CHAPTER 7

Conclusion

In his monograph, *The Shock of the Old*, David Edgerton laments the tendency within the history of technology towards 'innovation-centric history'. Hugely successful innovations, he argues, are mined for historical value while those that fail, which in fact make up a greater proportion of science and technology's past, are sidelined. Addressing technology in general, rather than medicine specifically, Edgerton nonetheless, like John Pickstone before him, calls attention to the easy slippage between histories of innovation and histories which simply document advance. For Edgerton, this calls into question the whole value of using innovation as an historical framework.[1]

But this argument sets up a straw man. Such criticisms of innovation-focused history rely on a simplistic notion of what innovation is and how it is experienced. In fact, the history of innovation is only this narrow if we let it become so: if we make it our business as historians to shoehorn innovations into immutable categories of successful diffusion or ultimate failure, depict those associated with innovations as either winners or losers, and if we assume that the process of innovation is an ordered one. In the preceding chapters, I have sought to show that in the case of ovariotomy no such order or simplicity can be found, nor is this a desirable way to frame the negotiation of the operation into medical practice. Rather, what it shows is that no aspect of the innovation process in surgery can be treated as self-evident; that which we might initially take for granted as being unambiguous about an innovation: its beginning, its ending, its

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definition, are not necessarily so. Moreover, innovation in operative surgery comes with its own unique set of problems and peculiarities, which neither broader histories of medicine nor of technology adequately convey. Caught between overlapping but distinct worlds of theory and performance, the physical invasiveness of surgery has, historically, amplified tensions around the introduction of new procedures. When a new operation succeeded, the potentiality of innovation to restore the body to health was made dramatically visible. But so too, were the devastating physical consequences of surgery when an operation failed.

As a means of showing this, I have set out with the objective of examining one surgical procedure, the removal of the ovary, making the operation itself central to the narrative. It may seem odd to claim an operation-centred approach to surgery as novel within the historiography, but, a few notable exceptions aside, it is.[2] And yet an operation-centred approach can do valuable work in helping us understand innovation. It serves to magnify the deficiencies that remain in the history of surgery: patients' journeys through referral networks, understandings of surgical responsibility, the pre- and post-operative periods, the negotiation of an operation's financial cost: all these are issues that are nuanced through a close reading of ovariotomy.

By addressing the complex genealogy of a single operation over a lengthy time period, this study also obliges reconsideration of the temporality of surgical innovation. John Pickstone long ago drew attention to distinctions between invention and innovation, insisting that innovation involves not just a new product or phenomenon but its negotiation into medicine.[3] But it is the 'new' that studies of innovation remain indelibly linked to. I do not deny this association, nor that ovarian surgery represented genuine and significant novelty among the historical actors under scrutiny here; for better or worse, the entry into the peritoneum was viewed as a striking innovation by many contemporary surgeons. But by reviewing the lengthy process of negotiation that ovarian surgery underwent, we see that the 'new' is as much a representation as it is an essential quality of a product or process, fixed to a specific period. Surgical innovation did not necessarily begin with the first performance of a procedure. In the case of ovariotomy, the shift from theoretical possibility to surgical practice was a slow process—about as distant from modern-day conceptions of innovation as lightning-quick that one can get. As described in Chapter 2, Ephraim McDowell's canonical operation in 1809 was preceded by decades of discussion as to the feasibility

and ethicality of removing diseased ovaries, coupled with reports of numerous procedures where the ovary or part of the ovary had been removed, both intentionally and unexpectedly. Notions of ovarian surgery's novelty and longevity were constantly shifting and did not pertain to any self-evident, linear temporality. When the possibility of the operation was discussed in the late eighteenth century, for example, precedents of ovarian extirpation from the ancient world were emphasised in a bid to improve its credibility and show that the procedure was not simply a dangerous novelty. But when at the tail end of the nineteenth century ovariotomy was historicised by some as the pinnacle of Victorian surgery's achievement, as described in Chapter 6, it was its identity as a novelty of *that* era which became increasingly valued. Furthermore, in Chapter 6, I teased apart the idea of an innovation's 'ending'. Generally, medical innovations are considered to have two possible destinies: integration or rejection. But the history of ovariotomy shows operations can have a different fate. By the beginning of the twentieth century, elements of both integration *and* rejection were part of ovariotomy's status. Changing and inconsistent nomenclature further complicated matters, as the definition of 'ovariotomy' became increasingly uncertain. In this chapter, I also probed the idea of endings by considering how the medical profession sought to historicise recent innovations in ovariotomy, even as the operation remained in contemporary use. The historicisation of past achievements tangled uneasily with anxieties about the future of surgery. The significance of taking a chronologically expansive view of ovariotomy has other implications too. Recent literature on the history of surgical innovation has generally focused on the late nineteenth century onwards. But if the chronological focus remains this way then 'innovation' and attendant concerns of risk, responsibility, credit and so forth, remain invariably wedded to recent times when, as the history of ovariotomy shows, such concerns were already considered highly important by surgeons.

