

John Elderton's Lithotrite Device of 1817.

Frederick John O'Dell, MSc. fred.odell@nhs.net

Archive and Museum Service, Northampton General Hospital NHS Trust, Cliftonville, Northampton, NN1 5BD.
Telephone 01604 544868 (author details at the end of the paper)

2019 marks the 200th anniversary of the publication of the plans of John Elderton's lithotrite device. Elderton's invention was earlier than those of the major participants in the history of the lithotrite by at least five years, however he remains largely unknown. This paper seeks to rectify this.

"Cutting for the stone was probably the earliest elective operation practiced in an attempt to relieve the human body of pain."¹ Indeed it is mentioned in the 'Hippocratic Oath', indicating that it was practiced over two thousand years ago at least.

Riches pays tribute to the "...outstanding courage and fortitude of the patients...who submitted themselves to the hazards and terrors of lithotomy without the benefit of anaesthesia." and "The prolonged pain of a stone in the bladder was great, the pain of lithotomy was greater but shorter and they had the hope of recovery."² This hope of recovery was not always realised and depended on the skill of the surgeon, many sufferers died from the barbarous attempts of less skilled operatives. It was this that led to the invention of lithotrites and the possibility of removing stones in the bladder without recourse to the knife and the inherent dangers of 'cutting for the stone'.

The early history of the lithotrite is confused and depends on which account is cited; probably the most popular is that of Civiale. This paper, however, endeavours to put forward another name for consideration; that of John Elderton. Many commentators of this period omit Elderton's contribution to the debate on the early use of the lithotrite, and indeed his own device. William Coulson in his book comments that the "...invention of Mr. Elderton was...passed over without attracting any attention whatever."³

History records that the first use of a lithotrite on a living patient was performed by French surgeon Jean Civiale (1798-1867) at the Nekkar Hospital in Paris in 1824.^{4,5} Civiale demonstrated his lithotrite on 4th February; present at this demonstration were two representatives of the Paris Academy of Medicine.⁴ But Civiale had a rival, another Frenchman named d'Etiolles.

Leroy d'Etiolles (1798-1860), a contemporary of Civiale, also designed surgical instruments, and produced a lithotrite of his own design, in the 1820s.

Rivalry between these two French surgeons came to a head with both claiming the lithotrite as their invention. The French Academy appointed a commission to investigate the matter and in 1831 the commission came down in favour of Leroy d'Etiolles; but then two years later they reversed their decision in favour of Jean Civiale.⁴

Williams states that the speciality of urology can "...date its origin no earlier than 1820-30 when a group of young French surgeons began to develop instruments for crushing bladder stones..." which offers support to the above.⁶

Elderton's Lithotrite

John Weiss asserts, in a letter to the *Lancet*, that he invented the lithotrite in 1824,⁷ and showed his curved instrument to Baron Heurteloup, who then went on to claim the invention as his own.^{7,8} In his assertion Weiss also claims support from Sir Benjamin Brodie (1783-1862).⁷

Heurteloup, in his book of 1831, talks about many devices used in lithotripsy but does not mention any dates or the names of inventors of these devices.⁹

More recent authors continue this theme; Lovett and Tomkins in 2013 say this about Civiale, that he "...founded the first urology department in the Necker Hospital in Paris and invented the lithotrite in 1832".¹⁰

However, John Elderton (1791-1844) House Surgeon at Northampton General Infirmary invented a lithotrite in 1817, seven years earlier than the French demonstration. The plans of his lithotrite he sent for inspection to Benjamin Brodie¹¹, one of the leading surgeons in the country at that time, who was later made a Baronet (1834) by King William IV. Brodie himself confirms this in his Lecture XV.¹¹ Whether Brodie ever compared Elderton's lithotrite design with the design by Weiss, or informed Weiss of having seen the earlier design, thus indicating that Weiss was not the first inventor of this instrument, this author has not been able to ascertain. It seems unlikely that Brodie would have forgotten about the earlier design as the Brodie family and the Elderton family appear to have been acquaintances (or maybe even relatives) as both Benjamin Brodie and his nephew Peter were beneficiaries in John Elderton's last will and testament (see below).

