

Pain and Surgery in England, *circa* 1620–*circa* 1740

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Abstract: The scholarship on the discussion and role of pain in early modern English surgery is limited. Scholars have given little consideration to how surgeons described and comprehended pain in their patients' bodies in early modern England, including how these understandings connected to notions of the humours, nerves and sex difference. This article focuses on the attention that surgeons paid to pain in their published and manuscript casebooks and manuals available in English, *circa* 1620–*circa* 1740. Pain was an important component of surgery in early modern England, influencing diagnosis, treatment and technique. Surgeons portrayed a complex and multi-dimensional understanding of their patients' bodies in pain, which was further connected to their portrayals of their professional ability.

Keywords: Early modern England, Pain, Surgery, Sex

Introduction

This article asks how surgeons described and understood pain in their adult patients' bodies, *circa* 1620–*circa* 1740. This brings up several interrelated themes, explored in this study, including: did these understandings influence diagnosis and treatment, and if so, how? Were understandings of pain influenced by ideas of sex difference? How did purported knowledge of pain control contribute to surgeons' claims to professional authority? This paper makes three interrelated arguments. First, pain shaped surgical treatment in early modern England. Physical hurt acquired significant meaning in surgical theory and practice, as surgeons paid close attention to pain as a diagnostic tool and as a condition requiring treatment. There was a great deal of instruction within surgical writings regarding the importance of identifying, monitoring and controlling pain. Second, these instructions contributed to surgeons' claims to authority, by emphasising the skill of the surgeon. This emphasis on professional skill reveals a nuanced understanding of how surgeons understood pain within the body, including, but not limited to, humoralism. Surgeons portrayed an understanding of pain as one of interconnections between humoralism and nerves, and they also placed a unique emphasis on wounds. This attention

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to pain contributed to a surgeon's professional authority. Third, surgeons demonstrated an awareness of what Wendy Churchill has called the 'sexed body'.¹ The question of how sex difference interacted with surgeons' understandings of pain has been neglected by scholars. This study argues that sexed-based physiological differences influenced surgeons' diagnoses of painful conditions and contributed to an awareness of their own interventions causing sexed-differentiated suffering. 'Sex' was therefore a category that surgeons considered in their understandings of pain. Overall, surgical manuals emphasised pain in ways that interacted with their specialised knowledge of the body, increasing their claims to professional authority, but also revealing a complicated relationship with suffering.

Scholarship on the surgical history of pain is somewhat limited,² perhaps because medicine, rather than surgery, has dominated the historiography of pre-modern health. In the early historiography, scholars portrayed pre-modern surgery as barbaric and glorified the rise of anaesthetics as a 'victory over pain'.³ This picture has been drastically altered: modern scholars interested in the history of anaesthetics have explored the complexities of their development and adoption,⁴ while scholars interested in pre-modern surgery have revealed surgeons as trained individuals with specialised skills whose education and status improved over the course of the early modern period.⁵

A handful of historians have inquired into the early modern history of surgical pain. Andrew Wear considered the relationship between surgery and pain as part of his larger project to 'recreate that knowledge and practice of that foreign culture: early modern

¹ Wendy Churchill, 'The Medical Practice of the Sexed Body: Women, Men, and Disease in Britain, circa 1600–1740', *Social History of Medicine*, 18 (2005), 3–22; Wendy Churchill, *Female Patients in Early Modern Britain* (Farnham: Ashgate, 2012), 141–78.

² Christopher Lawrence, 'Democratic, divine and heroic: the history and historiography of surgery', in Christopher Lawrence (ed.), *Medical Theory and Surgical Practice: Studies in the History of Surgery* (London: Routledge, 1992), 10.

³ Peter Stanley, *For Fear of Pain, and British Surgery, 1790–1850* (Amsterdam: Rodopi, 2003), 14–5. Early histories of pain routinely presented the development of surgical anaesthetics as a conquest or victory. Victor Robinson, *Victory Over Pain: A History of Anesthesia* (New York: Henry Schuman, 1946), xiii. Frank Kells Bowland, for example, stated: 'It has been said that surgical anesthesia is the greatest discovery of man. While it is not difficult to describe the limitless triumphs of electricity and of other marvellous inventions and discoveries, on land and sea, and in the air, which some may regard as the first in importance, to the individual who has experienced the power of surgical anesthesia to prevent pain, restore health and save life, all other human contributions become secondary in comparison. How was it found? With a towel, a bottle of ether, a prepared mind, a courageous heart, and a prayer – seemingly so simple, but creating for the world such a sublime, revolutionary gift! That was THE FIRST ANESTHETIC.' Frank Kells Boland, *The First Anaesthetic: The Story of Crawford Long* (Athens, GA: The University of Georgia Press, 1950; paperback edn, 2009), v.

⁴ Martin S. Pernick, *A Calculus of Suffering: Pain, Professionalism, and Anesthesia in Nineteenth-Century America* (New York: Columbia Press, 1985); Donald Caton, *What a Blessing She Had Chloroform: The Medical and Social Responses to the Pain of Childbirth from 1800 to the Present* (New Haven, CT: Yale University Press, 1999); Stephanie Snow, *Operations Without Pain: The Practice and Science of Anaesthesia in Victorian Britain* (Basingstoke: Palgrave Macmillan, 2006); Lucy Bending, *The Representations of Bodily Pain in Late Nineteenth-Century English Culture* (Oxford: Clarendon Press, 2000); John Kirkup, 'Surgery before general anaesthesia', in R.D. Mann (ed.), *The History of the Management of Pain: From Early Practices to Present Practice* (Carnforth: The Parthenon Publishing Group, 1988), 15–30; Marcia Meldrum (ed.), *Opioids and Pain Relief: A Historical Perspective* (Seattle, WA: International Association for the Study of Pain Press, 2003). Peter Stanley has attempted to draw the attention of historians to surgery before the use of ether or chloroform; however, his study leaves most of the early modern period untouched, covering only the period 1790–1850. See Stanley, *op. cit.* (note 3).

