JOSEPH LISTER’S FIRST OPERATION

by

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Joseph Lister was still a medical student in 1851 when he served as house surgeon at University College Hospital, London, under John Erichsen. Here we report the first major operation that Lister accomplished, hitherto apparently missed by biographers. We chart his exemplary dealings with an emergency case of eviscerating stab wound in a woman brought to casualty at night, when he had been in post for less than a month. The case demonstrates Lister’s fundamental competence at an early stage in his training. We outline the context of debate and controversy over the repair of lacerated gut at the time, and argue that Lister’s period at University College London was profoundly formative.

Keywords: eviscerating stab wound; bowel repair; perforated intestine; hospital gangrene; abdominal operation; sutures

Although Joseph Lister’s life and work has received considerable attention from biographers and historians of medicine, the period of his medical training at University College London is not well documented. Important hospital records are lost, and few of Lister’s personal papers survive from these years. We report a successful operation that Lister undertook in 1851 on a woman with an eviscerating abdominal stab wound, which seems to have been overlooked.1–3

Lister enrolled at University College London (UCL) in 1844, when he was 17 years old. The more usual career path of apprenticeship to apothecary, followed by walking the wards, was not his choice. Instead, encouraged by his father to gain a broad education, Lister registered for a bachelor’s degree in arts before attending medical school. At the time UCL had only two faculties, Arts and Medicine, and Lister studied widely in the first, before attending additional classes in anatomy and practical pharmacy at the medical school during his final arts undergraduate year.4

His time at UCL was not without incident. In December 1846 Lister witnessed the famous operation by Robert Liston during which ether anaesthesia was first used in England, the anaesthetist being one of Lister’s classmates, William Squire.5 Soon after gaining his BA in 1847 and starting his medical training, Lister contracted smallpox, and this serious illness was followed by a nervous breakdown. After more than a year out, in which he rested up, travelled and studied independently, Lister resumed his studies at UCL,
although he was still weak for some time. Lister did not fully qualify in surgery or gain his Fellowship of the Royal College of Surgeons until the end of 1852.

We have recently discovered the record of a court case in 1851 in which Lister gave evidence, and have since located further materials about the same case. Sadly, the casebook for Lister’s surgical chief John Erichsen’s female patients is missing from the UCL archive, so there is no hospital record of the patient concerned. Yet the materials we have found show that the operation was an important one for the young Joseph Lister, who at the time was still more than a year away from becoming qualified.

**Called to Casualty**

It is not known whether Lister had been occupying the house surgeon’s small room just inside the hospital’s main entrance doors on Gower Street, nor whether he had been asleep or studying late when he was called urgently at one o’clock in the morning of
Friday, 27 June 1851, to care for a casualty. Young Lister (figure 1) was clearly the most senior surgical officer on duty in the hospital in the small hours, and on his own.

The casualty, Julia Sullivan, was a mother of eight grown children; her second husband, Jeremiah, drank too much. His drinking had destroyed their home life, and Mrs Sullivan had left as a result of his violence. She rented lodgings in Camden Town, sharing a room with an elderly widow, and supported herself by working for a local employer. Her drunken spouse had publicly abused her to a crowd in the street and had been heard making threats against her life. Earlier that evening he had sought to stay with her in her new lodgings, or to induce her to stay with him. Mrs Sullivan—evidently in fear of him—had been careful to keep a friend by her when they all went out for a drink. She herself had remained sober and had tried to prevent a publican from selling her husband too much alcohol. As they returned towards her lodgings, her husband lunged at her with a long narrow-bladed knife that he had hidden in his sleeve, stabbing her in the lower abdomen.

The wound was not large, but on arrival in the casualty ward at Gower Street, Julia Sullivan’s intestines were protruding through the gash, and her dress was soaked with blood. She seems to have lost consciousness on the cab journey with the policeman who brought her to the hospital. Her inebriated husband, unrepentantly declaring his hopes of having ‘done for’ her, was in custody.

