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## History of Neurology

# Percivall Pott (1713-1788) on the curvature of the spine and the French contribution

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### ABSTRACT

Physicians remember the name of the surgeon Percivall Pott (1713–1788) because of the eponym “Pott’s disease”, described as “paralysis in the lower limbs, which is often accompanied by curvature of the spine”. Pott’s writings on surgical subjects are far vaster. For example, he described the fracture-dislocation of the ankle, or Pott’s fracture, and determined the cause of scrotum cancer in chimney sweeps. He attributed this disease to contact with tar that contaminated the clothing of workers, often very young children because they were small enough to fit into chimney conduits. His work led to the first law addressing the employment of children. After a brief account of Pott’s life, this article presents the description of Pott’s paraplegia, for which both Jean-Martin Charcot and Yvonne Sorrel-Dejerine paid him homage. The contribution of some of his predecessors and of French contemporaries is highlighted. Pott was also a pioneer in neurosurgery, describing the non-symptomatic interval between cranial trauma and coma and the indication for trepanation to remove a haematoma.

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Yvonne Sorrel-Dejerine (1891–1986), the daughter of Augusta Klumpke-Dejerine (1859–1927) and Jules Dejerine (1849–1917), noted in the introduction of her thesis defended in 1926 [1]: “Percivall Pott, who masterfully authored two dissertations, linked paralysis to vertebral caries”. French physicians all know the eponym “Pott’s disease”; that is, tuberculous spondylodiscitis that spreads to the vertebral body. However, for the non-medical public, now that tuberculous infections are rare, especially those affecting the bones, it is easy to forget this disease, even though Sorrel-Dejerine collected forty-two observations over four years at the Berck Maritime Hospital from 1921 to 1925. Approximately, 10% of patients with

extrapulmonary tuberculosis currently have skeletal involvement. Spinal tuberculosis accounts for almost 50% cases of skeletal tuberculosis. The epidemic of infections due to the human immunodeficiency virus led to a resurgence in all forms of tuberculosis; an increased awareness about spinal tuberculosis is therefore necessary [2].

The eponym “Pott’s disease” retains the name of this English physician, but Pott’s life and his important contributions are largely unknown. His son-in-law, Sir James Earle (1755–1817), left us with the most authoritative biography which he added to posthumous editions of his complete works [3]. The article on Pott in the *Encyclopædia Londinensis* is aimed

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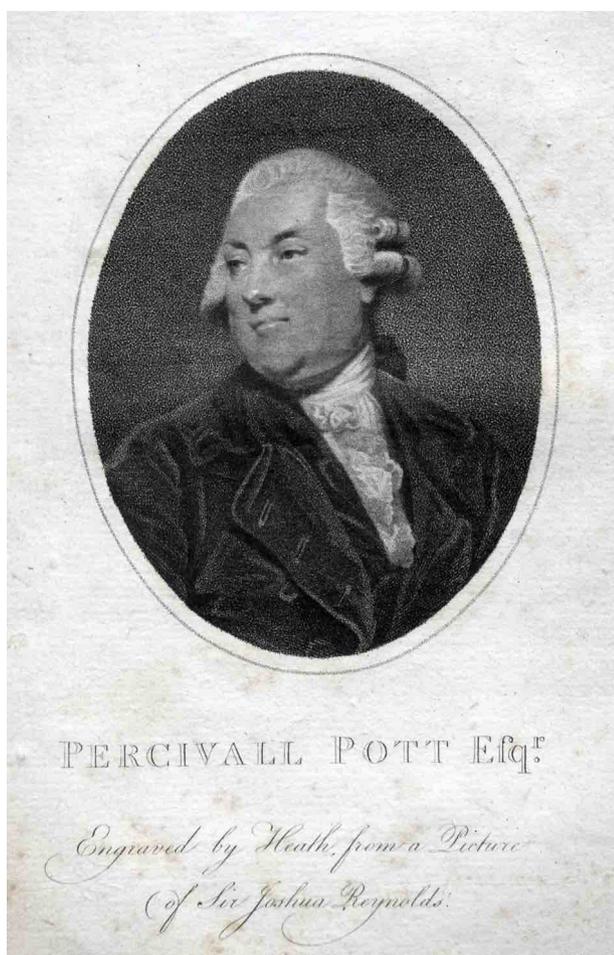
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at highlighting the efforts he made to make medicine and surgery more humane: “Mr. Pott lived to see the remains of barbarism exploded, and a more humane and rational plan, of which he was the chief author, universally adopted”.