⁵ Laurence Brockliss and Colin Jones, *The Medical World of Early Modern France* (Oxford: Clarendon Press, 1997; repr. 2004), 553–621; Mary Lindemann, *Medicine and Society in Early Modern Europe*, 2nd edn (Cambridge: Cambridge University Press, 2010), 128–36.

medicine'.⁶ Wear drew attention to the role of physical suffering in early modern surgery, arguing for the importance of patient consent, surgeons' training in attention to pain as part of the surgical process, and pain's intrinsic role within the worldview of surgeons.⁷ Wear's argument that surgeons, in comparison to physicians, acted quite extensively on the bodies of their patients suggests that analysing the discussion of pain in surgical works may reveal deeper connections between pain and surgeons' unique understandings and treatment of the body.⁸ Lynda Payne, more so than any other scholar, has focused on the question of how surgeons coped emotionally with the task of inflicting pain on the patient.⁹

A select group of scholars have developed analyses connecting pain, gender, and sexed physiology, but their work has predominantly concerned physic, rather than surgery.¹⁰ This study therefore draws upon two strands of the historiography to consider the significance of their connections. An exploration of sexed differences in the sources is supported by the fact that a consistent identifying factor in the records about early modern English adult patients was their sex. This is not true of age, occupation, residence, ethnicity or other identifiers. The most obvious fact about the person who presented herself or himself as a patient was 'sex'. This article therefore draws connections between careful observations of the adult patient's body in pain, including considerations of sex, in order to deepen the understanding of the role that physical hurt played in early modern surgery. The focus here is on adult bodies, although work by historians such as Hannah Newton and Wendy Churchill suggests that the story for children may well be different, as early modern medicine identified important differences between the bodies of adults and children. Moreover, in the bodies of children, age, rather than sex, differentiated their care.¹¹

⁶ Andrew Wear, *Knowledge and Practice in English Medicine, 1550–1680* (Cambridge: Cambridge University Press, 2000), 1.

⁷ *Ibid.*, 241–8.

⁸ *Ibid.*, 5.

⁹ Lynda Payne, *With Words and Knives: Learning Medical Dispassion in Early Modern England* (Aldershot: Ashgate, 2007), 4–5: 7.

¹⁰ Two historians have investigated the role of gender in their work on bodily pain in early modern England: Lisa Wynne Smith, 'Women's Health Care in England and France (1650–1775)' (unpublished PhD dissertation: University of Essex, 2001), ch. 3; Lisa Wynne Smith, "'An Account of an Unaccountable Distemper": The Experience of Pain in Early Eighteenth-Century England and France', *Eighteenth-Century Studies* 41.4 (2008), 459–80; and Olivia Weisser, 'Suffering Well: Gender, Religion, and Pain in Seventeenth-Century Patient Narratives', unpublished paper, presented at the Northeast Conference on British Studies, Providence, Rhode Island, 3 October 2009; Olivia Weisser, 'Gender and Illness in Seventeenth-Century England' (unpublished PhD thesis: Johns Hopkins University, 2010) and Olivia Weisser, 'Boils, Pushes and Wheals: Reading Bumps on the Body in Early Modern England', *Social History of Medicine* 22.2 (2009), 321–39. Other historians who have written on early modern bodily pain, include: Roselyne Rey, *The History of Pain*, Louise Elliott Wallace, J.A. Cadden, and S.W. Caden (trans.) (Cambridge, MA: Harvard University Press, 1995); Wear, *op. cit.* (note 6), 241–8; Barbara Duden, *The Woman beneath the Skin: A Doctor's Patients in Eighteenth-Century Germany* (Cambridge, MA: Harvard University Press, 1991); Lisa Silverman, *Tortured Subjects: Pain, Truth, and the Body in Early Modern France* (Chicago, IL: University of Chicago Press, 2001); Payne, *op. cit.* (note 9); Javier Moscoso, *Pain: A Cultural History* (Basingstoke: Palgrave Macmillan, 2012). For two recent modern histories of pain, see: Joanna Bourke, *The Story of Pain: From Prayer to Painkillers* (Oxford: Oxford University Press, 2014) and Rob Boddice (ed.), *Pain and Emotion in Modern History* (Basingstoke: Palgrave Macmillan, 2014).

¹¹ Hannah Newton, *The Sick Child in Early Modern England, 1580–1720* (Oxford: Oxford University Press, 2012); Hannah Newton, "'Very Sore Nights and Days": The Child's Experience of Illness in Early Modern England, c.1580–1720', *Medical History* 55 (2011), 153–82; Hannah Newton, 'Children's Physic: Medical Perceptions and Treatment of Sick Children in Early Modern England, c.1580–1720', *Social History of Medicine* 22.3 (2010), 456–74; Ashley Mathisen, 'Mineral Waters, Electricity, and Hemlock: Medical Practice and Children in the Eighteenth Century', unpublished paper, presented at the Canadian Society for the History of Medicine Annual Conference, Concordia University, Montreal, 30 May 2010; Adriana S. Benzaquén, 'The doctor and the child: medical preservation and management of children in the eighteenth century',

This article builds upon the work of recent scholars who have discussed connections between pain and surgery as part of their larger projects, but with a greater focus on the ways that surgeons understood pain in their patients' bodies, and within a broader surgical context. The ways in which surgeons paid careful attention to adult patients' pain and the importance of these observations has not been developed in significant detail. Surgical sources largely have been dismissed as a critical source of information for studying early modern understandings of pain. In the introduction to their edited collection, Jan Frans van Dijkhuizen and Karl A. E. Enenkel dismissed surgical sources: 'Yet, like theoretical medicine, surgery offered little in the way of an analytical perspective on pain beyond the immediate practicalities of pain management'.¹² This article asks what can be learned through a deeper analysis of these surgical 'practicalities'.

Chronology and Sources

The chronology for this study, which is part of a larger project on bodily pain and gender in early modern England, was selected for several reasons. After 1620, extant surgical casebooks became more plentiful. There was a proliferation of medical and surgical treatises during the period under study, which encompassed a variety of changes in the medical field related to the treatment of pain, including the growth of professionalisation and the increasing availability of New World medicines. This time period, of *circa* 1620–*circa* 1740, also predates the large-scale adoption of nerve theory as the predominant explanation for pain. It was only after the mid-eighteenth century that a number of changes intensified within early modern professional and lay medicine, including the adoption of the nervous model of the body.¹³ This article therefore concentrates on a period of time that emphasises continuity in terms of the understanding and response to pain as a whole.