**Lister at the Old Bailey**

Two and a half months later—on 15 September 1851—Sullivan was tried at the Old Bailey for ‘feloniously stabbing, cutting, and wounding Julia Sullivan’ with intent to murder, disable or grievously harm her. Mrs Sullivan herself, now recovered, was one of those who gave evidence in the case; another was the young man who saved her life: Joseph Lister.

The court report shows Lister identifying himself as house surgeon at University College Hospital (UCH), and describing events for the court:

The prosecutrix was brought there about 1 o’clock on the night of the 27th June—she was then in the casualty ward, lying on a stretcher—I examined the lower part of the abdomen—I found, both on the outer and under garments, a vertical cut about two-thirds of an inch long—they were wet with blood and the contents of the intestines—on removing the clothes I found a coil of intestine about eight inches across, comprehending, perhaps, about a yard of the small intestines, protruding from the lower part of the abdomen in a red congested state—the most prominent part of this coil presented two wounds in the intestine itself; they were almost opposite to each other, transfixed somewhat obliquely—it is no doubt that the two wounds were made by a single stroke—the contents of the intestine, both faeces and flatus, were escaping at the time; there was also a wound in the mesentery—those wounds were of about the same length as the cut in the clothes—no doubt all was done by one instrument and one stroke.

Lister’s explanation of what he had done to help the patient was simple and brief:

the entrails were cleansed with water about the temperature of blood, and I then attempted to return a part of them prior to sewing up the wound—I found it necessary to make the cicatrix wider in order to do so—I was enabled finally to restore them—the injury she had received was excessively dangerous—she is now perfectly recovered, as far as we could judge.
The knife shown to the court—which had been found, still bloody, thrown into the basement area of a house near the scene of the stabbing—Lister confirmed was ‘precisely suited to the production of such an injury’. Sullivan was found guilty and sentenced to transportation for 20 years.

SUTURING THE GUT

The disappearance of the female hospital casebook is mitigated by the existence of two anonymous reports in *The Lancet*. The first, a brief hospital report, appeared in early September 1851 (after it had become clear that Julia Sullivan would survive) under a Latin epigraph from Morgagni urging the medical value of collecting and sharing case reports. The text mainly concerned an abdominal knife injury accidentally inflicted on a butcher during ‘larking’, which had been treated by watchful waiting by Mr Cutler at St George’s Hospital, London, and had proved rapidly fatal. The reporter contrasted this sorry case with another, which is evidently Lister’s:

it would appear from a case which we lately saw at University College Hospital, that protrusion of bowels after a stab of the abdomen, with wound of the intestine, though of so distressing an aspect, is not so dangerous as when the bowel is wounded within the cavity. The patient, who was admitted under the care of Mr. Erichsen, received from her husband a severe stab into the lower part of the abdomen, with a kind of dagger. The protrusion of intestines and the haemorrhage were considerable, and it was some time before the patient was brought to the hospital. When Mr. Erichsen saw her he found that the small intestine had been perforated by the wounding instrument in two places. He applied fine sutures ... returned the mass of bowels into the abdomen, and lightly closed the wound. Active antiphlogistic means were resorted to, and the case was eventually brought to a favourable issue.

*The Lancet*’s reporter made clear that there was considerable surgical controversy about suturing the gut, and cited the famous surgeon-anatomists Antonio Scarpa and John Bell, as well as Samuel Cooper (Erichsen’s predecessor as Professor of Surgery at UCL), all of whom had roundly condemned the practice.

