

Two Centuries of Autopsies in the New England Journal of Medicine: Evolution of the Status of the Cadaver in Occidental Medicine (1812-2012)

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Abstract

Medical autopsy is an incredible opportunity of putting the exact diagnosis on a patient. Through the frequency and evidence of autopsies in the Journal since its creation in 1812, how is it possible to describe the evolution of the status of the cadaver in occidental medicine during the past 200 years? Does a dead patient belong to its family or to physicians, at the service of medical knowledge and improving surgical procedures? Is the medical secret to be preserved or not, even for public personalities? Is it licit to say everything about the health of a patient, even with its previous consent? Was the journal, during its first 100 years of existence, a forensic one? Post-mortem utility of MD and VIP's will be shown and discussed. Lastly, dangers of the autopsy, and chronic ineluctable decrease of its rate will be analyzed from 1812 until now.

Keywords: Autopsy; Forensic techniques; Medical ethics; Anthropology of death; History of medicine; Evolution of medical practices

Introduction

Medical autopsy is an incredible opportunity of putting the exact diagnosis on a patient [1]: “the report of a fatal case is not complete, and the statistics of a fatal disease are comparatively worthless without the certain knowledge which only an autopsy can give [2]. But is the autopsy technique a static methodology or rather a living one? Is-it influenced by social evolution, political facts, moral believes, medical needs, etc.? In other words, what autopsies can say about the development of modern occidental medicine and post-mortem patient-physician relationship?

Through the frequency and evidence of autopsies in the *New England Journal of Medicine* (i.e. one of the most prestigious and the oldest continuously published medical journal in the world, created in 1812), how is it possible to describe the evolution of the status of the cadaver in occidental medicine during the past 200 years? Does a dead patient belong to its family or to physicians, at the service of medical knowledge and improving surgical procedures? Is the medical secret to be preserved or not, even for public personalities? Is it licit to say everything about the health of a patient, even with its previous consent? Let's initially focus on the first 100 years of the *Journal*.

Autopsy, what for?

In the first issue of the *Journal* (January, 1812), from the 21 original papers, 4 are directly related or based upon autopsy data [3-6]. Autopsies are mentioned within the following contexts: medico-legal problems, case reports in medicine and surgery [7], patho-biographies, environmental diseases and epidemics, sanitary statistics, description of normal anatomy [8], and evaluation of new surgery techniques.

Necropsies are mainly presented in innumerable case reports and series of dissections, but also occur in the following categories of articles: Recent progress in legal medicine, recent deaths, reported mortalities, and reports of forensic societies. Before the periodical “Medical Reports from the Massachusetts General Hospital” (originating on the October 25, 1923) [9], we found an older case on the March 28, 1861

issue including the autopsy of the patient: a 50-year-old man with a Bright's disease [10].

Some autopsies are related to local political, environmental, and historical facts, such as the Secession War (1861-1865) including cases of atypical wounds and epidemics (for example yellow fever). During the same conflict, an epidemics of yellow fever arises in South Carolina [11]. Sanitary news is given from fortresses and ships, giving the opportunity—when possible—of pursuing autopsies and improving medical knowledge. For example, at the occasion of two cases of sudden death on board the U.S. receiving ship Ohio, the author mentions: “Brown [the first dead soldier] was buried intact. Under Dr Potter's supervision, Dr. Williard and Shipley made a prolonged and careful autopsy of Lewis' body [the second dead soldier]. From his brain to his anus, every organ and every portion of every organ was normal in appearance and condition” [12]. But autopsies cannot be made everywhere, as explained by Martin: “There have been no autopsies made at the hospital yet. The extreme heat of the weather, together with the custom hitherto of sending the bodies of deceased soldiers back to their native States, have been the principal reasons for this omission” [13].

Since the beginning of the *Journal*, the importance of the French (Paris) and Austrian (Vienna) medical schools is real, especially in the field of autopsies. Correspondents attest of the evolution of local European medical and surgical practice. News is given of discoveries, controversies and important publications from eminent medical authorities such as Rudolf Virchow [14-22].