## 1. Brief biography

Percivall Pott (Fig. 1) was born in London on 26 December 1713 (the date of 06 January 1714 often incorrectly referred to in the literature is probably that of his baptism and not his birth). The family house at the time of his birth, on Thread-Needle Street, no longer exists, having been replaced by the Bank of England, which has been located at this site since 1734. Pott's father died when he was just four years old. His mother, a widow for the second time “with very limited resources”, provided for his education with the help of a distant relative, Dr. Joseph Wilcocks (1673–1756), bishop of Gloucester and of Rochester, and dean of Westminster. At the age of 7, Pott entered a private school in Darent (Darne) in Kent, southeast of London. Choosing not to follow the ecclesiastical path set out for him, he decided to study surgery. In 1729, at the age of 15, he



**Fig. 1 – Frontispiece of The Chirurgical Works of Percivall Pott, Surgeon to St.-Bartholomew's Hospital 1775 (BIU Santé, Université de Paris).**

began an apprenticeship with Edward Nourse Junior (1701–1761), one of the chief surgeons at St.-Bartholomew's Hospital in London. Working under him over several years, he prepared dissections for the anatomy course that this teacher held at his home on Aldergate-Street. He thus developed the skill of accurately drawing anatomical parts and learned the surgical treatment and techniques for many pathologies, especially orthopaedic pathologies. In 1736, at age 22, Pott was admitted to the Barber-Surgeons's Company, which made it possible for him to perform surgery himself. From that point forward, he was allowed to wear the Company's livery. In 1744, he was appointed assistant surgeon at St.-Bartholomew's Hospital and went on to work as a principal surgeon from 1749 to July 1787, when he injured his hand and had to resign after half a century of service to this institution. He conducted classes at his home, first on Watling-Street, then in the house he bought near Lincoln's-Inn in 1769, and, finally, in 1777 in his Hanover-Square house. He became so renowned that much of his time was devoted to answering letters from throughout Europe.

A member of the Royal Society of Surgeons of England since 1764, he became an honorary member of the Royal College of Surgeons of Edinburgh in 1786 and of the Royal College of Surgeons of Ireland in 1787.

In 1746, after his mother's death, Percivall Pott married Sarah Cruttenden, the daughter of the director of the East Indies Company. The couple had four boys (Percivall, Edward Holden, Robert, and Joseph) and four daughters (Sarah, Elizabeth, Mary, and Anna). One of them married Sir James Earle (1755–1817), a famous surgeon at St-Bartholomew's Hospital. Their third son, Henry Earle (1789–1838), was also a surgeon at this hospital and invented a folding bed for immobilising leg fractures in the physiological position.

Percivall Pott, an amiable and generous man, attracted a large audience to his classes. They included Englishmen as well as foreigners. In addition to his son-in-law, James Earle, his most famous students were John Hunter (1728–1793) and John Abernethy (1764–1831). In the 1780s, Pott was reputed to be the leading surgeon in London. He died at age 74, on 22 December 1788, after eight days of fever with delirium: “My mind has a great propensity to aberration and I find myself much inclined to talk nonsense, unless I studiously collect my thoughts and fix them” [3].

## 2. An eclectic body of work

Pott's surgical writings covered many areas. “In the year 1756, an accident befell Mr. Pott, which, though of little consequence in itself, yet, as it displays the vigour and firmness of his mind, and seems to have had considerable influence on his future life, it deserves to be recorded in this place, as he was riding in Kent-Street, Southwark, he was thrown from his horse and suffered a compound fracture of the leg, the bone being forced through the integuments” [3]. He had a fracture-dislocation of the fibula at the ankle. Confined to his bed, he began to draft several treatises that he would go on to complete. For his contemporaries, these works were masterpieces [4]. His writings include treatises on hernia (1756) [5], cranial trauma (1760) [6], hydrocele which he called water hernia (1762), cataract and lacrimal fistula (1763), anal fistula (1765),

fractures and dislocations (1768), chimney sweepers' carcinoma or scrotum cancer (1775), polypus of the nose, gangrene (which he named "mortification of the feet and toes"), and amputations, varicose aneurysm (aneurysmal varix – arterio-venous aneurysm), and above all, his monograph on paraplegia secondary to vertebral caries (1779).