The second report in *The Lancet* appeared in November 1851 under the same Morgagni epigraph, and began with a discussion of the mortal danger of injuries to the abdomen, and the duty of recording the circumstances in instances of survival. Detailed notes follow concerning the care Lister had given Julia Sullivan on that June night, and the subsequent management of her case under Mr Erichsen in the female surgical ward at UCH. This part of *The Lancet*’s report may in fact derive from the lost hospital casebook, and is quoted here at some length because it accurately reveals not only what was done but also the thought behind it:

The house-surgeon, Mr. Lister, thinking it desirable to reduce the protruded unwounded mass of intestine, before attempting to close the wounds in the injured portion, so that the former might not suffer by prolonged exposure and constriction, proceeded to clear away the feculent matters by which the protruded intestine was besmeared, by pouring water, of about blood heat, over it. An attempt at reduction was then made by the gentle employment of the taxis. This, however, it was found impossible to accomplish, owing to the small size of the wound in the abdominal walls, by which wound a very tight constriction was exercised on the neck of the protrusion. This opening was accordingly
cautiously enlarged upwards and inwards, to the extent of about three-fourths of an inch; and thus the greater part of the protrusion was returned with facility.

The knuckle of intestine, upon which the above-described wounds had been inflicted, was now alone protruding, and these were now neatly stitched up by fine needle and silk, great care being taken to include in the stitches little except the peritoneal covering of the gut, and to invert the edges so that the serous surfaces, were brought into apposition. The stitches were made close to one another, and the suture was of the continuous kind. After the wounds had thus been closed, the silk was knotted, the ends cut off close to the knots, and the wounded intestine lightly returned.

After the return of the gut, a small quantity of red, watery fluid was observed to escape from the abdomen. The lips of the wound in the abdominal walls were brought together by a couple of sutures through the skin, which were supported by adhesive plaster, and some light water-dressing was laid over the whole. Very little blood had been lost, and the patient was perfectly sensible, though somewhat faint. A dose of opium was administered; she was put to bed, directed to be kept quiet, and restricted to barley-water and ice: one grain of solid opium was ordered every third hour. So far the case had been entirely conducted by Mr. Lister, to whose skill and judgment, both then and after, much of its successful issue may be attributed.

The Lancet’s report charts the uneven progress of Julia Sullivan’s recovery, day by day for several weeks. Her treatment included the use of leeches, poultices and fomentations to mitigate the tympanic effects of initial peritonitis, a liquid diet to ease pressure on the bowel, and a drug regimen designed to allay the natural peristalsis of the bowel with opium until the healing process seemed complete, the scar fully healed, and faeces passed naturally. Mr Erichsen himself is quoted near the end of the report, expressing disagreement with some leading surgical authorities’ hostility to suturing the gut, especially in light of this case.

The Lancet’s report concludes: ‘The . . . case is of such importance, and so much interest and practical instruction is connected with its phases . . . that we have thought it advisable to enter into greater detail than we are wont to do.’

A complex operation

The collection and collation of court and press reports concerning this case allow us to understand—despite the lack of personal papers and hospital records—the delicacy of the operation that Lister performed without supervision on a patient’s near-fatal injury, at the very outset of his surgical career. This technically challenging operation took place when Joseph Lister was a medical undergraduate still attending lectures, a decade before his first public operation in Glasgow, and 16 years before his now famous series of papers in 1867 demonstrating the success of antiseptic surgery.

Lister had been due to assume the role of Erichsen’s house surgeon in September 1851, but after the premature resignation of the previous incumbent he had stepped up—having briefly served as dresser—to fill the vacancy. At the time of the operation in June 1851, Lister had been in post for less than a month.

Lister’s prosecution of the operation was logical and sensible. He examined and understood the nature of the injury—a yard of intestine, damaged in two places, the mesentery in one, all protruding through a knife wound, bloody and soiled. Recognizing that he could not return the entrails as they were, Lister washed the coil of intestine in
warmed water, and then discovered he could not return it through the narrow wound. The dark congested appearance of the extruded bowel—indicating the danger of necrosis—would have made intervention urgent. Of such a moment, the great surgeon Benjamin Travers had observed in 1812: ‘It is impossible to conceive more disadvantageous circumstances than those of a surgeon hampered with an open wound of the intestine while endeavouring to return it.’