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These 200 years of research on human cadavers are at the origin of important publications and discoveries: case of arrhythmogenic right ventricular dysplasia [23], case of gas embolism [24,25] and cases of sudden infant death syndrome [26].

Technically, most of the autopsies are carried out within the ten hours following death (some one hour only after the patient passed away) [27], mainly for conservative reasons, and in order to give back the cadaver quickly to the family. In 1897, some pathologists recommend to preserve soft parts of the body in formaldehyde in order to present them in court, as they “would often convey much more meaning to the average jury than lengthy technical descriptions” [28]. What of the specimen after the trial? Will it be destroyed by fire or deposited within an anatomical museum?

Even if the power of the physician toward the dead body (and relatives) is enormous in the 19th century, an autopsy is not systematic. Each year from 1812 to 1912, 8 to 12% of the articles mention that an autopsy could not be obtained (without any precision regarding the origin of this non-execution: technical problems, non-availability of the body, opposition by the family, etc.). For example in a post-surgery series of 11 cases of appendectomy in 1889, the authors performed only one autopsy on the four he expected [29].

Some, like a German citizen, Eugene Groux, ask in 1859 for their dissection with further publication of the results in the *Journal*: “Since the peculiarities of my case are marked and rare, I desire and direct that if I die on the American continent, my body shall be dissected in the most scientific, thorough and skilful manner, with a view to the complete ascertainment, disclosure and publication thereof, and this be so done that the exact condition of the parts of my body, as it existed in life, so far as this is possible, be discovered and recorded, and be preserved for scientific inspection and information. And I direct and desire that in addition to this dissection and record and publication, so much of such parts of my body as are necessary for the purpose of demonstrating the nature of my case and of preserving and giving evidence thereof forever, shall be deposited in the museum of the Boston Society for Medical Improvement for the period of one year from said time of deposit, and until such further time as there shall be founded in Hamburg a museum of Pathological Human Anatomy, wherein, in that event, said parts are thenceforward to be deposited. In regard to the manner of such dissection, the preservation of the parts after death, in the same state as they were in life, and what parts may be needful and proper for deposit aforesaid, I refer it to the skill and science of those by whom it shall be done. And with regard to the residue of my body, I direct that the same be decently interred in such manner that the same may be removed to Hamburg if my friends desire” [30].

From the origin to the 1850's, all autopsies and case reports are nominatives (i.e. the name and geographical localization, and even the dates of consultation, hospitalization, and death are given in the article) [31,32] more, some cases interest the most intimate part of human behavior [33]. After this date, only exceptional cases remain nominatives: autopsies of VIP's, notorious crimes with medical interest [34]. A great majority is presented with initials, city of origin, sex and age [35]. A last category is at the origin of nominative data: autopsies of physicians.

Autopsies of VIP's

As stated by physicians, autopsies of VIP are carried out “for advancing the interests of our profession” [36]. The assassination of the US President Garfield in 1881 is a good example of a full publicly

autopsy and medical data. After the extremely long agony of the President (almost 11 weeks following the gunshot wound on July 2, 1881), daily official bulletins were published in the September 29, 1881 issue [37], ten days after the death of the president on September 19, 1881. The second and final sequence of the daily official bulletins, with the full transcription of the autopsy is published in the October 6, 1881 issue [38]. Some weeks later, in the November 17, 1881 issue, a global medical and surgical analysis is given, with a synthesis of the autopsy findings [39].

The same with the publication of the whole medical archives relative to the angina pectoris of Senator Sumner treated by Dr Taber Johnson in 1874 [40], and Sir James Simpson's apoplexy [41].

The case of the Vice-President Wilson's death is analyzed in the December 16, 1875 issue: in this long article, one of his physicians (Dr Hammond, a professor of Diseases of the Mind and Nervous System in the University of the City of New York) publishes all personal data relative to private consultations, and refutes some results of the official autopsy [42] (Figure 1).