Elderton published his 'Description of an Instrument for destroying Urinary Calculi within the Bladder', including his drawing plans for the device, in the April 1819 edition of the *Edinburgh Medical and Surgical Journal*.¹²

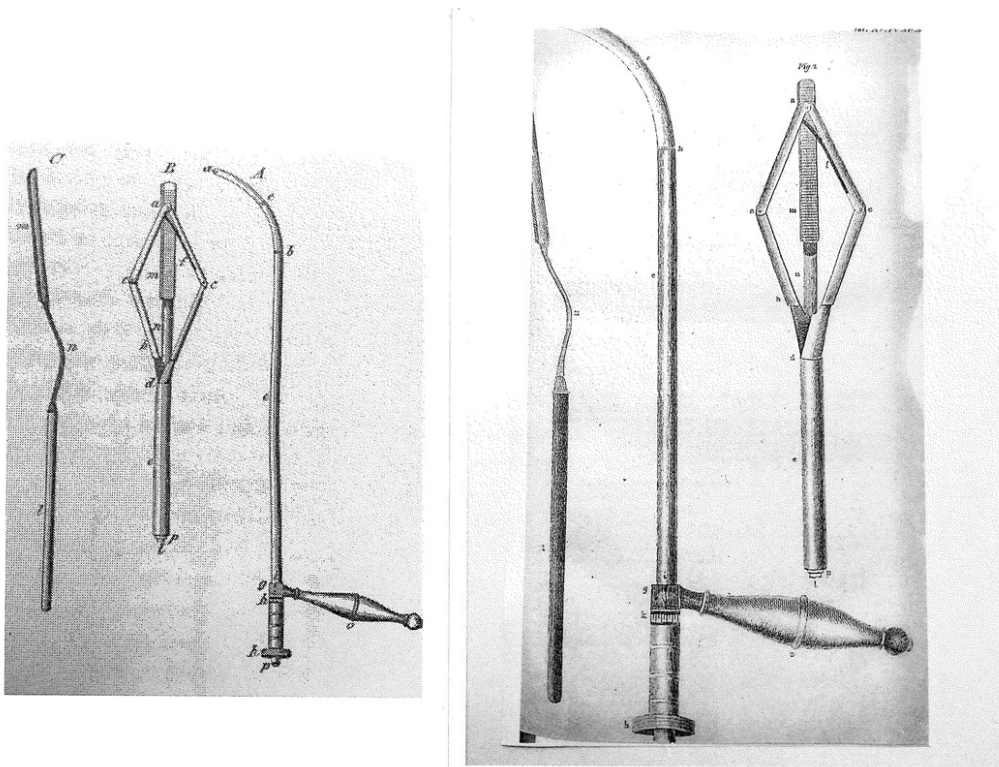


Figure 1. Elderton's lithotrite device; left, as published by Coulson,³ and right, as published by Elderton.¹²

It would appear to be this article that prompted the inclusion of Elderton in the book by Murphy, *History of Urology*. Murphy says in his book, "In 1819, John Elderton described a curved instrument opening out into two blades in which the stone was grasped and crushed or, if too hard, was filed away with a rasp."¹³

Thomas King published a paper in 1832 in which he stated, "...in 1819 his countryman, Mr Elderton, conceived the idea of lithotrity, and invented ingenious instruments for the operation."¹⁴

50 years later Jones described Elderton as a genius to whom "...the institution [Northampton General Infirmary] was indebted for an apparatus...for crushing stone – one of the earliest lithotrites ever invented."¹⁵ Indeed King expanded on this stating that, "To this gentleman [Elderton], who resides at Northampton, we are also indebted for other inventions of great importance in surgical operations."¹⁶

Dr F F Waddy (Emeritus Consultant Anaesthetist to Northampton General Hospital) stated in a letter to the *BMJ* (19th July 1975)¹⁷, sent as a reply to an Editorial article of 14th June 1975 edition of the *BMJ*⁵, reiterating Elderton's lithotrite as pre-dating both Civiale and d'Etiolles Lithotrites by seven years.

John Elderton died in 1844 and is buried at the parish church of St. Mary The Virgin in the village of Gayton in Northamptonshire. A memorial tablet on the west wall bears an inscription which says of Elderton, he was, "For many years a Surgeon of eminence in the town of Northampton who died 13th June 1844 in the 53rd year of his age; and whose remains were interred near this tablet."

Elderton left in his will, "To Sir Benjamin Brodie 'my old family gold embossed watch and large family bible' to Brodie's nephew "...my box of plate..." and "To 'my friend' Charles Dodd of Northampton, 'all my medical books and surgical instruments'."¹⁸ Indeed the "...hospital [Northampton General Infirmary] built a special museum." to house his instruments and inventions.¹⁹

There have been, then, several attempts to champion the idea that John Elderton was ahead of the field, by at least seven years, when it came to the invention of the lithotrite. However it is Civiale who has the credit for its invention and not Elderton. Doubtless there will be others with an equal claim in this regard, but this author suggests that if Elderton is not the first, he at least invented one of the earliest lithotrites and certainly before those of Civiale, d'Etiolles, Weiss and Heurteloup. The name of John Elderton is worthy of inclusion in the record of the inventors of the lithitrite.