Published surgical manuals and casebooks, consulted for this study, included information on suggested diagnoses, techniques and treatments for a variety of painful conditions. Some care needs to be taken when reading accounts of surgical cases, as many manuals were instructional, including case histories as a method of educating young surgeons, and setting out 'best practices' in a wide variety of contexts, as well as promoting the career of the surgical writer. The rationale for the inclusion of particular cases within these printed and manuscript casebooks is also frequently unclear to the modern reader.¹⁴ Despite these limitations, however, casebooks are valuable due to the inclusion of patient case histories provided within the body of a large number of

in Anja Müller (ed.), *Fashioning Childhood in the Eighteenth Century: Age and Identity* (Aldershot: Ashgate, 2006), 13–24; Wendy Churchill, 'Medical Practice', *op. cit.* (note 1), 3–22; Wendy Churchill, *Female Patients*, *op. cit.* (note 1); Katherine A. Walker, "'The Danger of Such an Undertaking in a Person of His Years': Old Age and Pain in Early Modern English Surgical Manuals', unpublished Paper Presented at the Department of History Workshop, University of Windsor, 21 October 2014 and Katherine A. Walker, 'Pain, Age, and Surgery in England, *c. circa* 1620–*circa* 1740', presented at the Tenth European Social Science History Conference in Vienna, Austria, 23–6 April 2014 and Pain and Old Age: Centuries of Suffering in Silence? The Birkbeck Pain Project and the Birkbeck Institute for the Humanities, Birkbeck, University of London, 27 October 2012.

¹² Jan Frans van Dijkhuizen and Karl Enenkel, 'Introduction: constructions of physical pain in Early Modern culture', in Jan Frans van Dijkhuizen and Karl A.E. Enenkel (eds), *The Sense of Suffering: Constructions of Physical Pain in Early Modern Culture* (Leiden: Brill, 2009), 22.

¹³ Weisser, 'Gender and Illness', *op. cit.* (note 10), 4.

¹⁴ Churchill has suggested that there were a number of reasons why practitioners kept the now extant casebooks, including social and legal liability, finances, and the exchange of medical information. See Wendy D. Churchill, 'Female Complaints: The Medical Diagnosis and Treatment of British Women, 1590–1740', Unpublished PhD thesis (McMaster University, Hamilton, Ontario, 2005), 19–20.

these works.¹⁵ Published surgical manuals and casebooks reported on the illnesses of real individuals, including descriptions of their conditions, prognoses and treatments, as well as additional information including the rough age and sex of most patients.¹⁶

Geographically, the majority of the sources considered in this article are English. The fundamental importance of early modern London and its immediate vicinity as England's medical marketplace, and the dominance of the London-based publishing industry, as well as a bias in the extant sources towards London practitioners, mean that the present study is, to some degree, 'London-centric'. The printed sources are those available to early modern English-language readers. This encompassed a limited number of translated treatises, which, despite their original foreign-language publication, are nevertheless useful due to the shared nature of medical culture across Europe. There were, for example, similarities in medical practices in early modern Europe, as well as the uniting theoretical tradition of humoralism originally derived from the ancient Greeks.¹⁷

The writers of these surgical manuals were predominantly surgeons themselves. Surgical writers frequently drew upon their experience in order to assert their claims to specialised knowledge, as in the case of surgeons who gained their training through military or naval service.¹⁸ James Handley and Edward Dunn, for example, produced practical surgical manuals with a focus on brevity and clarity in order to provide instructions for other naval surgeons.¹⁹ Other writers considered in this article drew upon their experiences working within London's hospitals. William Becket, for instance, was probably a surgeon at St Thomas's Hospital in Southwark before producing his *Practical Surgery*.²⁰ Richard Wiseman embodied many surgical career paths: he joined the royalist army, worked as an assistant to Edward Molins of St Thomas's Hospital, had his own private practice in the Old Bailey, spent three years in the Spanish navy, and, in 1660, became surgeon in ordinary to King Charles II in London.²¹ Physicians with surgical experience also produced manuals: Daniel Turner was a surgeon for twenty years before he gave up his position within the Barber-Surgeons' Company in 1711 to become a licentiate to the Royal College of Physicians.²² This selection of sources aims for a breadth of 'surgical writers', which is a term used here to refer widely to individuals laying claim to surgical knowledge.

Definitions and Causes of Pain

Recent scholarship has emphasised the predominance of humoralism in the early modern understandings of embodiment, emphasising the interconnectedness of feeling, physicality

¹⁵ On this phenomenon, see: S. Sandassie, 'Evidence-Based medicine? Patient Case Studies in English Surgical Treatises, 1660–1700', *Journal of Medical Ethics; Medical Humanities*, 24 (2008), 11–8.

¹⁶ Sandassie, *Ibid.*, 13.

¹⁷ Smith, 'An Account', *op. cit.* (note 10), 461.

¹⁸ Philip K. Wilson, *Surgery, Skin and Syphilis: Daniel Turner's London (1667–1741)* (Amsterdam: Rodopi, 1999), 22.

¹⁹ Philip K. Wilson, 'Acquiring surgical know-how: occupational and lay instruction in early eighteenth-century London', in Roy Porter (ed.), *The Popularization of Medicine: 1650–1850* (London: Routledge, 1992), 45.

²⁰ Sidney Lee, 'Becket, William (1684–1738)', rev. Michael Bevan, *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004; online edn).

²¹ John Kirkup, 'Wiseman, Richard (bap. 1620?, d. 1676)', *Oxford Dictionary of National Biography* (Oxford University Press, 2004; online edn, 2008).

²² Philip K. Wilson, 'Turner, Daniel (1667–1741)', *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004; online edn, 2008).

and culture, as well as the culturally constructed nature of emotions.²³ Humoralism provided the foundation for both learned and lay medicine in the seventeenth century, and remained the basis of Western medicine into the nineteenth century, despite developments in anatomy and new theories such as iatrochemistry.²⁴ Humoral theory posited that the body was made up of four humours – black bile, yellow bile, blood, and phlegm – that needed to be balanced within an individual's body, according to his or her individual constitution.²⁵ The definition of pain, its causation and the rationale underlying treatment practices, in surgical tracts *circa* 1620–*circa* 1740, was – as for physic – largely based on humoralism.²⁶