Autopsy of the Major of Buckland in 1844 is the occasion of a strong opposition between colleagues: first examiner of the body [43] being judged as “both impertinent and ungentlemanly” in their conclusions by followers [44]. Other examples of oppositions between colleagues exist, highlighted at the occasion of the patient's autopsy [45].

Cases from other countries are also discussed and published, especially from France for which the expertise of French physicians is considered of great scientific interest for the *Journal's* readers: for example the assassination of the French president Sadi Carnot [46], and the death of Gambetta [47].

One may ask: Is this full medico-political transparency? Is this continuing medical education based on interesting and well-documented cases (i.e. VIP cases)? In any case, the medical confidentiality seems very poor or absent, sacrificed for the benefit of medical knowledge and scientific improvement (and the service of future patients).

Post-mortem utility of MD

A dead MD is again as any other patient, whose autopsy is publicly published, is useful for the medical education of his colleagues (Table 1). For example, at the occasion of the obituary notice of Dr Crosby in 1877, all intimate details are provided in the 3 pages of his autopsy report (the full article being composed of 5 pages), for example the “highly irritated urethra” [48]. The physician's physiological and medical data are presented as for any other patient's case report from the *Journal*, continuing the few initial paragraphs of its biography. However, it has to be said that the autopsy was incomplete: only the brain, liver, and kidneys were examined, as being directly at the origin of death. If no microscopic examination was made of any portion of the brain, one entire kidney and a portion of the liver were sent to a colleague for microscopic examination. This case is isolated: other obituaries do not mention a partial autopsy but rather a full and complete one, as currently carried out on any cadaver.

The same with the obituary of Dr J.H. Bennett (a British physician) in 1875: “it is, we believe, acknowledged that he was the first to recognize the combination of symptoms known as leucocythaemia. We give some account of the case of this distinguished man, interesting in itself” [49].

With time, the post-mortem description is more and more

synthetic, ending in the 1880's as a single conclusive phrase, such as, for a late Vice-President of the Massachusetts Medical Society: "the autopsy showed ossification of the coronary arteries" [50].

A forensic journal?

Forensic medicine represents an important part of the Journal's publications in the 19th century (a category that has quite disappeared in columns of the present day Journal). Indeed, forensic medicine and medical autopsies are intimately related in the initial years of the Journal, based on the same goal: to determine the exact cause and manner of death (and not necessarily a criminal one). Cases are frequently mixed (Table 2): forensic cases of gunshot wound to the head or other parts of the body are interesting cases for trauma descriptions and surgery; neurological problems with organic consequences causing dubious diagnosis [51]. The same with fatal side-effects [52-55] or misuse of toxics [56,57] or drugs [58-61] that may led to a false diagnosis of toxicological criminal death. Strange and/or extraordinary medico-legal cases are also present [62-67]. At this period, some articles are published by students in medicine [68]. Cases of "Murder or suicide" are recurrent.

When publishing victim's autopsies in cases of murder (Table 3), the facts are always previously judged. For example, with the John Dean affair (a murder on December 17, 1896, in Massachusetts), the murderer was already executed when the paper was published on March 30, 1899 [69]. Publication occurs two years after the facts, only a few days after the execution of the murderer.

It has to be known that autopsies are not systematic in cases of violent deaths and medico-legal background at the extreme end of the 19th century in New England: [70] "it imposes it on the discretion of the medical examiner, if after having viewed the body and made the special inquiry, he deems a further examination necessary" [71].

Even murderers are examined after their execution, such as Probst in 1866 whose cadaver, through the courtesy of the prison directors, was turned over to the Faculty of Jefferson Medical College (Philadelphia), for scientific inquiries [72].

Danger of the autopsy

Autopsy is a dangerous activity, as some physicians die of accidents surrounding during body openings. In 1852, "Dr Spencer's death was caused by a small scratch upon the thumb while engaged in an autopsy on the body of one of his patients. The wound was so slight that his attention was scarcely drawn to it at the time, but at the end of 24 hours he became fully sensible of the fate that awaited him (...) At the end of one week the poison had done its work! And another victim of the profession had fallen" [73].