Throughout this study I have attempted to elucidate the operation's constantly shifting, malleable identity, which runs throughout its history; over the nineteenth century, ovariotomy could be depicted both as a murderous procedure performed by immoral 'belly-rippers' and the dazzling beginning of a new era of surgery. Diverse methodologies, from patient narratives to ambitious statistical accounts, were employed by doctors to try and ascertain just how risky the operation was. With the emergence of a new term for the operation, 'ovariotomy', in the 1840s, as detailed

in Chapter 3, a transitional moment occurred in which the operation was reconceptualised from a range of diverse acts—often private endeavours—to a single identity, in which all occurrences of the procedure were expected to be relayed through print and thus available for public comparison and consumption. The term 'ovariotomy' helped to make sense of the developments taking place, but underneath the label there struggled multiple identities and meanings. When situating surgical procedures historically, it seems useful to think of an operation as a network in itself, and one that perhaps more closely resembles a cobweb, formed of gossamer thin threads that constitute an unstable whole. This factored into almost every key debate around ovariotomy, from the differing definitions of the operation used to calculate its risks, to disputes over the intellectual property of the procedure, to the discussions around the justifiability of performing it for a growing range of pathologies. All were impacted by the varying definitions ascribed to ovariotomy by different actors.

To an extent, my conclusions speak to those of other historians. Thomas P. Hughes, in his extensive explorations of innovation in technology, most notably through the work of Thomas Edison, understood inventions as being incorporated into large-scale technological systems, which involve various stages of development, growth, competition and consolidation, although not necessarily in that order. Hughes cautions against a reliance on models of innovation which suggest a one-size-fits-all staged career, alluding instead to the messiness and complexity of the process of innovation.[4] Focusing on surgery specifically, Thomas Schlich has elaborated further, pointing to the unhelpfulness of a 'sharp distinction between innovation, invention and diffusion, which is so typical of economic models of innovation', when both the context and the technology of a surgical innovation are, in fact, liable to change.[5] A further deconstructive step, however, can be taken in understanding the fragile identity of surgical operations. Twenty-five years ago, Charles E. Rosenberg and Janet Golden's seminal work, *Framing Disease*, powerfully put forward the case for unravelling the intricacies of disease categories. In it Rosenberg argued that biological events were continually being re-framed in response to cultural change.[6] Their work has been influential on medical history (and beyond) ever since. Given the constructivist bent of the discipline, it is then remarkable that little has been done to understand surgical operations in the same way. But as the history of ovariotomy shows, new surgical operations are equally subject to continual reframing and even reconceptualisation.

As Thomas Schlich has noted, historians of medicine have focused predominantly on 'concepts and practices that are obviously influenced by culture and society'.[7] The connections between operative surgery and broader cultural concerns may seem less immediately obvious. But as I have sought to show, ovariotomy channelled a spectrum of wider issues pertinent particularly to Victorian society, from preoccupations with financial success, honour and reward, to gender normativity and the pernicious effects of fashion upon society. These issues often converged through the operation. Chapters 4 and 5 reveal a rather complicated picture of the economics of nineteenth-century surgery. Professional and surgical risks, expectations of aftercare, ovariotomists' self-identity, as well as patient demand, all factored into the pricing of the operation. Meanwhile, those practitioners able to claim a role in the operation's innovation, following its growing success in the middle decades of the century, were able to capitalise financially on their connection with it. Implicit within the financial benefits of performing ovariotomy were multiple professional and ethical questions, as the prolific performance of the operation led to fears that unnecessary surgery was taking place and that patients were demanding what was by the late 1880s perceived by some as a 'fashionable' operation. This factored into understandings of the operation's performance as economically motivated. For some doctors, it also signalled excessive amounts of power on the part of female patients—facilitated by professional acquiescence—to shape their treatment, potentially to the detriment of their health.