Lister’s patient had three open wounds, still discharging. It was now that he decided to extend the cut in Julia Sullivan’s abdomen, so as to ease the return of the clean undamaged segments of the bowel, a plan that turned out to be effective. The traditional manner of returning the bowel through a narrow aperture was to persuade that part which was last out to return first, and to assist the rest to follow bit by bit. Lister looks to have kept the damaged parts until last, using the skin gash itself as a valve to hinder further bleeding/soiling, so as to give himself time to deal with the wounds. Returning the bowel in two stages allowed time for its careful repair, and Lister was able to concentrate on sewing up the wounds with a single thread each (not interrupted sutures) inverting the edges to hold the cut surfaces together, cutting short the ends of the silk, and presumably cleansing the repaired intestines before returning them to their rightful place, and suturing the abdomen.

The confident practicality with which Lister dealt with Julia Sullivan’s ‘excessively dangerous’ injury shows that even at this relatively early stage in his surgical education he knew a great deal about how to confront such a situation. Already a dextrous dissector, Lister’s facility with stitching is not surprising, but the consecutive details of this complex operation certainly reflect well on his surgical training at UCL, and suggest the benefit of careful reading.

In practical terms, the surgical wards at UCH dealt with a wide array of general surgery, including fractures, wounds and lacerations, burns, abscesses, tumours, ulcers, carbuncles, chancre and buboes, carious bone and gangrenous limbs. One column in Mr Erichsen’s male casebook provides a place for recurring entries of ‘amputation’, ‘excision’ and ‘operation’. The latter included efforts to deal with strictures, enlarged prostates, fistulas in ano, lithotomies and, in two cases earlier that academic year, strangulated hernias, one femoral, the other inguinal. Lister would probably have witnessed the process of returning extruded bowel during the care of cases such as these, and is likely to have known the details of their case histories from being on the wards, and from the contents of the casebook, to which Lister himself also contributed. The operations had been successful but—as in so many cases—neither man had survived.

These operations would have raised several matters useful to Lister in Julia Sullivan’s case, and they might already have prompted him to look at the literature. In surgical textbooks of the day, discussions of strangulated hernias and their dangerous intestinal protrusions were invariably followed by the protrusions resulting from penetrating wounds. Lister may have derived some of the procedures in the Sullivan case from having read specialized works on the abdomen such as those by George James Guthrie and Benjamin Travers, both of whom had gained extensive experience of intestinal wounds during the Napoleonic Wars. It is also possible that he had been prompted to look at these authors for another reason: in March 1851, an announcement in The Lancet set the topic for essays to be submitted for the 1853 Fothergillian Gold Medal at the Medical Society of London. The title for the forthcoming competition was ‘Wounds and injuries of the abdomen and their treatment’. Gold medals for brilliant essays by young medics
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were a feature of the London medical world of the mid nineteenth century: that spring every ambitious young surgeon at a certain stage in training would have pondered whether to enter the contest.30

It is also noteworthy that G. J. Guthrie’s 1846/47 lecture to the Medical Society of London on ‘Wounds and injuries of the abdomen’ had been reprinted in The Lancet in April 1851, only a few weeks before Mrs Sullivan was carried into UCH.31 Guthrie’s text covered penetrating wounds and protrusions of the intestines, and recommended cleansing the protruded bowel with warm water, continuous sutures (not ligatures) with a needle and silk thread, turning in the cut edges of the intestinal wound, careful positioning of the patient after the operation, no purging or bleeding, and the administration of opium, all of which were observed in Lister’s case. Cutting the ends of the suture short after the final knot is something Travers emphasized, but neither Travers nor Guthrie suggested returning the intestines in two stages as Lister actually did.32,33

The initial report in The Lancet accredited the remarkable success of this operation to Mr Erichsen; it was only later, in longer and more detailed coverage, that young Lister’s central role in the surgery of the patient (as distinct from the subsequent management of her case) became clear.34 When John Erichsen came to mention the case with justifiable satisfaction in his major textbook, The Science and Art of Surgery (1853), he simply referred to it as under his own care, and made no distinction between the initial operation and the patient’s aftercare, referring readers to The Lancet of 1851 for further particulars.35 Although Lister’s modesty might explain The Lancet’s initial report, it may be significant that the mature Lister often credited the work of his own house surgeons by name in his published papers.36