### 3. Pott's fracture

Following his fracture in 1756, Pott stressed the importance of the fibula as a support in the ankle region in spite of its slender structure as compared with the tibia: "Without the support of the fibula the body cannot be held erect, since abnormal movements of the foot may be expected at any moment". Pott described a fracture of the distal fibula, 2–3 inches proximal to the ankle joint, with an associated tear of the deltoid ligaments and lateral displacement of the talus. In 1769, Pott published an extensive review on fractures and dislocations, the first classification system for ankle fractures. He describes fractures in terms of the number of malleoli involved, thus dividing injuries into unimalleolar and bimalleolar, but this classification does not distinguish between stable and unstable injuries. In English, the eponym "Pott's fracture" has since been used (Fig. 2). Surgeons who examined Pott's leg soon after his accident suggested it be amputated. Pott refused, following the advice of his teacher Nourse, who reduced the dislocation and immobilised the ankle. This conservative treatment made Pott well known and even renowned: "From this phase of the accident, Mr. Pott was recognised as an author". Throughout his career, he taught his students to avoid the amputation of fractured limbs wherever possible.

In keeping with the British surgeon William Sharp (1729–1810), who described, in 1767, in a letter to the Royal Society of

London [7], splints for treating leg fractures, Pott examined the conditions of immobilisation for all fractures. His work appeared in a book he published in London in 1769 [8] and in Paris in 1783 [9]. In it, he described the reduction of the fracture by extension then the positioning of the limb in such a way that the muscles are as relaxed as possible. The thigh is in semi-flexion, which enables passive extension preventing ankylosis, with the popliteal fossa resting on a cushion, for both thigh fracture and leg fracture. The elbow is flexed for humerus fractures. For him, there were only two exceptions: olecranon fracture and kneecap fracture, where the knee or elbow must not be bent but rather maintained straight and in extension [8].

A similar method was, in fact, used at the St-Bartholomew hospital starting in 1748. While Pierre Joseph Desault (1738–1795) and his school, which dominated in Paris, opposed this practise [10], Baron Guillaume Dupuytren (1777–1835), a famous surgeon at Hôtel-Dieu Hospital, paid homage to the British surgeons Sharp and Pott and adopted their method: "Guillaume Sharp and Percivall Pott merit recognition for establishing that the fundamental condition for reducing and maintaining fractures was to place the muscles in a position favouring the greatest relaxation possible. The advantages of this method, which Pott perhaps exaggerated but with which Desault was not sufficiently familiar, are so evident that we are eager to adopt it and disseminate its use in France" [11].

### 4. Pioneer in occupational medicine: scrotum cancer in child chimney sweeps

In February 1775, Pott published a study on scrotum cancer in London in subjects aged 20 to 50 who had been chimney sweeps in childhood [4]. While until then scrotum cancer was