Early moderns inherited an understanding of pain as an unpleasant sensory experience marked by the disruption of the body's natural balance, and acting as a warning sign of trouble, from the ancient Greeks. According to Galen of Pergamon, pain, like pleasure, was 'inherent in all the senses', particularly in those of touch and taste.²⁷ Galen turned to Hippocrates and Plato in order to explain the causes of pain, explaining that pain occurred in an individual when a *pathos*, contrary to nature, occurred in the body, so that 'the natural state[s] [of the body], are changed and corrupted . . . It is their being corrupted that indicates the swiftness and, at the same time, the magnitude of the change'.²⁸ Everard Maynwaringe, who wrote the first published English-language treatise on pain, *Pains Afflicting Humane Bodies: Their Various Difference, Causes, Parts affected, Signals of Danger or Safety* (1682), followed Galen in stating that pain was 'adjudged by the sense of feeling, only, which sense is of the largest capacity of all the rest being extended throughout the body, even through the Organs of all the other senses'.²⁹ Pain acted as an inner alarm bell: Maynwaringe's treatise on pain argued that pain frequently appeared as the first stage of fatal diseases. 'Pain begins and gives the Alarm, discovering a disorder or disease in

²³ David Gentilcore, 'The fear of disease and the disease of fear', in William G. Naphy and Penny Roberts (eds), *Fear in Early Modern Society* (Manchester: Manchester University Press, 1997), 185–208; Linda A. Pollock, 'Anger and the Negotiation of Relationships in Early Modern England', *The Historical Journal* 47, 3 (2004), 567–90; Fay Bound Alberti (ed.), *Medicine, Emotion and Disease, 1700–1950* (Basingstoke: Palgrave Macmillan, 2006); Katherine A. Craik, *Reading Sensations in Early Modern England* (Basingstoke: Palgrave Macmillan, 2007); Ulinka Rublack, 'Fluxes: The Early Modern Body and the Emotions', *History Workshop Journal* 53 (2002), 1–16; Duden, *op. cit.* (note 10); Gail Kern Paster, *The Body Embarrassed: Drama and the Disciplines of Shame in Early Modern England* (Ithaca, NY: Cornell University Press, 1993); Gail Kern Paster, *Humouring the Body: Emotions and the Shakespearean Stage* (Chicago, IL: Chicago University Press, 2004), 13. Alisha Rankin views the lay interpretation of fluxes as distinct from, but not inherently conflicting with, practitioners' concept of the humours. Rankin, 'Dutchess, Heal Thyself: Elisabeth of Rochlitz and the Patient's Perspective in Early Modern Germany', *Bulletin of the History of Medicine* 82 (2008), 109–44.

²⁴ Harold Cook, *The Decline of the Old Medical Regime in Stuart London* (Ithaca, NY: Cornell University Press, 1986), 61; Vivian Nutton, 'Humoralism', in W.F. Bynam and Roy Porter (eds), *The Companion Encyclopedia of the History of Medicine*, 2 vols (New York: Routledge, 1993), I, 281.

²⁵ Cook, *ibid.*, 61.

²⁶ Daniel Turner, *The Art of Surgery*, 2 vols (London, 1722), I, 11–2; Lisa Wynne Smith has expertly articulated how early modern English and French understandings of bodily pain were deeply rooted in the language of humoralism in her examination of letters of diagnosis by correspondence sent by patients to their physicians. The humoral understanding of pain causation was shared across the sexes. Smith's analysis, however, is based primarily on the work of physicians. See Smith, 'An Account', *op. cit.* (note 10), 459–80.

²⁷ Galen, *Galen on Diseases and Symptoms*, Ian Johnston (trans.) (Cambridge: Cambridge University Press, 2006), 220.

²⁸ *Ibid.*, 220.

²⁹ Everard Maynwaringe, M.D., *Pains Afflicting Humane Bodies: Their various Difference, Causes, Parts affected, Signals of Danger or Safety* (London, 1682), 8.

this or that internal and hidden part of the body; gives warning betimes, and implores aid', acting as a warning of a potentially fatal disease.³⁰

Surgeons emphasised that damage to the animal spirits or nerves, in particular, caused pain. From Galen through to the second half of the eighteenth century, the 'animal spirits' explained functions of sensation and movement in the body and were subsumed into humoral theory. According to Galenic theory, the concoction of animal spirits, from natural spirits, took place in the liver. These natural spirits then flowed within the blood to the brain, before being purified and sent out through the body in a series of hollow nerves, which then produced sensation and movement.³¹ Surgical treatises, available in English *circa* 1620–*circa* 1740, adopted the connection between the animal spirits and nerves. The relationship between nerves and bodily discomfort was evident in William Becket's descriptions of patients' sensations following limb amputation in his posthumously published *Practical Surgery, Illustrated and Improved* (1740).³² Becket, a noted surgeon who became a Royal Society fellow in 1718, followed the opinion of Jean-Baptiste Verduc, a Parisian physician, in using the concept of the nervous fibres to explain pain perceived in absent limbs following amputation.³³ According to Becket and Verduc, the motion of the spirits was greater after amputation, which meant that the spirits were 'violently beaten back again', causing pain.³⁴

Their attention to nerves as a particular site or cause of pain led surgeons to recommend techniques to avoid damaging these sensitive fibres. Richard Wiseman treated nerves together with tendons in his surgical treatise, advising that nerves could be harmed by cutting them completely through, which rendered them 'irrecoverable'.³⁵ Punctured nerves caused 'vehement pain' and convulsions, and required surgical treatment by 'great endeavours', as these wounds failed to respond to 'the simple anodyne Cataplasme of white bread and milk'.³⁶ Care and proper surgical techniques were necessary, and surgeons such as Augustin Belloste, James Handley and Turner warned in their treatises of the negative consequences of damaging nerves through the improper use of such things as setons, cautery and caustics.³⁷ While often combined with humoral explanations, surgeons paid careful attention to the nerves and tendons as particular sources of pain.

A particular definition of 'wound' as a 'solution of continuity' has a surgical origin and came to be uniquely significant to surgical discussions of pain. The term's first known published use appeared in Joannes de Vigo's *The most excellent workes of chirurgerye*,

³⁰ Maynwaringe, *Ibid.*, 9.

³¹ William T. Clower, 'The Transition from Animal Spirits to Animal Electricity: A Neuroscience Paradigm Shift', *Journal of the History of the Neurosciences*, 7, 3 (1998), 201–2.

