



Current state of surgical training using cadavers in Japan compared with Western countries

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Abstract

Surgical skill training using cadavers is important for surgeons to gain an understanding of anatomical approaches. However, the laws and guidelines stipulating surgical technique training using corpses differ in each country. We discuss the new guidelines and the current situation in Japan in comparison with that in Western Europe and the United States.

Keywords Cadaver · Surgical training · Japan

Studying systemic anatomy has been widely accepted by society historically, as an essential part of medical education for training physicians [1]. Recently, the fresh frozen cadaver has been presented as a valuable tool for facial trauma simulation [2]. However, there is considerable variability among countries in terms of the history and conditions of cadaver surgical training (CST), or the training and research of surgical techniques conducted by clinicians using the bodies of recently deceased people. A legal basis has been established for CST based on the laws surrounding body donations in the United States of America (USA), the Human Tissue Act in the United Kingdom of Great Britain and Northern Ireland (UK), and the laws of local communities determining funeral administration in France. In the UK, recent revisions have included “training”, in addition to education and research, for the stipulated purposes of donated bodies, thereby opening new doors for the full-scale implementation of CST. In the USA, the UK, and France, specific consent for surgical training is not required from donors.

Various initiatives have been taken by universities in the USA, with the majority of courses targeting newly graduated residents rather than experienced surgeons. There are several reports of studies measuring the effectiveness of different types of training [3]. In the UK, well-equipped training facilities have been established by the associations of surgeons,

operating in addition to the universities. However, the number of donated bodies provided is limited, so the implementing organizations are required to provide objective data on the effects of CST [3, 4]. In France, the donation of bodies for medical education and training is considered in line with the freedom and right for an individual to choose the type of funeral they want, and there are also studies reporting the effectiveness of training at organized training facilities established nationwide [5, 6].

In Japan, CST has been conducted sporadically at individual medical universities, but it has no legal basis and has not been recognized officially. Therefore, the Japan Surgical Society and the Japanese Association of Anatomists have taken the principal role of initiating an academia-led discussion, including the question of ethics, which was followed by the establishment of the “Guidelines for Cadaver Dissection in Education and Research of Clinical Medicine” in 2012 [7]. The core items of these guidelines are as follows:

1. The dissection laboratories of medical departments as the point of contact for CST.
2. The requirement of a separate living consent specifically for surgical research, in addition to consent from an individual to donate their body for dissection.
3. Limiting those who participate in CST procedural training to physicians and dentists
4. Mandatory reporting of the operations performed to the committee established by the Japan Surgical Society.

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Based on these guidelines, the organizations that would participate in the Ministry of Health, Labour and

Table 1 Changes of cadaver surgical training reports in Japan in these 5 years

Year	2012	2013	2014	2015	2016	2017
Universities that received the Health and Labour Sciences Research Grants	In 2012, the “Guidelines for Cadaver Dissection in Education and Research of Clinical Medicine” was established	Total: 6 Sapporo Medical Univ. Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Ehime Univ. Okayama Univ.	Total: 7 Sapporo Medical Univ. Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Ehime Univ. Univ. of Occupational and Environmental Health	Total: 8 Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Ehime Univ. Nagoya City Univ. Sapporo Medical Univ. Univ. of Occupational and Environmental Health	Total: 8 Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Ehime Univ. Nagoya City Univ. Sapporo Medical Univ. Univ. of Occupational and Environmental Health	Total: 9 Hokkaido Univ. Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Ehime Univ. Nagoya City Univ. Tokushima Univ. Univ. of Occupational and Environmental Health
Universities that reported details of CST operations to the Japan Surgical Society		Total: 5 Chiba Univ. Sapporo Medical Univ. Ehime Univ. Tokyo Medical Univ. Tohoku Univ.	Total: 6 Sapporo Medical Univ. Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Aichi Medical Univ.	Total: 8 Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Yokohama City Univ. Aichi Medical Univ. Tokushima Univ. Dokkyo Medical Univ.	Total: 11 Tohoku Univ. Chiba Univ. Tokyo Medical Univ. Okayama Univ. Ehime Univ. Nagoya City Univ. Nagoya Univ. Tokushima Univ. Iwate Medical Univ. Dokkyo Medical Univ. Aichi Medical Univ.	Total: 12 Yokohama City Univ. Fukushima Medical Univ. Nagoya Univ. Tokushima Univ. Okayama Univ. Tohoku Univ. Iwate Medical Univ. Chiba Univ. Hokkaido Univ. Ehime Univ. Tokyo Medical Univ. Dokkyo Medical Univ.

Univ. University, *CST* cadaver surgical training

Welfare-funded project, “Training project for improving practical surgical procedural techniques,” were recruited to start the following year (2013), with the project expanding accordingly. The number of universities receiving public funding was six in 2013, seven in 2014, and nine in 2017. Universities that do not receive public funding are still instructed to report to the appointed committee of the Japan Surgical Society. Consequently, 12 universities reported details of their CST operations in 2017 (Table 1). In these Japanese reports, it is noteworthy that the anatomical preservation methods included saturated salt solution [8] and a new substitute solution [9]. The details of the activities were classified as educational and research-based: the education-based reports focus on the difficulty or level of invasiveness of the procedure, whereas the research-based reports are subcategorized into three levels from research for undergraduate studies to the development of new medical equipment. A large increase in the public budget has been allocated to promote this academia-led project for 2018. Efforts are also being made to improve financial transparency, including the cost of operations according to the new Guidelines [7]. In this brief report, we focused on comparing

CST between Japan and Western countries. Further research is needed on the practice of CST in other Asian countries, such as Thailand.

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Compliance with ethical standards

Conflict of interest We have no conflicts of interest associated with this manuscript.

References

1. Gillingwater TH, Findlater GS. Anatomy: back in the public spotlight. *Lancet*. 2015;385:1825.
2. Christophel JJ, Park SS, Nogan SJ, Essig GF Jr. A facial trauma simulation course for evaluation and treatment of facial fractures. *JAMA Facial Plast Surg*. 2017;19:464–7.
3. Davies N. Simulation in surgical training: the College’s role. *Ann R Coll Surg Engl (Suppl)*. 2011;93:318–9.

4. Gilbody J, Prasthofer AW, Ho K, Costa ML. The use and effectiveness of cadaveric workshops in higher surgical training: a systematic review. *Ann R Coll Surg Engl*. 2011;93:347–52.
5. Guzik L. Don de son corps à la science, à l'enseignement et à la recherche. Réseau CHU. <https://www.reseau-chu.org/article/don-de-son-corps-a-la-science-a-l-enseignement-et-a-la-recherche/>. Accessed 20 Jan 2018 (in French).
6. Delpech PO, Danion J, Oriot D, Richer JP, Breque C, Faure JP. SimLife a new model of simulation using a pulsated revascularized and reventilated cadaver for surgical education. *J Vasc Surg*. 2017;154:15–20.
7. Japan Surgical Society and Japanese Association of Anatomists: Guidelines for cadaver dissection in education and research of clinical medicine. 2018. <https://www.jsoc.or.jp/journal/guideline/info20180406-01.pdf>. Accessed 12 April 2018 (in Japanese).
8. Hayashi S, Naito M, Kawata S, Qu N, Hatayama N, Hirai S, et al. History and future of human cadaver preservation for surgical training: from formalin to saturated salt solution method. *Anat Sci Int*. 2016;91:1–7.
9. Haizuka Y, Nagase M, Takashino S, Kobayashi Y, Fujikura Y, Matsumura G. A new substitute for formalin: application to embalming cadavers. *Clin Anat*. 2018;31:90–8.