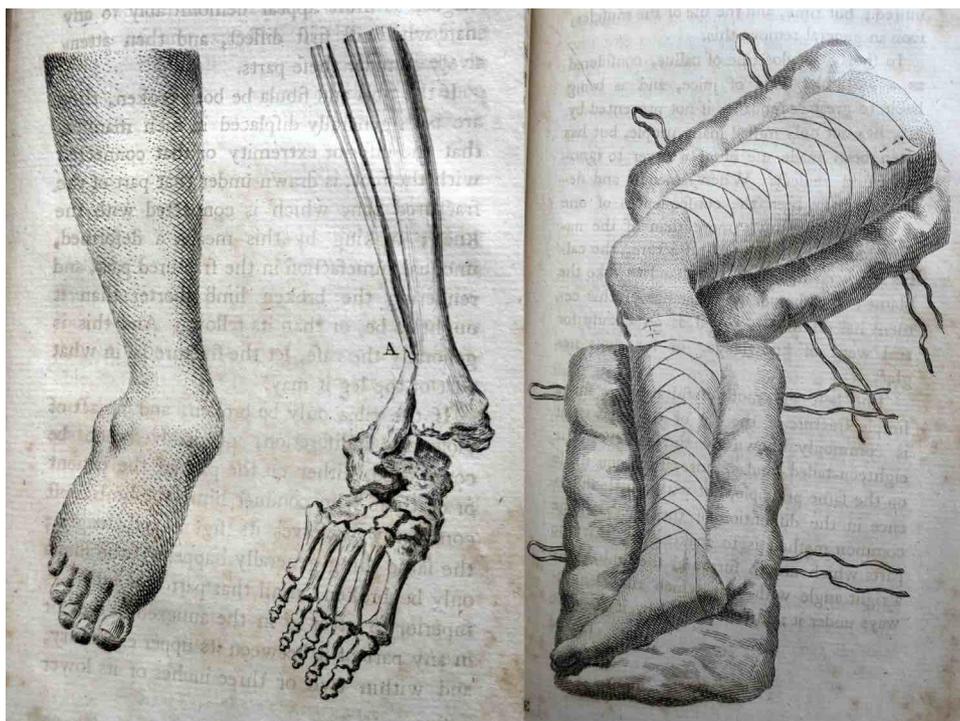


Fig. 2 – Pott's fracture (Collection OW).

attributed to venereal disease, Pott demonstrated for the first time the harmful effects of tar, specifically residues of unburnt bituminous contained in the soot in workers' clothes and the folds of the skin of the scrotum. He thus described an occupational disease and was one of the first to identify a cause of cancer. To keep the disease from spreading to the testicles and the ganglia of the groin, Pott proposed an early surgical excision which met with incredulity among both physicians and chimney sweep employers [12]. Throughout the following years, Pott sought to improve working conditions for young chimney sweeps in London, children whose parents sold them off, often at a very young age. Some of those recruited were as young as 4. In 1788, following Pott's efforts, the first child labour law, the Chimney Sweepers Act, was adopted. The age at which the hiring of children was authorised was initially set at 8, then 14 in 1834, and finally at 21 in 1864.

### 5. Brief history of knowledge regarding vertebral caries

Vertebral caries or Pott's disease became rare after the 1950s with the use of a tritherapy of antituberculosis antibiotics. Involvement of the spine reportedly occurs in less than 1-2% of patients who contract tuberculosis. Although the incidence of tuberculosis increased in the late 1980s to early 1990s, the total number of cases has decreased in recent years. Prior to this, absolute rest in dorsal decubitus, immobilisation in plaster shells, heliotherapy, and feeding up were the basis for treatment like that used, for example, at the Berck Maritime Hospital. Patients were referred to as "*les allongés*" because they had to remain lying down, in the same way that healthy individuals were called "*bien-portants*" (able to stand up) at the beginning of the 20th century [13].

Pott's disease overlaps with that of hunchback patients. The progression of the infection toward bone cysts could result in the absence of neurological damage or be marked by a regression of paralysis with possible return to walking in case of initial paraplegia. Jean-Martin Charcot (1825-1893) presented an edifying observation in his Tuesday lesson of 18 December 1888. This was an opportunity for him to show the persistence of an exaggerated patellar reflex and epileptoid tremor in foot dorsiflexion, signalling the persistence of pyramidal damage (before Joseph Babiński described the sign), even after motor recovery [14].

A series of various theories explaining paraplegia have succeeded one another ever since the seventeenth century. Spinal compression secondary to spinal canal curvature in severe gibbosity and localised compression by a "*une vive arête*" (sharp edge) of bone are the two theories initially accepted, but they were weakened by the macroscopic anatomopathology of Jean Cruveilhier (1791-1874) at the beginning of the nineteenth century [15]. Compression by a detached bone sequestrum in the spinal canal proved to be exceptional yet possible by a sequestrum consisting of the odontoid apophysis. Jules-Aimé Michaud (1842-1878), resident under Charcot in 1870-1871, drew on the prophetic 1816 writings of the Montpellier surgeon Jacques-Mathieu Delpech (1777-1832) [16]. In his thesis, he demonstrated the cause of

paraplegia to be due either to an intraspinal abscess or a "*pachyméningite externe caséuse*" (caseous external pachymeningitis); that is, meningitis without perforation of the dura mater, which could include spinal lesions that were part of the neuralgic clinical pictures familiar to physicians of that time [17].