³² William Becket, *Practical Surgery Illustrated and Improved* (London, 1740). This was not officially referred to as 'phantom limb' until 1872. See 'Phantom', under 'phantom limb, or other body part that is felt to be present after amputation'. *Oxford English Dictionary Online*, (henceforth *OED*) (Oxford: Oxford University Press, online edn, 2010).

³³ Sidney Lee, *op. cit.* (note 20); Jean-Baptiste Verduc, *A Treatise of the Parts of a Humane Body*, J. Davis, M.D. (trans.) (London, 1704).

³⁴ Becket, *op. cit.* (note 32), 60–1, quotation on p. 61; Verduc, *op. cit.* (note 33), 229–30.

³⁵ Richard Wiseman, *A Treatise of Wounds* (London, 1672), 47. Wiseman gained wartime experience during the civil war in the royalist army and served as Charles II's surgical attendant, before serving in the Spanish Navy c.1654–c.1657. He was eventually appointed master of the Barber-Surgeons' Company in 1665. See Kirkup, *op. cit.* (note 21).

³⁶ Wiseman, *Ibid.*, 47.

³⁷ Augustin Belloste, *The Hospital Surgeon* (London, 1701), 16; James Handley, *Colloquia Chyrurgica* (London, 1721), 38; Turner, *op. cit.* (note 26), 154.

translated into English by Bartholomew Traheron in 1543.³⁸ John Woodall defined the term as follows:

A Wound being a recent solution of a continuitie [*sic*]; or a division of that which was knit together without putrefaction; and common as well to the soft and organicke [*sic*] parts, as also to the harder: it may (though seldome [*sic*] it doth) arise from an internall [*sic*] cause, as the malice of bad humours, but more commonly it comes from an externall cause, namely by the violence of some instrument.³⁹

Other surgical writers described wounds in these terms.⁴⁰ The job of the surgeon was to unite the wound successfully.⁴¹ Surgical writers discussed pain as it related to this concept. François Tolet linked pain inexorably to a solution of continuity, writing:

If any be surprized [*sic*] that we have spoken nothing of Pain, they ought to consider that is a Symptome [*sic*], or rather an essential property of all diseases of the parts that are capable of feeling, since it always happens, where there is an *Intemperies* with a solution of continuity of the soft parts⁴²...

Wounds inevitably caused hurtful sensations, as ‘there is not any part of our Body admits of a solution of continuity without pain; every scratch in the skin and little cut in the finger is painful, much more wounds in the flesh’.⁴³ Wounds could not be properly united, and the solution of continuity resolved, until the ‘accidents’ (including pain, inflammation, fever and haemorrhage) resolved.⁴⁴ Some writers connected the notion of wounds as a division of the flesh to humoralism and nervous fibres. Wiseman, for example, described how pain due to a wound occasioned heat, excess humours and tumours.⁴⁵

By the mid-eighteenth century, the definition of pain as occasioned by a solution of continuity was evolving. John Quincy stated that the cause of pain ‘may be all such things as are able to distract [disunite] the Parts of the Nerves or Membranes from one another’, rather than emphasising the violence of an external separation.⁴⁶ Quincy retained the overall notion of the solution of continuity as causing pain, but added that nervous fibres could be damaged by various causes. The anonymous *Division of Simple Vices* (written circa 1750) refuted the notion of pain as occasioned by a solution of continuity, producing

³⁸ ‘Solution of continuity’, in the entry for ‘Solution, *n.*’, *OED* (2nd edn, 1989; online, 2010); The *OED* defines a solution of continuity as: ‘The separation from each other of normally continuous parts of the body by external or internal causes’.

³⁹ John Woodall, *The Surgions Mate* (London, 1617), 125.

⁴⁰ Esther Cohen, ‘The Animated Pain of the Body’, *The American Historical Review* 105.1 (February 2000), 47–8; Wiseman, *op. cit.* (note 35), 3; John Brown, *A Compleat Discourse of Wounds: Both in General and Particular: Whereunto are Added the Severall Fractures of the Skull, with their Variety of Figures. As also a Treatise Of Gunshot-Wounds in General. Collected and Reduced into a New method by John Brown, Sworn-Chirurgieon in Ordinary to the Kings most Excellent Majesty, and Approved, and Allowed by his Majesties Chief Chirurgieons; and may be of Singular Use to all Practitioners in the Art of Chirurgery* (London, 1678), 18; Richard Boulton, *A System of Rational and Practical Chirurgery* (London, 1713), 165, 226, 277, 311, 325. The accounts kept by an anonymous medical practitioner defined a fracture as a solution of continuity: the British Library (henceforth BL) Sloane MS 2886, *Accompts Kept by a Medical Practitioner, Seventeenth Century*, f. 59r.

⁴¹ Wiseman, *op. cit.* (note 35), 3.

⁴² François Tolet, *A Treatise of Lithotomy, or, Of the Extraction of the Stone out of the Bladder*, A. Lovell (trans.) (London, 1683), 120–1.

⁴³ Wiseman, *op. cit.* (note 35), 21.

⁴⁴ Brown, *op. cit.* (note 40), 43.

⁴⁵ Wiseman, *op. cit.* (note 35), 21.

⁴⁶ John Quincy, *Lexicon Physico-Medicum: Or A New Physical Dictionary, Explaining The Difficult Terms Used in the Several Branches of the Profession, and in such Parts of Philosophy as are Introductory Thereunto* (London, 1719); BL Sloane MS 2263, f. 41r. Thomas Garlick, Surgeon of Wolverhampton, *Praxis Chyrurgiae Ratonalis*, seventeenth century.

an alternative explanation emphasising the significance of nervous fibres.⁴⁷ The notion of a ‘solution of continuity’ therefore emphasised the particular significance of the treatment of wounds to the art of surgery. At times the inexorably painful nature of wounds meant that further comment was unnecessary, perhaps limiting writings about surgically inflicted pain. Esther Cohen has described how the pain of surgical intervention was considered a solution of continuity in late medieval Europe, which meant that it did not require complicated analysis by medical writers.⁴⁸

The notion of wounds as a ‘solution of continuity’ or as caused by damage to nerves did not exclude humoral explanations for pain. Instead, these explanations occasionally inspired further comment to the effect that wounds caused a flux of humours. The surgical understanding of the underlying cause of pain at a physiological level was primarily humoral in nature, accompanied by explanations involving the nerves and solutions of continuity. Nerve fibres, like other bodily structures including tendons, could be damaged through accident or a lack of skill displayed by a surgical practitioner: the consequence was violent pain. The understanding of the cause of pain in the body in surgical sources was multidimensional and reflected their particular skilled work.