An 1861 issue about hospital construction gives some precision about the exact ideal location and organization of autopsy rooms: "The dead-house and autopsy room should form no part of any of the inhabited buildings, but be situated in the rear. The wards should all be connected with the kitchen and the dead-house by an underground passage" [74]. This statement is based on a necessity of isolating cadavers from living patients, for sanitary reasons. More, a contamination of medical professionals would weaken the power of their investigation and scientific conclusions. It corresponds also to a period where a choice has to be made of showing or not showing the cadaver and educating citizens toward their bodies. Respect and knowledge, distance and delay: reports of autopsy data are not given in hurry, not within the few days following death but much later,

as a "sacred" or highlighted moment, using such delays as time and distance. For these reasons too, the dead has its proper building within the hospital.

After the autopsy: cadaver, data, and exams

Exceptional autopsies have been published in the *Journal* [75] such as the case of the Siamese twins (Chang and Eng brothers) (Figure 2). For this latest, a real legal transaction was carried out between a medical commission, and both widows and their legal adviser: physicians "received permission to examine the structure of the twins, but on condition that the sacred ligament should not be defaced by any incision whatever. The commission, however, finally obtained the consent of the widows to a limited dissection of the posterior surface of the band" [76]. The cadavers were first embalmed, then transferred to Philadelphia's College of Physicians for further autopsy by Dr Pancoast and Allen, and public exposition of the twins' cadavers. Is this true medical curiosity, or rather sensationalism and opportunism as for other autopsies of "monsters" [77,78]? One may doubt. And what about the cadavers after the autopsy? "It is said that the remains of the twins will not be carried through the States on exhibition; that the loving widows are filled with a burning desire to make the twins profitable even after death; that, however, strenuous opposition to this delightful and savory plan, has arisen on the part of an invalid daughter of one of the brothers. There may yet be opportunity in Boston to gaze upon the forbidding, shriveled remnants of Chang and Eng" [76]. In any case, the double liver of the twins is still conserved in formaldehyde at the Mütter Museum (Philadelphia).

In 1882, after preliminary technical recommendations [79], a committee of physicians appointed to consider a plan for securing uniformity in the data of autopsies: a blank form to be filled by the examiner is proposed, together with detailed instructions for making the required measurements [80]. (Figure 3) By the end of the 19th century, complementary exams increase following autopsies: toxicology, radiology, bacteriology [81].

Autopsies? never enough

Already in 1868, authors of the *Journal* blame the ineluctable decrease of the autopsy rate: "While autopsies are so rare and so uncertain, it should be the duty of every medical man, not only to make all he can, but to see that his followers, the students, are all well grounded in the ways of making them, and habituated in comparing the results of what they see. The autopsy room, next to the dissecting room, should be the student's constant resort. Here he may acquire more in one hour than in a day of lectures. He should be encouraged to visit it as soon as he has acquired enough knowledge of anatomy to enable him to estimate and to discriminate what he sees; and his attendance at autopsies should be obligatory throughout his whole three year's study" [82].

Physicians regret the rarity of autopsy practice during epidemics episodes: "We cannot but regret that so little [autopsies] has been done, where the opportunities are so great. It may be given in extenuation, however, that the physicians, in attendance, are over-worked, and that many of them have been ill with the fever" [83].

Concerning the rarity of post-mortem head/brain examination [84], a physician explains in 1844 the circumstances avoiding such an analysis: "The head, from various circumstances, as the feelings of relatives, the lateness of the hour, and the approach of the funeral services, was not examined—a circumstance, in a scientific point of view,

most deeply to be deplored” [85]. Indeed, some families of patients are clearly opposed to an examination of the brain [86].

The same with families of dead MD: in 1861, in a case of thoraco-bronchic disease, the abdomen is not opened; [87] in 1859, “the brain, by request of the family, was not examined” [88].