### 6. Neurology pioneer: Pott's disease

In 1779, Pott published a first version of the work to which he would owe his posthumous fame: "Remarks on that kind of palsy of the lower limbs, which is frequently found to accompany a curvature of the spine and is supposed to be caused by it: together with its method of cure" [18-20] (Fig. 3). Earle testified, "He introduced his first treatise on this subject with doubts and surmises, having just drawn the outline; but finding his opinion confirmed by experience, he with confidence produced his further remarks on this disease in 1782, which gives a complete description of the complaint so little understood before, that those who suffered under it were



**Fig. 3 – Ten-years-old girl with midthoracic gibbus and chest deformity, photo by Lewis-Albert Sayre (1820-1900). In: spinal disease and spinal curvature: their treatment by suspension and the use of the plaster of Paris bandage. London: Smith, Elder & Co.; 1877 (BIU Santé, Université de Paris).**

consigned to their fate which usually led to inactivity, deformity, and death". This second part was entitled: "Further remarks on the useless state of the lower limbs, in consequence of a curvature of the spine: being a supplement to a former treatise on that subject" [21]. He dedicated this new version to the French surgeon Jean-Louis Petit (1674–1750). The change of title in 1782 incorrectly suggested that Pott saw spinal curvature as the cause of the palsy. In fact, he attributed it to abscesses adjacent to the vertebral column: "That in the case of true curvature, attended with useless limbs, there never is a dislocation, properly so called; but that the alteration in the figure of the back bone, is caused solely by the erosion and destruction of a part of one or more of the corpora vertebrarum; and that as there can be no true curvature without caries, it must be demonstrably clear that there must have been a distempered state of parts previous to such erosion; from all which it follows, that this distemper, call it by the name you please, ought to be regarded as the original cause of the whole, that is of the caries, of the curvature and all the attendant mischiefs, be they what they may, general or particular. That the useless state of the limbs is by no means a consequence of the altered spine, or of this disposition of the bones with regard to each other, but merely of the caries: of this truth there needs no other proof, than what may be drawn from the cure of a large and extensive curvature, in which three or more vertebrae were concerned, in this deformity always remains unaltered and unalterable, notwithstanding the patient recovers both health and limbs" (Fig. 4).

Pott gives a good depiction of the semiology of paraplegia: "The disease of which I am to speak is a disease of the spine, producing an alteration in its natural figure and not unfrequently attended with partial or total loss of the power of using, or even moving, the lower limbs. From this last circumstance (the loss of the use of the limbs), it has in general been called a palsy and treated as a paralytic affection to which it is, in almost every respect, perfectly unlike. In the true paralysis, from whatever cause, the muscles of the affected limb are soft, flabby, unresisting, and incapable of being put even in tonic state. In the present case, the muscles are indeed extenuated and lessened in size, but they are rigid and always at least in, a tonic state by which the knees and ankles acquire a stiffness not very easy to overcome". He gave a vivid observation of the spasticity and rigidity surrounding damage to the central nervous system [21]. Pott did not specify explicitly the vertebrae affected during paraplegia, indicating only three or four dorsal vertebrae. The concept distinguishing between spastic and flaccid paresis is not yet relevant at the time of Pott. He put forward treatment to create a draining fenestra adjacent to the spinal deformity. It is easy to understand the rationale behind this approach; the draining of pus to relieve spinal cord compression: "A purulent discharge derived from the neighbourhood of the spine is found, from repeated experience, to be a successful remedy, even after the disease is confirmed by caries, it seems to me to bid fairer than anything else" [21].