Pain, Treatment and Surgical Skill

Within surgical operations, the minimisation of pain was an important concern for early modern surgeons. They promoted individual techniques and lauded their own skill above other practitioners based on the argument of limited suffering. In addition, seventeenth- and eighteenth-century surgeons mentioned pain in the context of their beliefs that they were improving upon Classical texts, portraying themselves as progressing beyond previous methods, and pain management was a key component of this agenda.⁴⁹

The importance of reducing pain was clear in the changing attitudes among surgeons towards certain procedures over time. Surgeons developed opinions about the use of treatment options according to whether or not they promoted healing and removed pain, or delayed recovery and inflicted unnecessary suffering. This was particularly evident in the ways that authors discussed the use of tents (rolls of medicated material used to clean wounds and keep them open) and caustics (substances that burn living tissue).⁵⁰ John Woodall, a member of the Barber-Surgeons’ Company and the first surgeon-general of the East India Company, wrote *The Surgions Mate* in 1617 to educate sea surgeons.⁵¹ Woodall advised caution when treating wounds with a combination of tents and caustics, as the medicines made ulcers more painful and prohibited wounds from uniting or closing properly.⁵² He warned: ‘Truely the abuse of good Causticke medicines bringeth much slander to the Arte of Surgery’, yet he allowed for the usefulness of caustics in the treatment of fistulas and ulcers as they helped wounds to heal.⁵³ Wiseman’s *A Treatise of Wounds* (1672) cautioned that lint and tents in small cuts would impede healing and cause

⁴⁷ The Royal College of Surgeons of England (hereafter RCS), MS 0183, v. 1, f. 54. Division of Simple Vices, mid-eighteenth century.

⁴⁸ Cohen, *op. cit.* (note 40), 49.

⁴⁹ Stanley has noted how this phenomenon extended into the nineteenth and twentieth centuries. Stanley, *op. cit.* (note 3), 58.

⁵⁰ ‘Tent’, *OED* (2nd edn, 1989); ‘Caustic’, *OED* (2nd edn, 1989).

⁵¹ John H. Appleby, ‘Woodall, John (1570–1643), surgeon’, *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004–13; online edn).

⁵² Woodall, *The Surgions Mate* (1617), 31.

⁵³ *Ibid.*, 145.

pains, as the lips would not unite properly.⁵⁴ However, he advocated their use when faced with deep lesions that failed to heal.⁵⁵ Wiseman counselled that trapped humours within wounds could cause pain, and therefore caustics could be used to allow the humours to escape, providing respite.⁵⁶

Several later writers went further in their condemnation of tents and caustics. John Colbatch wrote his *Novum Lumen Chirurgicum, Or, A New Light of Surgery* (1695) to publicise his remedy for wounds, ‘Vulnerary Powder and Tincture of the Sulphur of Venus’, with which he claimed success treating soldiers during his experiments at the army’s campaign in Flanders.⁵⁷ In this work, he argued that tents were uniformly harmful. His rationale for the pain caused by tents and caustics was similar to Woodall and Wiseman’s warnings, claiming that they interfered with wounds knitting together. He further argued against his critics that his secret external medicine was not a caustic, accused all caustics of inflicting pain, and defended his medicine as an anodyne. Becket also disapproved of the use of tents in the case of a boy whose leg he treated following an amputation by another surgeon.⁵⁸ Becket criticised the boy’s former surgeon for inserting tents into a number of wounds on the boy’s legs, ‘which by penning up the Matter, enlarged the Abscess, and created an almost unsupportable Pain’.⁵⁹ While these later surgeons argued that the use of tents could interfere with healing and inflict pain, earlier authors meanwhile believed that the use of tents allowed for the escape of humours, aiding in healing. The later authors rejected this difference.

Surgeons portrayed their art as one of forward improvement by claiming to minimise pain. This was emphasised in the later eighteenth century, although this trend was present earlier in the period.⁶⁰ Alexander Stuart, in his *New Discoveries and Improvements in the Most Considerable Branches of Anatomy and Surgery* (1738), argued that innovation was necessary within the surgical process: ‘Prior to other Men, those of our Profession are required to pursue their Progressive Improvement in this Case; but we must climb the Hill; Vertue fits o’ Top’.⁶¹ Belloste’s treatise advocating against the use of tents began with a sympathetic statement justifying progressive development, writing: ‘That which is *New* at this Time, will one Day be *Ancient*; as what to Day is *Ancient*, was *once New*’.⁶² He advised that while some patients whose wounds were treated using the tent method might be cured, they required strong constitutions, and ‘besides that it is never without Danger, much Pain, and required a tedious Length of Time’.⁶³ Writing about a form of incarnative suture, made with ‘claps’ instead of sutures, Edward Dunn described the technique as

⁵⁴ Wiseman, *op. cit.* (note 35), 7–8.

⁵⁵ Wiseman, *op. cit.* (note 36), 24 (tents), 30 (tents and caustives).

⁵⁶ Wiseman, *op. cit.* (note 36), 32.

⁵⁷ Harold J. Cook, ‘Colbatch, Sir John (bap. 1666?, d. 1729), physician’, *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004–13; online edn).

⁵⁸ John Colbatch, *Novum Lumen Chirurgicum: Or, A New Light of Chirurgery. Wherein is Discovered, a much more Safe and Speed way of Curing Wounds, than Hath Heretofore Been Usually Practiced. Illustrated with Several Experiments made this Year in Flanders* (London, 1695), Dedication, no page no.

⁵⁹ Becket, *op. cit.* (note 32), 40–7, quotation on p. 41.

⁶⁰ Wilson, *op. cit.* (note 18), 232.

⁶¹ Alexander Stuart, *New Discoveries and Improvements in the Most Considerable Branches of Anatomy and Surgery* (London, 1738), 1.

⁶² Belloste, *op. cit.* (note 37), no page no.

⁶³ *Ibid.*, Image 18, no page no.

‘ridiculous’, because ‘the Pain wou’d be continual’ and the wound would never heal.⁶⁴ Criticism of ancient knowledge, when undertaken, was generally linked to the pain these procedures caused.