But for 1890’s practitioners, medical autopsies are still too rare in America comparatively to Europe: “the American physician is often indifferent or careless after his patient is dead. Except in large cities, it is difficult to undertake a post-mortem examination, and even where it would be comparatively easy, a busy doctor will often prefer to remain in doubt rather than undertake a disagreeable extra amount of work, and perhaps at the same time run the risk of offending the bereaved family” [89]. Principal objections to autopsies are religious feeling connected with the resurrection of the body, common feeling of repugnance to the mutilation of the body of a relative, and fear in the public mind of “ante-mortem autopsies” (i.e. false diagnosis of death) [89].

In 1890, medical examiners protest against the rapidly increasing custom of embalming by inflation of the body with fluids containing large amount of arsenious acid, mercury, corrosive sublimate, and zinc; indeed, detecting poisons is rendered impossible by this process of post-mortem body conservation [90].

As seen on (Table 4), decline of autopsy reports since the 70’s coincides with the rise of original research (i.e. scientific reports of the results of original clinical or biological research).

20th to 21st century tendency

Data concerning the medical and/or surgical specialty of the article citing autopsy results (isolated or series) within the Journal is only available by 1952. Such data (Table 5) confirms the huge decline of autopsies in both medical research and publications. In the 1950’s, medical autopsies were still very common [91]. A majority of research was performed on post-autopsy material, then a change occurred with the important increase of laboratory animals and models. In the same time, obtaining proper consent for an autopsy poses more and more problems, at the origin of a global decline of the autopsy [92]. Facing this decline, some physicians propose a new position in the end of the 1970’s: “not to de-emphasize the autopsy’s importance but to place emphasis on the quality and interpretation of autopsies performed rather than on the number performed” [93]. Facing the disinterest of multiple pathologists and physicians for autopsies, it has been proposed that it probably is not necessary to have a special pathology instructor in addition to the prosecutors to do the teaching at the autopsy table [94]. At the same period, religious oppositions to autopsies (even medico-legal ones) are more and more frequent [95]. Within the 1980’s, even if autopsies are presented as the best measure of accuracy of the death certificate [96], various negative points major its decline: elimination of autopsy requirements by the Joint Commission on the Accreditation of Hospitals, reduced emphasis on autopsies as a teaching device in medical education, fear of the autopsy as a revelator of a previous medical and/or surgical malpractice, lack of any direct reimbursement for performing autopsies [97], and time-consuming chore [98]. New propositions are made in the columns of the Journal, for example to bring video technology into the autopsy room, and record highlights of autopsies of persons who have presented clinical problems during life [99]. Post-mortem imaging has been proposed as a alternative to autopsy in the diagnostic of both adult and infant deaths, but is still lacking a high-degree of performance; to date, nothing replaces the efficacy a full evisceration, dissection of all organs

with direct identification of pathologies and/or injuries, and further histopathology. As a matter of fact, the number of autopsies performed in the United States continues to decrease in the 1990’s and still now, even if many physicians consider that this medical act plays a most important part in societal health issues [100]; for example, autopsy data from epidemiologic studies (and not experimental researches) have shown a relation between coronary artery disease and cardiovascular risk factors such as high serum total cholesterol concentrations and cigarette smoking [101].

Actual position is that of an incomparable but vanishing tool (“an extensive literature documents the frequency with which autopsy reveals clinically significant diagnoses that were missed before death”) [102]. A majority of actual physicians deeply think that bio-molecular (reimbursable) post-mortem tests are sufficient to get a precise diagnosis, and consider the autopsy as obsolete. Pathologists themselves have lost interest in such a long procedure. Some propose the creation of regional autopsy centers, which would receive funding to maintain high autopsy rates in their own hospitals and to perform autopsies of patients from other institutions. To date, autopsies are performed after less than 10% of all US deaths, but rates are inflated in many institutions by the inclusion of forensic cases and still births [102].

Anyway, autopsies “are not dead”, as recently proved by the recent publication of autopsy findings in children with Hand, Foot, and Mouth disease by a Far East team [102].