The 1792 Paris edition includes a separate chapter entitled *Examen de la véritable cause de la courbure de l'épine* (examination of the veritable cause of spinal curvature) even though it was accorded only a paragraph in the complete works compiled by Earle. In this chapter, Pott linked caries and scrofula, but it



**Fig. 4 – “Palsy of the Lower Limbs, which is Frequently Found to Accompany a Curvature of the Spine and is Supposed to be Caused by it.” (BIU Santé, Université de Paris).**

would be anachronistic to criticise him for not referring to tuberculosis: "These different affections of the spine and of the parts in its immediate neighbourhood are productive of many disorders, general and local affections of the whole frame and habit of the patient, as well as particular parts and, among the rest, of that curvature which is the subject of the enquiry; and it may not be amiss to remark that strumous tubercles in the lungs and a distempered state of some of the abdominal viscera often make a part of them. That the disease which produces these effects on the spine and the parts in its vicinity, is what is in general called the scrophula; that is that same kind of indisposition as occasions the thick upper lip, the tedious obstinate ophthalmy, the indurated glands under the chin and in the neck, the obstructed mesentery, the hard dry cough, the glairy swellings of the wrist and ankles, the thickened ligaments of the joints, the enlargement and caries of the bones, &c" [22].

Some authors, such as Jacques Dalechamps (1513–1588) in 1570 [23], had already published observations of gibbosity at the beginning of the sixteenth century, but among them were those who explicitly associated them with the presence of tubercles, as in the case of the doctoral thesis defended on 23

December 1836 by Auguste Nélaton (1807–1873) [24]. Nélaton cited Ernesti Friderici Haacke who had titled his own 1744 thesis, presided by Zacharias Platner (1694–1747), professor of pathology and *décevmvir* at the University of Leipzig [25], *Panegyryn medicam indicit et de iis, qui ex tuberculis gibberosus fiunt, disserit*, which can be summarised as “medical discussion of tubercles in gibbosity”. The translation “gibbosity following tubercles” clearly does not convey a specific infection, which was not recognised before the beginning of the nineteenth century. A similarity was established between tubercles (a potato is one example) and outgrowths or masses (abscesses), such as white tumours, but also the projection of spinous processes secondary to gibbosity due to crushing of the anterior part of vertebral bodies. It is clear that gibbosity and tubercles were conceptually associated in Germany before Pott’s description.

Other contemporaries of Pott associated gibbosity and the presence of tubercles in their descriptions. The surgeon Claude Pouteau (1725–1775) at Hôtel-Dieu Hospital in Lyon was one the most original observers of his time. His name has remained linked to the “Pouteau-Colles” fracture of the wrist that he described, followed by Abraham Colles (1773–1843) in Ireland in 1814. His posthumous work published in 1783 includes a chapter entitled *Sur le Rakikis & spécialement sur la gibbosité, sur les causes de cette maladie et sur les remèdes propres à la combattre* (on rickets and especially gibbosity, on the causes of this disease and the specific remedies to fight it) [26]. The first sentence explains that he has established the association between gibbosity and pulmonary tuberculosis: “Gibbosity has the closest relations with pulmonary tuberculosis. It is very often complicated by symptoms of this disease that are more or less serious”. Pouteau disputed attributing gibbosity to “a vice arising from rickets, scurvy, or venereal disease” or to women’s corsets. After a long discussion of the various directions the spinal column could bend, he reflected on the neurological deficit. He set out to “understand how the deformations of the spine affect not only the parts below but also and so manifestly the parts above. Is it necessary to add to this the inflections of the spinal cord, the stronger or weaker compression it undergoes, the nerves that leave from it, the slight interception in the course of the animal spirits, and a sort of reflux of these spirits toward the parts above the derangement of the vertebral column?” Turning to the theories put forward by François-Guillaume Le Vacher de la Feutrie (1732–1816), Pouteau considered the disease to have a “humoural” origin, concluding that rest in a reclined position was entirely ineffective to prevent gibbosity, which nevertheless progressed. Le Vacher de la Feutrie posed a valid question: “Is this a destructive virus which, used to circulating everywhere in the human machine, causes alterations of all kinds & the greatest of ravages?” [27]. In very clear terms and during the same time during which Pott was writing, Pouteau concluded: “Of all the organ lesions that rickets may inflict, that of the lungs is most common & without a doubt the most dangerous. The treatment of gibbosity is almost always that of pulmonia or the rudiments of this disease.”