A surgeon’s sense of time was also generally invoked in the literature in relation to the progression of patients’ conditions and willingness to undertake surgical cures. As Patrick Wilson has stated, many conditions that were treated by surgeons were long-term health problems. Except for the cases of accidents requiring surgical treatment, patients frequently chose to wait before consulting a surgeon.⁶⁵ Wilson compared the delay of a few days in seeking treatment by women consulting Turner for complications following childbirth, compared to patients with tumours, who had more considerable delays ranging from ‘some days’ to ‘many years’.⁶⁶ The use of early modern self-help remedies led to delays in seeking advice from surgeons, as Olivia Weisser has demonstrated in her analysis of the treatment of skin bumps. Patients might seek aid from a surgeon only after attempting to minimise pain, observing the bump, and attempting to reduce it themselves.⁶⁷ It is clear that the sense of timing for surgical consultation by patients was dependent on their perceptions of the complaints in ways that were linked to pain. Breast cancers grew agonising over time. The delay between women first noticing symptoms of a breast ailment and approaching a male practitioner for treatment ranged from a few weeks to several years.⁶⁸ Pain, along with signs that the tumour had become ‘ulcerous’, appeared in casebook notes as a significant factor motivating women to consult a practitioner.⁶⁹ Matthias Gottfried Purmann (in his section focusing primarily on breast cancers) described how a cancer was difficult to perceive at first and was painless, but gradually grew to be ‘accompanied with pungent and twitching Pains’, motivating patients to seek medical advice and submit to the knife.⁷⁰

Surgeons were also concerned with timing and expediency in relationship to their ability to control pain. They expressed professional opinions on the timing of treatments, considering the relative value of speed compared to performing under optimal conditions. Some connected timing to beliefs about the effects of the seasons on the humours. According to Becket, surgeons should also consider their individual patient’s chance of surviving surgery without ill effects, weighing up factors such as age and constitution, because the patient’s life might depend on the surgeon’s decisions.⁷¹ The urgency of particular operations, especially those that were connected to severe pain or to the threat of imminent death, required swifter action from surgeons, even if it meant greater suffering during treatment. *The Surgions Directorie*, which originated from Thomas Vicary’s 1577 anatomical work, summarised a range of conditions that could not wait for optimum

⁶⁴ Edward Dunn, *A Compendious and New Method of Performing Chirurgical Operations, Fit for Young Surgeons: To which are Added, Short and Easy Directions How to Manage the Venereal Disease* (London, 1724), 15.

⁶⁵ Wilson, *op. cit.* (note 18), 37.

⁶⁶ *Ibid.*

⁶⁷ Weisser, ‘Boils, Pushes and Wheals’, 325–6.

⁶⁸ Churchill, *op. cit.* (note 14), 126.

⁶⁹ *Ibid.*, 127.

⁷⁰ Purmann, *Chirurgia Curiosa*, 123–4; Charles Gabriel Le Clerc also described breast tumours as growing increasingly painful. Le Clerc, *The Compleat Surgeon: Or, The Whole Art of Surgery Explain’d in a Most Familiar Method* (London, 1696), 223. John Hunter included the case of one Mary Woodward, a sixteen-year-old, whose left breast ‘became hard and began to swell, it continued swelling, without any pain ‘till the June following, when she came from the Country to St Georges Hospital to have it removed.’ RCS MS 0189/1/1, Case 39, no page no.

⁷¹ *Op. cit.* (note 34), 48–50.

conditions to perform bloodletting, including: ‘the Phrensie, the Pestilence, the Squinancy, the Plurisie, the Apoplexie, or a continuall Head-ach growing of cholerick blood, a hot burning Fever, or any other extreame paine’.⁷² John Browne instructed that ‘in some cases *Incision* is speedily required, and in these, delay may bring pain and other bad Symptoms’, whereas at other times incision could be used with ‘a more deliberate care’, and at intervals to allow patients to rest.⁷³ Tolet’s *A Treatise of Lithotomy* (first published in French in 1682; English edition, 1683) described how a patient’s inability to urinate was one such dangerous condition requiring immediate aid as death was likely without intervention.⁷⁴ Surgeons used their purported knowledge of pain, gained through close contact with their patients’ bodies, to develop the best possible treatment options and to emphasize their professionalism.

When it came to individual surgical procedures, surgeons used speed to minimise pain when possible. The overall qualities perceived to be essential to a good surgeon, including steady hands, good sight, and boldness, all aided surgeons to perform their work as quickly and as painlessly as possible.⁷⁵ Belloste linked this need for quick movement to dressing wounds, instructing that surgeons should dress wounds quickly, as, although exposure to air was painful, it would be barely perceptible if performed swiftly.⁷⁶ Surgeons had to work quickly, but they also had to work skilfully. Lithotomy required particular care and delicacy; nevertheless, Tolet instructed that it was better to keep a patient ‘under the Operation rather too short a time than too long, lest he be surprized by death, if he be made to endure too much’.⁷⁷ Moreover, surgeons had to balance the speed of multiple incisions against their patients’ abilities to endure without breaking for a rest.⁷⁸

Surgeons argued that their use of particular techniques were more effective at minimising pain in surgery than others. Their writings imply an acknowledgement that early modern surgery was inherently painful, but also the belief that good surgeons used skills to reduce this consequence as much as reasonably possible. Surgeons used arguments about their abilities to reduce the levels of suffering to advocate for their own skill in choosing pain-reducing measures.

Sex Difference

The treatment of pain was often undifferentiated between the sexes. In some circumstances, however, early modern surgeons reported that physiological differences resulted in varied prognoses between men and women, and required the use of specialised surgical techniques. Attention to the sexed body was therefore a clear component of the surgeon’s art. The intersections between pain and sex in surgical tracts enabled surgeons to demonstrate their specialised knowledge of male and female bodies and, further, to draw attention to their professional skill in making adjustments for these differences. Breast operations and castration were two obviously sex-specific surgical operations in early

⁷² Thomas Vicary, *The Surgions Directorie, For Young Practitioners, in Anatomie, Wounds, and Cures, &c. Shewing, the Excellencie of Divers Secrets Belonging to that Noble Art and Mysterie* (London, 1651), 104. For the history of Vicary’s publication, see Duncan P. Thomas, ‘Thomas Vicary and the *Anatomie of Mans Body*’, *Medical History* 50, 2 (2006), 235–246.

⁷³ Brown, *op. cit.* (note 40), 3.