References

1. Cotting BE (1890) Cases in which the disease indicated by the symptoms was not found on post-mortem examination). Why doctors may be non-committal sometimes. *Boston Med Surg J* 123: 457-458.
2. Anonymous (1890) Autopsies in America. *Boston Med Surg J* 123: 449-450.
3. Warren J (1812) Remarks on angina pectoris. *N Engl J Med Surg Coll Br* 1: 1-11.
4. Anonymous (1812) Account of Bichat. *N Engl J Med Surg Coll Br* 1: 26-33.
5. Warren JC (1812) Cases of apoplexy, with dissections. *N Engl J Med Surg Coll Br* 1: 34-41.
6. Dorsey JH (1812) Case and dissection of a blue female child. *N Engl J Med Surg Coll Br* 1: 69.
7. Harley G (1850) Successful extraction of the child by the caesarean section, after the death of the mother. *Boston Med Surg J* 79-81.
8. Cottino BE (1870) Position of the foetus in utero. *Boston Med Surg J* 5: 253-256.
9. Brandt AM (2012) A reader’s guide to the 200 years of the New England Journal of Medicine. *N Engl J Med* 366: 1-7.
10. Ware R (1861) Medical reports from the Mass. General Hospital. *Boston Med Surg J* : 190-193.
11. Smiley TT (1863) The yellow fever at Port Royal. S.C. *Boston Med Surg J* 67: 449-468.
12. Anonymous (1863) Two cases of sudden death on board the U.S. receiving ship Ohio. *Boston Med Surg J* 442-443.
13. Martin HA (1861) Letter from fortress Monroe. *Boston Med Surg J* 526-531.
14. Welch WH (1891) Rudolf Virchow, pathologist. *Boston Med Surg J* 125: 453-457.
15. Anonymous (1878) Virchow on post-mortem examinations. *Boston Med Surg J* 98: 150-151.
16. Anonymous (1898) The morgue in Paris. *Boston Med Surg J* 138: 458-459.
17. Osgood H (1887) In Re Pasteur. Another side of the Reveillac case. *Boston Med Surg J* 146: 98-99.
18. Anonymous (1883) The mistaken diagnosis in the case of the Comte de Chambord. *Boston Med Surg J* 109: 451-452.