Lister and abdominal surgery

This early operation of 1851 has apparently been missed by historians and biographers: all the writers on Lister that we have consulted seem to know nothing of it. Even John Shepherd, who wrote a fine essay on Lister and abdominal surgery, starts consideration of the matter from the 1860s onwards, and apparently had no clue what Lister had already accomplished before he visited Syme in Edinburgh in 1853.37 The silence surrounding the operation on Julia Sullivan may be attributed to Lister’s reticence concerning his own achievements: he said modestly late in life that abdominal surgery was not a field in which he had much experience.38

However, to Lister himself the operation on Mrs Sullivan must have been highly important: his first major operation—on a life-threatening injury for which the treatment remained controversial—and conducted urgently at night without supervision. The operation was publicly recognized as noteworthy at the time, and generated the first reference to Lister in the medical press, as well as the ordeal of a public appearance at the Old Bailey.39 All this occurred not long after Lister’s return to surgery from a long break in his training after a nervous breakdown. There can be little doubt that this meticulous operation would have significantly raised the estimation in which he was held among his contemporaries: indeed, The Lancet itself recognized Lister’s vigilant care of Mrs Sullivan as exemplary by reporting on it twice.

It is also noteworthy that a significant proportion of Lister’s early physiological researches concerned various aspects of the gut, and that more than one of his published papers on the
subject involved experiments investigating animal gut deliberately extruded via incision, which suggests that aspects of this case may have excited his curiosity.\(^{40}\)

If young Lister’s nervous breakdown had been rooted in self-doubt or misgiving about his career choice, this operation may have helped transform the hitherto diffident student into the confident scientific surgeon he proved to be. Julia Sullivan and her husband (who was saved from the gallows by Lister’s timely intervention) were the first of countless lives preserved by Joseph Lister’s thoughtful work.

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**NOTES**

1 We have found no mention of Julia Sullivan’s operation in any of the many biographies or other literature on Lister, and exhaustive internet searches have also so far drawn a blank. If we have missed some reference to it, we would be glad to be informed of it. For Lister’s time at UCH and the lack of records see W. R. Merrington, *University College Hospital and its medical school: a history* (Heinemann, London, 1976), pp. 43–44.

2 As a result of bomb damage during the London Blitz, only a single UCH hospital casebook survives for the period 1850–51 concerning the male patients of John Erichsen, under whom Lister served as dresser and house surgeon (U.C.L. Archives, UCH/MR/1/63). The parallel female casebook is lost.

3 The only manuscript reference to the case so far found appears in a small book of accounts in which Lister noted under income for 1851 that he had been paid a £5 ‘fee for attendance in court’, which presumably took time to be paid. Account-book of Joseph Lister, 1844–1861, summary of income for December 1851 (Wellcome MS 6980). Anything further relating to the era/event has not yet emerged, and may possibly have been destroyed soon after his death. R. K. Aspin, ‘Seeking Lister in the Wellcome Collections’, *Med. Hist.* 41, 86–93 (1997).

4 Biographers differ on the details of Lister’s education and his period of absence from it. His studies are documented by a collection of certificates in the Archives of the Royal College of Surgeons, London, MS0021/2/1: 1–29, which show that Lister first attended university classes in botany in 1843. As a full undergraduate in arts from 1844, Lister’s studies included Greek language and literature, Latin, mathematics, chemistry, astronomy, botany and natural philosophy. He gained honours in classics and botany. His certificate of attendance in anatomy in 1846 and his BA of 1847 are in the same collection. Certificates for attendance in anatomy, clinical practice and clinical lectures at the medical school survive for the October term of 1847, but then there is a gap until the resumption of his studies in October 1849. His anatomy certificate for the winter session 1847–48 is unsigned. For Lister’s earlier course in practical pharmacy, see R. S. Pilcher, ‘Lister’s medical school’, *Br. J. Surg.* 422–424 (1967).

