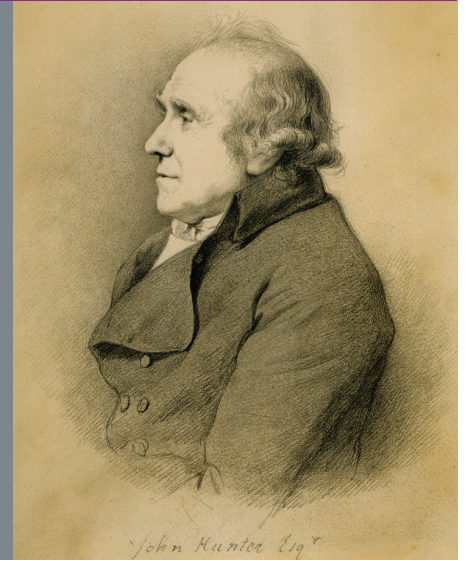
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John Hunter

**The Hunterian Museum at The Royal College of Surgeons of England contains approximately 3,500 specimens of human and comparative anatomy and pathology collected by the surgeon, John Hunter (1728–1793). A significant part of the collection comprises pathological specimens. These include specimens removed during surgery or as incidental findings from anonymous bodies being dissected during anatomical teaching. However, the majority comes from the bodies of patients on which Hunter performed post-mortem examinations. These include patients at St George's Hospital, where Hunter worked as a surgeon from 1768 until his death. A surprising number also come from the bodies of private patients.<sup>1,2</sup> These were presumably removed with consent, at autopsies that would have taken place in the patient's own home and often with the patient's family or friends present.**

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Among the specimens are a calvaria, a portion of rib, the distal part of the left humerus and the proximal third of the right femur from the former prime minister, George Grenville, who died on 13 November 1770 (RCSHC/P 844-7). Although details of many of these post-mortem examinations are included in Hunter's notes there is no record of Grenville's case.<sup>3</sup> As a surgeon and at that stage a relatively unknown practitioner, John Hunter is unlikely to have been employed directly by Grenville. It is possible that this case was one of several in which John Hunter was asked to perform an examination at the request of the physician John Pringle (1707–1782). Pringle's casebooks are preserved in the Royal College of Physicians of Edinburgh. The collection has only recently been opened to researchers and further study may yet reveal a connection with Grenville's case.

Whatever the terms under which Hunter carried out the autopsy the results appear to have been widely disseminated. *The Annual Register* for 1770 recorded Grenville's death, adding that 'When his body was opened, the blood vessels in the head were nearly empty; the rib bones on one side rotten, and two on the other side the same'.<sup>4</sup> Hunter's assistant William Bell later prepared drawings of the calvaria, rib and humerus (RCSSC/HDB/4/1/361a-b). A note appended to these drawings describes them as 'Bones of the Honourable George G-', adding that 'many more were found in the same condition upon opening the body, where in place of the bone that was gone was a curdily [sic]

substance'. It also records that the humerus was fractured before death (RCSSC/HDB/4/1/360A).

In contrast with modern practice, John Hunter appears to have had few qualms about revealing the identity of the patients whose organs or tissues were preserved in his collection. From 1785 until his death Hunter's collection was displayed in a purpose-built museum behind his house in Leicester Square. In 1799 the collection was purchased by the government and presented to the Company (now the Royal College) of Surgeons. During the 19th century Hunter's collection was enlarged through the addition of many thousands of new specimens. As part of this process, the collection was recatalogued and specimens anonymised. Only recently has a major recataloguing project helped to recover some of these hidden identities. The bones of George Grenville are still preserved and displayed in the College's Hunterian Museum.

Morphologically the appearance of the bones suggests malignancy, with multiple myeloma being the most likely diagnosis though secondary deposits of a tumour could not be ruled out with the primary being in the lung, prostate or any other tumour capable of spreading to bones; finally military tuberculosis was another disease that could not be convincingly ruled out (Figure 1).