The same year as Pott, in 1779, Jean-Pierre David (1737–1784), a surgeon in Rouen, published work that earned him a prize from the Academy of Surgery of Paris. The Academy selected the following subject for the competition: *Quels sont*

*les effets du mouvement et du repos dans les maladies chirurgicales?* (What are the effects of movement and rest in surgical diseases?) David submitted the observation of a patient who experienced “weakness in the spinal cord, with pain & difficulty to maintain an upright position; in the beginning he had trouble walking & then could only do so in a bent position supporting himself with a cane.” This was followed by a fluctuating non-inflammatory mass lateral to the column that opened to the skin and “released a pint of pus as white as milk”. David went on, “The patient was attacked in 1769 by a peripneumonia that killed him. I succeeded in obtaining his cadaver & my first task was to observe the disorders that his spinal column had undergone three years prior. As I had already suspected, this part showed several dorsal vertebrae that had merged; the 9, 10, and 11 had lost at least half of their height whereas their processes, which had undergone no alteration, presented on the outside a projection & a very marked convexity” [28]. He added other cases progressing to death and reported the disease’s cause to blows or carrying an overly heavy burden. Each time a surgeon drained non-inflammatory abscesses, death followed. On the other hand, based on his therapeutic proposals, complete rest in a reclined position allowed the resorption of fluctuating masses then recovery of the ability to walk with the help of a cane. David used the word “*carie*” to describe the vertebral lesions but did not refer to the condition of the spinal cord. Posterity has forgotten David, regrettable for some, who consider that Pott’s eponym is not entirely merited [29].

Completely contradicting David, Pott boasted of having developed the first effective treatment based on evacuating perivertebral abscesses following spondylodiscitis: “The remedy for this most dreadful disease consists merely in procuring a large discharge of matter, by suppuration, from underneath the *membrana adiposa* on each side of the curvature, and, in maintaining such discharge until the patient shall have perfectly recovered the use of his legs. To accomplish this purpose, I have made use of different means, such as setons, issues made by incision, and issues made by caustic; and although there be no very material difference, I do upon the whole prefer the last” [18]. It seems that the fatal issues observed by David were the result of the transformation of non-inflammatory abscesses into purulent abscesses due to bacterial superinfection.

After his 1816 writings mentioned above, Delpech (1777–1832) described in 1828 the exclusively tuberculous aetiology of this “serious affection of the bones [that] often results in deformities of the spine or limbs. Tubercles are the exclusive cause of the deformities of the spine, which are symptomatic of what is called Pott’s vertebral disease. Today it is fitting to call it a tuberculous affection of the vertebrae” [30]. This was repeated in 1835 by Jacques Nichet (1803–1847), a surgeon at the Hôpital de la Charité in Lyon who spoke of dorsal phthisis or myelophthisis, describing in detail “a pocket the length of a thumb, filled with yellow tubercular matter that was thick and viscous” or “raw tubercles around the first three vertebrae”, leaving no doubt about his knowledge of the aetiology of Pott’s disease [31]. In 1888, Odilon Lannelongue (1840–1911) gave lessons at the medical school in Paris that provided an overview of the knowledge acquired since Pott up to the bacillus discovered by Robert Koch (1843–1910) in 1882 [32].

## 7. Percivall Pott, pioneer of neurosurgery?

Since Hippocrates's *De capitis vulneribus* [33], physicians have distinguished between the wounds of the scalp alone and those that damaged the skull and its contents. It was not until the eighteenth century that the medical literature began to refer to the neurobehavioural consequences of cranial trauma following the writings of Jean-Louis Petit (1674–1750) [34], François Pourfour du Petit (1664–1741) [35], and François Le Dran (1685–1770) [36] in France.