Indeed, questions of sex and gender course through the history and historiography of ovariotomy. A long-held supposition within the historical literature has been that surgical innovation around the ovaries, in comparison with the relative *lack* of surgical innovation around less obviously gendered abdominal organs, reflected upon the susceptibility of women's bodies to becoming experimental material for doctors, particularly in the Victorian era. Undeniably, this is part of the story. Enmeshed within contemporary concepts of womanhood, which were also framed by ideas of class and race, an exclusively female set of patients suited and shaped the narrative many surgeons wished to project of the operation as a life-saving necessity for vulnerable and suffering women, restoring them to health so that they could perform their familial and societal duties. Moreover, in some cases, the existence of the patient's full consent to undergo the procedure is doubtful. But the gendering of ovariotomy was also more complex than previous works have suggested, and the

controversies surrounding ovarian surgery by the end of the nineteenth century can be read within a broader and longer history of disease and therapeutics. The burgeoning fields of reproductive physiology and morbid anatomy in the eighteenth century found common ground in the ovary and its pathological complexities, which revealed itself in practitioners' interest in the large tumours many female patients were afflicted with. But it was also the relative expendability of the ovaries that made them a potential site of surgical intervention, as the male testicles were already; and a growing understanding that it was possible for women to go on to live a healthy life without their reproductive organs—although this idea would come under scrutiny once more at the end of the nineteenth century. Moreover, a close reading of the operation paints a more nuanced picture of power relations between practitioners and patients, ever-fluctuating in the face of the operation's own evolution. Ovarian disease could be a painful, humiliating and life-threatening condition; the possibility of a complete cure that ovariotomy offered meant that while patients felt fear and trepidation about its risks, some also pursued the operation regardless in their quest for relief. Indeed, there is ample space for further work in this area. Traditionally, it is the 'pioneering' surgeon we see as pushing the boundaries of surgical innovation, but what about the role some patients played, not just in enduring operations but in initiating and shaping them? New research is bringing the surgical patient into the history of innovation.[8] Although most work has so far been focused on the twentieth century, if relevant primary sources could be unearthed, such work could be done in a nineteenth-century context as well, helping to refine our conceptualisations of the symbiosis involved in the patient–practitioner relationship.

No one operation could ever seamlessly reflect the unfolding of all surgical innovations during the period in question, and there is no doubt that ovariotomy in many respects occupied a singular place in surgery during this time. Its acceptance into established practice was based upon a profound shift in the ethics of surgery; the operation portended a significant reframing of major surgery from last resort to elective treatment. But the controversies surrounding the operation leveraged it to a status that meant through it, conceptions and concerns about surgical innovation were visibly channelled. These conceptions and concerns can be read more widely into the negotiation of surgical novelty during this time, where innovation did not simply equate to progress and where a single surgical procedure, the removal of the ovary, gave rise to deep-seated questions about the objectives—and even the very meaning—of surgery.

Notes

1. David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (London: Profile, 2006), xiv.
2. Thomas Schlich, *Surgery, Science and Industry: A Revolution in Fracture Care, 1950s–1980s.* (Basingstoke: Palgrave Macmillan, 2002); Thomas Schlich and Christopher Crenner, 'Technological Change in Surgery: An Introductory Essay', in *Technological Change in Modern Surgery*, ed. Thomas Schlich and Christopher Crenner (Rochester: University of Rochester Press, 2017). Both Schlich, and Schlich and Crenner in their edited volume, make individual procedures central to their historical investigation.
3. John V. Pickstone, 'Introduction', in *Medical Innovations in Historical Perspective*, ed. John V. Pickstone (Basingstoke: Macmillan, 1992), 1.
4. Thomas P. Hughes, 'The Evolution of Large Technological Systems', in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker and Thomas P. Hughes and Trevor Pinch (Cambridge, MA: MIT Press, 2012), 50–51.
5. Schlich, *Surgery, Science and Industry*, 241.
6. Charles E. Rosenberg, 'Framing Disease, Illness, Society and History', in *Framing Disease: Studies in Cultural History*, ed. Charles E. Rosenberg and Janet Golden (New Brunswick: Rutgers University Press, 1992), xiii–xv.
7. Thomas Schlich, *The Origins of Organ Transplantation: Surgery and Laboratory Science* (Rochester and Woodbridge: University of Rochester Press, 2010), 8.
8. Cynthia L. Tang and Thomas Schlich, 'Surgical Innovation and the Multiple Meanings of Randomized Controlled Trials: The First RCT on Minimally Invasive Cholecystectomy (1980–2000)', *Journal of the History of Medicine and Allied Sciences*, 72, no. 2: 117–141; Beth Linker, 'Prosthetic Imaginaries: Spinal Surgery and Innovation from the Patient's Perspective', in *Technological Change in Modern Surgery*, ed. Thomas Schlich and Christopher Crenner (Rochester: University of Rochester Press, 2017), 100–128.