19. Armand Trousseau (1859) Lectures on asthma delivered at Hotel Dieu. *Boston Med Surg J*: 473-480.
20. Hodges RM (1856) Addison on the symptoms and treatment of disease of the supra renal capsules. *Boston Med Surg J* 55: 133-140.
21. Fisher FW (1846) Continuation of the report of M. Velpeau, surgeon to the hospital La Charité, Paris. Burns, contusions, wounds, disease of the lymphatic system. *Boston Med Surg J* 35: 337-341.
22. Anonymous (1837) Case of nymphomania. *Boston Med Surg J* 71-75.
23. Hosmer A (1864) Two cases in which sudden death was caused by fatty degeneration of the heart. *Boston Med Surg J* 319-321.
24. Greene JS (1865) Sudden death in labor. Air in the veins suggested as a cause. *Boston Med Surg J* 335-336.
25. Anonymous (1833) Introduction of air into the veins. *Boston Med Surg J* 251-252.
26. Howe OH (1899) Two cases of sudden death in infants. *Boston Med Surg J* 140: 10.
27. Baker FH (1899) A report of medico-legal autopsies. *Boston Med Surg J* 141: 465-466.
28. Whitney WF (1897) The preservation of specimens with their natural colors by Kaiserling's method. *Boston Med Surg J* 137: 621-622.
29. Cutler ER (1889) Eleven cases of operation for appendicitis. *Boston Med Surg J* 120: 554-556.
30. Anonymous (1859) Copy of the will executed by M. Groux while in the U.S. *Boston Med Surg J* 379-382.
31. Jackson J (1835) Organic disease of the stomach. *Boston Med Surg J* 364-366.
32. Cartwright SA (1825) Case of laryngotomy and case of phthisis pulmonalis. *N Engl J Med Surg Coll Br* 135-143.
33. Portal P (1837) Case of demonomania, with cerebral disturbance. *Boston Med Surg J* 8-12.
34. Anonymous (1859) Emphysema and death after a bayonet wound. *Boston Med Surg J* 220-225.
35. Pineo P (1858) Chronic meningitis. *Boston Med Surg J* 116.
36. Trow NG (1844) Case of the late Major Griswold. *Boston Med Surg J* 154-158.
37. Anonymous (1881) Official bulletins of the President's case. *Boston Med Surg J* 105: 299-307.
38. Anonymous (1881) Official bulletins of the President's case. *Boston Med Surg J* 105: 322-330.
39. Warren JC (1865) Case of President Garfield. *Boston Med Surg J* 105: 463-466.
40. Taber Johnson J (1874) Angina pectoris, illustrated by the case of Charles Sumner. *Boston Med Surg J* 91: 365-734.
41. Anonymous (1870) Account of Sir James Simpson's last illness. *Autopsy (1870) Boston Med Surg J* 414-415.
42. Hammond WA (1875) On the cause of the Vice-President Wilson's death. *Boston Med Surg J* 93: 693-704.
43. Trow NG (1844) Case of the late Major Griswold. *Boston Med Surg* 154-158.
44. Tabor SJW, Tobey IL (1844) Autopsy of the Hon. Joseph Griswold. *Boston Med Surg J* 236-237.
45. Anonymous (1836) Medical ethics. *Boston Med Surg J* 14: 69-72.
46. Anonymous (1894) The wound of president Carnot. *Boston Med Surg J* 131: 119-120.
47. Anonymous (1883) Medical notes. *Boston Med Surg J* 108: 164.
48. Peaslee ER (1877) Obituary notice of Dr A.B. Crosby. *Boston Med Surg J* 97: 373-377.
49. Anonymous (1875) Dr John Hugues Bennett. *Boston Med Surg J* 93: 509-512.
50. Anonymous (1875) Obituaries: Dr J.W.D. Osgood. *Boston Med Surg J* 112: 540.
51. Fisher TW (1896) Insensibility to pain from mental causes. *Boston Med Surg J* 416-418.
52. Dix JH (1853) Remarkable accident from the use of the canule-Dupuytren. *Boston Med Surg J* 262-263.
53. Bronson H (1852) Death from chloroform. *Boston Med Surg J* 460-462.
54. Anonymous (1856) An over-dose of homoeopathy. *Boston Med Surg J* 78-79.
55. Butterfield J (1842) Case of death from thomsonism. *Boston Med Surg J* 216-218.
56. Amory R (1868) Experiments and observations on absinth and absinthism. *Boston Med Surg J* 68-71.
57. Ellis C (1856) Case of suicide by antimony. *Boston Med Surg J* 400-401.
58. Tuck H (1870) Case of fatal poisoning from the external application of mercurial ointment in a case of scabies. *Boston Med Surg J* 219-220.
59. White JC (1870) On the symptoms and post-mortem appearances in a case of suspected poisoning by oxalic acid. *Boston Med Surg J* 5: 57-63.
60. Anonymous (1868) Poisoning by sulfate of atropine. *Boston Med Surg J* 148-149.
61. Anonymous (1857) Poisoning by morphia and belladonna. *Boston Med Surg J* 468-469.
62. Taylor WH (1883) A case of delayed putrefaction. *Boston Med Surg J* 109: 461-462.
63. Tebbetts JA (1844) A needle in the gall-bladder. Death of the patient. *Boston Med Surg J* 20-21.
64. Ainsworth FS (1856) Extraordinary pistol-shot wounds inflicted by a suicide. *Boston Med Surg J* 318-320.
65. Morse JH (1844) A coffee-bean in the trachea. *Boston Med Surg J* 118-119.
66. Bush JM (1838) Interesting autopsy. *Boston Med Surg J* 187-188.
67. Stackhouse J (1845) Case of discoloration of the skin. *Boston Med Surg J* 417-418.
68. Webster CE (1883) The swallowing of a silver half-dollar. Death. *Boston Med Surg J* 108: 513.
69. Hoitt EG (1899) The murder of John Dean. A medico-legal review. *Boston Med Surg J* 140: 297-299.
70. Mead JA (1894) What cases shall the medical examiner "view"? *Boston Med Surg J* 131: 362-363.
71. Mead JA (1897) Massachusetts medico-legal society. *Boston Med Surg J* 136: 335-337.
72. Hutchins ER (1866) Autopsy of Probst the murderer. *Boston Med Surg J* 401-402.
73. French SH (1852) The late Dr G.L. Spencer. *Boston Med Surg J* 194-195.
74. Brown FH (1861) Hospital construction. *Boston Med Surg J* 65: 49-54.
75. Jackson JBS (1858) An imperfect head upon the top of the head of a child otherwise well formed. *Boston Med Surg J* 159-161.
76. Anonymous (1874) The autopsy of the Siamese twins. *Boston Med Surg J* 294-298.
77. Ellis C (1871) Autopsy of the double monster (*ischiopagus tripus*) born in Ohio, and lately exhibited in Boston. *Boston Med Surg J* 218-223.
78. Tuck H (1870) A case of ectopia cordis. *Boston Med Surg J* 392-393.
79. Bowditch HP (1880) The collection of data at autopsies. *Boston Med Surg J* 103: 148-149.
80. Bowditch HP (1882) On the collection of data at autopsies. *Boston Med Surg J* 107: 365-366.
81. Wright JH, Stokes WMR (1895) A report on the bacteriological investigations of autopsies. *Boston Med Surg J* 132: 275-278.
82. Anonymous (1868) How to study medicine. Pathology and physiology. A plea for autopsies and for vivisection. *Boston Med Surg J* 74-76.
83. Drake D (1847) The Irish immigrants' fever. *Boston Med Surg J* 37: 149-157.
84. Perry MS (1835) Autopsy of an opium eater. *Boston Med Surg J* 319-320.
85. Trow NG (1844) Case of the late Major Griswold. *Boston Med Surg J* 154-158.
86. Clapp S (1848) On the pathology of diabetes mellitus. *Boston Med Surg J* 523-524.