On 10 April 1766, the Royal Academy of Surgery held a colloquium presenting the texts submitted by the candidates for the 1761 prize. They responded to this prompt: “Establish the theory of ‘*contre-coups*’ (brain lesions opposite the impact) in the lesions of the head and the practical consequences that can be drawn from it.” The resulting book can be considered the first French treatise on cranial trauma [37]. Lorenz Heister (1683–1758) from Germany had proposed in his 1739 book *Institutiones Chirurgicae* [38], widely distributed in Europe, a chapter on head wounds and trauma. In these two works, while impairment contralateral to the trauma, somnolence, and coma are described, the progression over time is not covered. The exception to this was presented in 1729 by Louis-François Manne (?–1755) who considered the non-symptomatic interval in the observations he reported on [39]. Pott cited all these authors and drew from Le Dran's writings to recognise in the non-symptomatic interval between trauma and coma the pathognomonic clinical sign of cerebral compression by an epidural haematoma or by an abscess to be drained by trepanation. The two books he published in 1760 [40] and 1768 [41] only differ by the addition of numerous observations, compiled to establish the validity of his innovative views. Here is how Pott described these cases: “it is no very uncommon thing for a smart blow on the head to produce some immediate bad symptoms, which after a short space of time disappear, and leave the patient perfectly well. A slight pain in the head, a little acceleration of pulse, a vertigo and sickness, sometimes immediately follow such accident, but do not continue many hours, especially if any evacuation has been used. These are not improbably owing to slight commotion of the brain, which, having suffered no material injury thereby, soon cease. But if, after an interval of some time, the same symptoms are renewed [ . . . ]; if the symptoms of pressure, such as stupidity, loss of sense, voluntary motion, & appear some few days after the head has suffered injury from external mischief, they do most probably imply an effusion of a fluid somewhere: this effusion may be in the substance of the brain, in its ventricles, between its membranes, or on the surface of dura mater; and which of these is the real situation of such extravasation, is a matter of great uncertainty, none of them being attend with any peculiar mark or sign that can be depended upon as pointing it out precisely.” Pott tried also to distinguish between epidural clot and subdural empyema by noting that the latter was more often associated with a febrile course and localised pain. These books made Pott a pioneer in neurosurgery [42]. In 2001, Paul McCrory characterised Pott as a pioneer in sports medicine based on four instances of cranial trauma that he described in the sports of fencing and cricket [43].

## 8. Pott's puffy tumour

Pott's puffy tumour is the third eponym by which to honour and remember Pott. Its disadvantage is that it does not highlight his observation of the consequences of a lesion in diploic veins. These veins occupy channels in the diploe of the cranial bones. They are large and exhibit at irregular intervals pouch-like dilatations; their walls are thin and formed of endothelium resting upon a layer of elastic tissue. Initially, Pott described a rare pathology, frontal subperiosteal abscess with osteomyelitis that could spread intracranially: “The inflammation of the dura mater and the formation of matter between it and the skull, in consequence of contusion, is generally indicated and preceded by one [sign] I have hardly ever known to fail; I mean a puffy, circumscribed, indolent tumour of the scalp and a spontaneous separation of the pericranium, from the skull under such a tumour” [41]. Post-trauma tumefaction is initially only haematic due to bleeding in a ruptured diploic vein. The secondary infection Pott observed could lead to epidural abscess and thrombosis in the longitudinal sinus. In fact, osteomyelitis and purulent accumulation result more frequently from the spread of bacterial sinusitis than from direct frontal trauma. In any case, the drainage proposed by Pott could effectively prevent cerebral complications.

## 9. Conclusion

The disadvantage of using eponyms is that they focus an innovative clinical description on one or two authors, leading other equally perspicacious clinicians to be forgotten. In this way, Claude Pouteau and Jean-Pierre David, amongst others, also described vertebral curvature with paraplegia, associating it with the presence of tubercles. But history has forgotten their work, just as valuable as that of Percivall Pott. And only considering Pott's disease would be to ignore Pott's numerous other original and pioneering works. We should take a page from Sir d'Arcy Power (1855–1941), a British surgeon and historian of medicine, who best describes Percivall Pott's legacy: “He made plain the paths so that his followers walked along them more easily and were able to go further” [44].

## Statement of ethics

This work required no approval from an institutional review board and was prepared in accordance with the ethical guidelines of the journal.

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The authors declare that they have no competing interest.

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