Inhalation as an Anaesthetic in London’, *Lancet* ii, 1220–1221 (1888); see http://grandrounds-e-med.com/articles/gr049006/squireoriginal.pdf. (All cited websites were accessed on 8 January 2013.)

6 Fisher, *op. cit.* (note 5), p. 47, dates the period of Lister’s illness and recovery to between March 1848 and January 1851. It certainly seems that he was absent from the medical school for a considerable time. According to a statement from Lister relayed by Erichsen to the Faculty of Medicine at UCL, Lister had been absent between Christmas 1847 and October 1849, during which time he had not attended any medical classes. See Minutes of the UCL Faculty of Medicine: UCHMS/102/2 28 December 1851. Even in May 1852, quite some time after his return, Lister’s father’s expressed approval of the moderation with which his son was following his studies, as if there was still concern. Lister had declined the post of dresser to Erichsen in autumn 1850 on account of ill health, but he contributed notes to the surviving casebook (note 2)—see, for example, his entry for 29 October 1850. Lister officially became Erichsen’s dresser on 30 January 1851. The first case in which he seems to have had a significant role is dated 5 February 1851. See also Merrington, *op. cit.* (note 1), p. 43.

7 Lister’s final MB and his FRCS date to November and December 1852, respectively; see note 4. See also Plarr’s *Lives of the Fellows Online*: http://livesonline.rcseng.ac.uk/biogs/E000500b.htm.


9 The hospital floor plan appears in Merrington, *op. cit.* (note 1), between pp. 78 and 79.

10 Our account of R. v. Sullivan 1851 has been assembled from the court records of the Old Bailey, and press reports (see note 11 below). The trial took place on 15 September 1851. The verbatim report is available online at Old Bailey Proceedings Online: http://www.oldbaileyonline.org/browse.jsp?id=def1-1797-18510915&div=t18510915-1797.

11 For newspaper coverage of the case see, for example, ‘Dreadful case of attempted murder of a woman by her husband’, *Morning Post*, 7 (28 June 1851).


13 *Ibid.*, evidence of Joseph Lister. Eight inches is about 20 cm, and a yard just under a metre in length.


16 Mr. Cutler, ‘St George’s Hospital: Wound of the Abdomen; Extravasation; Death’, *Lancet* ii, 250–251 (1851). [1st Report.]


18 There was ‘much discrepancy of opinion’ among surgical authorities concerning the treatment of incised intestines. See A. Ellis, *Lectures and Observations on Clinical Surgery* (Fannin, Dublin, 1846), p. 187, who recommended reading Travers. The opening ‘index’ page of John Flint South’s translation of the eminent German surgeon J. M. Chelius’s *System of Surgery* (Renshaw, London, 1847), brand-new when Lister started at medical school, began with ‘ABDOMEN, wounds of’ and directed the reader to 19 packed pages (pp. 457–475) on the subject.


21 Lister was registered for lectures in medicine, surgery, comparative anatomy and pathological anatomy in this session. See Pilcher, *op. cit.* (note 4). Lister first operated in public in Glasgow in 1861. See R. J. Godlee, *Lord Lister* (Macmillan, London, 1917), p. 92. For Lister’s 1867 papers, see J. Lister, ‘On a New Method of treating Compound Fracture, Abscess, etc., with Observations in the Conditions of Suppuration’, *Lancet* i, 326–329 (1867); continued: i, 357–359 (1867); i, 387–389 (1867); i, 507–509 (1867); ii, 95–96 (1867). This series was followed by another paper, ‘On the Antiseptic Principle in the
Mr Erichsen’s previous house surgeon had been Watkin Williams. See Godlee, *op. cit.* (note 21), pp. 18–21, and Merrington, *op. cit.* (note 1), p. 44. R. S. Pilcher, himself Professor of Surgery at UCL in the mid twentieth century, described the teaching regime in Lister’s day as ‘an integrated curriculum with early assumption of clinical responsibility’; see Pilcher, *op. cit.* (note 4).