-
87. Anonymous (1861) Case of Dr Horace W. Adams. *Boston Med Surg J* 106-109.
 88. Ayer J (1859) The case of Ephraim Buck, M.D. *Boston Med Surg J* 97-101.
 89. Durell TM (1890) A protest against embalming. *Boston Med Surg J* 122: 544-545.
 90. Brown DE (1954) High autopsy-percentage. *N Engl J Med* 251: 859-860.
 91. Ghayet NL (1966) Consent for the autopsy. *N Engl J Med* 274: 268-269.
 92. Roberts WC (1978) The autopsy: its decline and a suggestion for its revival. *N Engl J Med* 299: 332-338.
 93. Castleman B, Chase RA, Ranchod M (1947) Role of the autopsy in the teaching of gross anatomy. *N Engl J Med* 291: 1413-1414.
 94. Curran WJ (1977) Religious objection to a medico-legal autopsy: a case and a statute. *N Engl J Med* 297: 260-261.
 95. Kircher T, Nelson J, Burdo H (1985) The autopsy as a measure of accuracy of the death certificate. *N Engl J Med* 313: 1263-1269.
 96. Landefeld CS, Chren MM, Muers A (1988) Diagnostic yield of the autopsy in a University Hospital and a Community Hospital. *N Engl J Med* 318: 1249-1254.
 97. Goldman L, Sayson R, Robbins S (1983) The value of the autopsy in three medical eras. *N Engl J Med* 308: 1000-1005.
 98. Lowe LW, Wells M (1982) Autopsy: a further suggestion for its revival. *N Engl J Med* 306: 51.
 99. Abrahams C (1994) Understanding the autopsy. *N Engl J Med* 330: 1165-1166.
 100. Berenson GS, Srinivasan SR, Bao W (1998) Association between multiple cardiovascular risk factors and atherosclerosis in children and young adults. *N Engl J Med* 338: 1650-1656.
 101. Shojania KG, Burton EC (2008) The vanishing nonforensic autopsy. *N Engl J Med* 358: 873-875.
 102. Jiang M, Wei D, Ou WL (2012) Autopsy findings in children with hand, foot, and mouth disease. *N Engl J Med* 367: 91-92.