Acknowledgement.

The author would like to thank the Archive and Museum Service at Northampton General Hospital for giving access to material for the writing of this paper.

References.

1. Shelley, HS. Cutting for the stone. *Journal of the History of Medicine and Allied Sciences*, 1958, 13(1):50-67.
2. Riches, E. The history of lithotomy and lithotrity. *Annals of the Royal College of Surgeons of England*, 1968, 43(4):185-199.
3. Coulson, W. On lithotrity and lithotomy with numerous wood-cuts. London: John Churchill, 1853.
4. Herr, HW. 'Crushing the stone': a brief history of lithotripsy the first minimally invasive surgery. *BJU International*, 2008, 102(4):432-435.
5. Editorial. Bladder stone. *BMJ*, 1975, 2(5971):578-579
6. Williams, DI. The development of urology as a speciality in Britain. *BJU International*, 1999, 84(6):587-594.
7. Weiss, J. Invention of the percuteur. Claims of Mr. Wiess. *Lancet*, 1834, 21(548):856-857.
8. Weiss, J. Invention of the Lithotrite. *Lancet*, 1836, 26(657):63.
9. Heurteloup, B. Principles of lithotrity; or, a treatise on the art of extracting the stone without incision. London: Whittaker, Treacher, and Co., 1831.
10. Lovett, L., Tomkins, A. Medical history education for health practitioners. London: Radcliff Publishing, 2013.
11. Brodie, B. Lectures on diseases of the urinary organs. 4th Edition. London: Longmans, 1849.
12. Elderton, J. Description of an instrument for destroying urinary calculi within the bladder; with remarks on the practicality of its employment in the living subject, and the probability of success. *Edinburgh Medical and Surgical Journal*, 1819, April:261-264.
13. Murphy, LJT. History of Urology. Springfield, Ill: Thomas, 1972.
14. King, T. Lithotrity and lithotomy compared: being an analytical examination of the present methods of treating stone in the bladder, with suggestions for rendering lithotrity applicable to the disease in almost all its stages and varieties, and remarks on the general treatment of gravel and stone. *American Journal of the Medical Sciences*, 1832, 11(21):117-127.
15. Jones, AH. A historical sketch of the physicians and surgeons of the Northampton Infirmary in the last century. *BMJ*, 1895, 2(1804):189-192.
16. King, T. Lithotrity and lithotomy compared; being an analytical examination of the present methods of treating stone in the bladder. London: Longman, Rees, Orme, Brown and Green, 1832.
17. Waddy, FF. Origins of the lithotrite. *BMJ* 19 July 1975, 3(5976):162.
18. Northamptonshire Record Office. Probate of the will of John Elderton of Northampton. MKM/124/8/41.
19. Waddy, FF. A history of Northampton General Hospital 1743 to 1948. Northampton: Guildhall Press, 1974.

Title of the paper.

John Elderton's Lithotrite Device of 1817.

Shortened title.

Elderton's Lithotrite.

Author name and affiliation.

Frederick John O'Dell, MSc. fred.odell@nhs.net

Archive and Museum Service, Northampton General Hospital NHS Trust, Cliftonville, Northampton, NN1 5BD.

Telephone 01604 544868.

Corresponding author.

Frederick O'Dell. As above.

Author's contributions: Frederick O'Dell is the sole author of this paper and approves the final submitted version.

Financial and competing interests disclosure.

Conflict of interest: The author has no conflict of interest.

Role of funding source: No funding was received by the author for this paper.

Ethics committee approval: Ethics approval was not needed for this paper.

Keywords.

Elderton, Lithotrite, Northampton, Bladder stones, Urinary calculi.

Word count.

1,188

Author Biography

Mr Frederick O'Dell studied Family and Community History with the Open University and holds a Master's Degree in Library and Information Science. He has written papers on library use in the NHS, and Dr Gosset and early Northamptonshire neonatal paediatrics.

Abstract

2019 marks the 200th anniversary of the publication of the plans of Elderton's lithotrite device. Elderton's invention was earlier than those of the major participants in the history of the lithotrite by at least five years, however he remains largely unknown. This paper seeks to rectify this.

The early history of the lithotrite is confused and depends on which account is cited; the most popular is that of Civiale. Many commentators omit Elderton's contribution to the debate on the early use of the lithotrite. History records that the first use of a lithotrite was performed by French surgeon Jean Civiale (1798-1867) at the Nekkar Hospital in 1824. John Elderton of Northampton General Infirmary invented a lithotrite in 1817, seven years earlier than the French demonstration. Elderton published his 'Description of an Instrument for destroying Urinary Calculi within the Bladder', including his drawing plans for the device, in April 1819.