This was the process for returning strangulated hernias recommended by William Fergusson, in his *System of Practical Surgery* (Churchill, London, 1846), p. 585.

Our account of Lister’s operation has been drawn from *The Lancet*’s more detailed second account as recorded from Mr Erichsen’s dresser at the time of Lister’s operation, John Turle (note 19) and from Lister’s own account from his evidence at the Old Bailey (note 10).


Each of the maladies listed appears in the Erichsen male casebook, *op. cit.* (note 2).

Erichsen male casebook, *op. cit.* (note 2). Case Report 38 (Edward Williams, operation 1 December 1850; d. 2 December 1850), pp. 109 and 120–121, and Case Report 57 (Thomas Ryan, operation 24 January 1851), pp. 173–175. Lister had something of a baptism of fire as Erichsen’s dresser, because in mid January 1851 a patient with ‘mortification of the legs’ sent to the hospital from Islington Workhouse triggered a fatal epidemic of hospital gangrene on Erichsen’s wards. The second of these two hernia patients, identifiable from the casebook, had been doing well but was among five patients (41%) who died from the infection. These cases had a strong effect on Lister. See W. W. Cheyne, *Lister and his achievement* (Longman, London, 1925), pp. 4–5. John Erichsen subsequently wrote about the ‘baneful’ infective influence in the wards, mentioned the value of cleansing the wards by fumigation with chlorine gas, and stressed the need for isolation facilities and specified staff to limit the spread of such a dangerous malady within hospital walls. See J. Erichsen, *The Science and Art of Surgery* (Walton & Maberley, London, 1853), pp. 340–343. See also Mr. Erichsen, ‘University College Hospital: Hospital Erysipelas of Peculiar Type’, *Lancet* i, 292–293 (1851). Lister studied this epidemic and later delivered a (sadly lost) paper on ‘Hospital gangrene’ to the students’ Medical Society at UCL, as well as another on the use of the microscope. See Godlee, *op. cit.* (note 21), p. 21. Like G. T. Wrench, who quotes Lister describing what he saw when studying hospital gangrene: ‘I imagined they might be the materies morbi in the form of some kind of fungus’, we suspect that Lister’s experience on Erichsen’s ward in 1851 was profoundly formative. See G. T. Wrench, *Lord Lister: his life and work* (Fisher Unwin, London, 1913), p. 33, and Godlee, *op. cit.* (note 21), p. 645.

G. J. Guthrie, *On Wounds and Injuries of the Abdomen and the Pelvis: being the second part of the Lectures on some of the more important points in Surgery* (Churchill, London, 1847); B. Travers, *op. cit.* (note 23).
‘Fothergillian Gold Medal’, *Lancet* 1, 311 (1851). The fiercely competitive atmosphere among young doctors with their eyes on proffered medals (and the purses that went with them) is discussed in R. Richardson, *The making of Mr Gray’s anatomy* (Oxford University Press, 2008), pp. 22–24.


Cutting short the ends of sutures is something to which Lister regularly referred in the work of his maturity. An instance is to be found in his *British Medical Journal* paper from 1867 (op. cit., note 21). See also note 26, and see D. Mackenzie, ‘The history of sutures’, *Med. Hist.* 17, 166–167 (1973). Travers suggested regarding the two types of wound as distinct, but implied that the intestinal damage should be tackled first, and the protrusion afterwards. Travers, *op. cit.* (note 23), p. 70.

An instance is to be found in Lister’s *British Medical Journal* paper from 1867 (op. cit., note 21), in which he described how his house surgeon Hector Cameron dealt with a gunshot wound. A brief search of Lister’s Collected Papers turned up more than 20 such references. J. Lister, *Collected papers of Joseph, Baron Lister* (2 volumes) (Clarendon Press, Oxford, 1909).


Neither the court transcript nor news reports give any indication of the stutter that Lister is known to have had. He would have appreciated Mrs Sullivan’s appearance in the court as the greater ordeal, as she would have had to give evidence with her husband present in the dock.