The x-ray of the skull, which was done at the Royal Free Hospital department of radiology (Figure 2), was characterised by many purely lytic punched-out lesions of

variable size but with many uniformly small or raindrop lesions. These are a feature very commonly seen in myeloma and far less commonly in disseminated malignancy. This taken with the widespread morphologically similar lesions seen throughout the rest of the appendicular skeleton makes a compelling case for the diagnosis of multiple myeloma. The presence of so many bone lesions, especially in the absence of pulmonary, renal or other soft-tissue disease, makes tuberculosis extremely unlikely though it can occasionally produce disseminated bone lesions.

In order to exclude military tuberculosis as a cause of this pathology we attempted to find the DNA of the TB bacillus in these bones. At the time of Lord Grenville's death, if the diagnosis of malignant myeloma is correct, it is highly likely that he was immunocompromised. Therefore, he would have been

particularly susceptible to tuberculosis, known as 'the white plague,' which had reached epidemic levels in Europe following the Industrial Revolution, with death rates in London, Stockholm and Hamburg approaching 800–1,000 per 100,000 population a year.<sup>5</sup>

Therefore, it was thought worthwhile to explore the possibility and a small piece of rib from Lord Grenville (P845) was examined for the presence of the DNA of the tubercle bacillus. The bone was crushed in a sterile pestle and mortar and 60mg of bone powder was used. Taking stringent precautions against contamination, the bone powder was demineralised in proteinase K and EDTA; incubated in lysis buffer based on guanidium chloride; subjected to successive freezing in liquid nitrogen and thawing; and the DNA captured onto silica using a commercial kit (NucliSENS®, bioMérieux UK Ltd, Basingstoke, UK).

Eluted DNA was examined for the repetitive target sequence IS6110 by the polymerase chain reaction, using primers specific for the *Mycobacterium tuberculosis* complex. No evidence of tuberculosis was obtained.

We can now conclude that having excluded tuberculosis as a cause of the lesions, multiple myeloma was responsible for the death of Lord Grenville on 13 November 1770.

#### References

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Figure 1 Skull and rib showing typical myeloma lesions

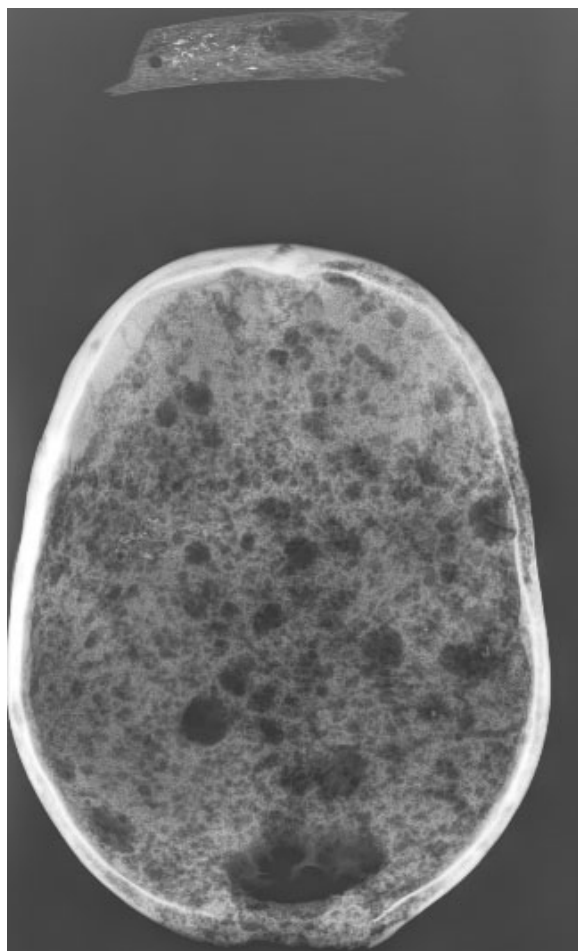


Figure 2 X-ray of skull and rib, confirming myeloma lesions