⁷⁴ Tolet, *op. cit.* (note 42), 143.

⁷⁵ Handley, *op. cit.* (note 37), 1; Wear, *op. cit.* (note 6), 241.

⁷⁶ Belloste, *op. cit.* (note 37), 45, 56.

⁷⁷ Stanley, *Op. cit.* (note 3), 87; Tolet, *op. cit.* (note 42), 113.

⁷⁸ Browne, *op. cit.* (note 40), 3.

modern England. The sexed nature of these procedures, however, allows for a comparison of the ways that surgeons attempted these amputations, and to the ways they considered pain. Lithotomy, the operation to remove bladder stones, by contrast, was an operation performed on both men and women, but which surgeons identified as posing particular difficulties for men.

Women's physiology made them susceptible to breast tumours and breast cancer, which was by far the predominant form of cancer portrayed in early modern surgical manuals, despite historical revisions of early modern cancer as 'mainly a woman's disease'.⁷⁹ While cancer may not have been perceived only as a disease of women, the surgical texts nevertheless support the notion that cancer was, to a significant degree, feminized in early modern England. The associations between women and cancer appeared clearly in early modern surgical writings. Robert Whytt recorded in his student notebook of 1731–2 that cancers which attacked the glandulous parts 'are most dangerous[,] especially those of the Bre[a]sts'.⁸⁰ For Edward Dunn, breast cancer was almost synonymous with the definition of cancer:

The *Cancer* is a hard and painful *Tumour*, of a livid and leaden Colour, which usually attacks the exterior *Glands*, and corrodes the *Membranes* and *Flesh*. They who feed upon spirituous *Aliments*, are more subject to it than others; as Women to whom it often happens in their Breasts.⁸¹

Surgeons understood various conditions affecting the breast as different stages in the single disease of cancer.⁸² In addition, to 'true' cancers, women underwent treatment for a number of tumours or swellings of the breast. The underlying causes of conditions that could purportedly degenerate into cancer were various, ranging from lactation, the onset of menopause, and physical injuries.⁸³ Surgical literature therefore portrayed cancer as a painful and, to some extent, feminized disease.⁸⁴

The unique physiology of the female breast not only satisfactorily explained women's susceptibility to breast cancer, but also, according to Becket, provided the root of the explanation for pain in these cases. He described a progression of the woman's symptoms as her tumour grew, along with her suffering.⁸⁵ Becket accounted for the pain in the cancerous breast of one patient, a woman of about forty years of age, by connecting it

⁷⁹ The removal of breast tumours was also the most frequent type of excision in the early nineteenth century: Stanley, *op. cit.* (note 3), 88. Ruth Perry has explored how fictional representations of breast diseases in the second half of the eighteenth century were connected to broader cultural processes that redefined women as maternal instead of sexual beings. See Perry, 'Colonizing the Breast: Sexuality and Maternity in Eighteenth-Century England', 2, 2 *Journal of the History of Sexuality*, Special Issue, Part 1: The State, Society, and the Regulation of Sexuality in Modern Europe (October 1991), 231–4.

⁸⁰ The Wellcome Library for the History and Understanding of Medicine (henceforth Wellcome) MS 6858, f. 17v, Student Notebook on Surgery and Anatomy, Robert Whytt, c.1731–32. Whytt studied medicine under Alexander Monro *primus* in Edinburgh from at least 1732 to 1734, at which point he moved to London to study under William Cheselden. He also studied in Leiden under Boerhaave, and at Rheims and St Andrews. Roger French, 'Whytt, Robert (1714–66)', *Oxford Dictionary of National Biography* (Oxford: Oxford University Press, 2004; online edn).

⁸¹ Dunn, *op. cit.* (note 64), 90.

⁸² Churchill, *op. cit.* (note 14), 125.

⁸³ Churchill, *op. cit.* (note 14), 125–6; Valerie A. Fildes, *Breasts, Bottles and Babies: A History of Infant Feeding* (Edinburgh: Edinburgh University Press, 1986), 102; Patricia Jasen, 'Breast Cancer and the Language of Risk, 1750–1950', *Social History of Medicine* 15.1 (2002), 21–2.

⁸⁴ Purmann included two cases of men with cancer in the breast, without any comment about their sex. See Purmann, *op. cit.* (note 70), 125–6. Javier Moscoso has drawn attention to the importance of pain as a diagnostic sign in cancerous tumours. Moscoso, 'Exquisite and lingering pains: facing cancer in Early Modern Europe', in Boddice (ed.), *op. cit.* (note 10), 17.

⁸⁵ Becket, *op. cit.* (note 32), 160.

to the physiology of the breast. He explains:

As to the violent Pain that attended the cancered Breast, it must be a necessary Consequence of the Increase of so hard a Substance as the Cancer is; for it not only engages all those small Branches of the Nerves that were distributed among the little glandular Bodies, to promote the Secretion of a milky Juice, at such as Time as Nature shall determine, but likewise compresses the larger Branches from which those were detached, that entered into its Substance.⁸⁶

The unique physiology of the breast, in the form of nerves needed for lactation, was therefore the cause of the woman's violent sensations.

Surgeons described advanced breast cancer as difficult to cure. Very frequently, this was precisely when the sufferer presented herself for surgical care. Women may have delayed treatment for a number of reasons, including a fear, modesty, or shame.⁸⁷ That breast tumours were not immediately uncomfortable is another reasonable explanation that may have contributed to late treatment. The delay meant that women risked waiting until their tumours were too large for non-invasive medical treatment, so that 'only the *Knife* and sometimes a *red-hot Iron* can perform the Cure'.⁸⁸ Edward Dunn writes:

This Disease [breast cancer] is so much the more troublesome, as its Cure is the most difficult of all *Tumours*; some however have been cur'd by the *Extripation* of the Breast; but altho' it be rarely cur'd, we shall give you the Manner of performing the Operation.⁸⁹

The author of *The Division of Simple Vices* warned of the difficulty of curing cancer, particularly as it might spread to the womb.⁹⁰ This belief related to a widely held notion that the breasts and womb were linked, either through a series of veins, or through the notion of sympathy (connection) between related parts of the body.⁹¹ The pain of breast cancer was therefore important because it ultimately drove women to seek aid from a practitioner, and demonstrated to the surgeon, along with the presence of a tumour, the more advanced stage of the disease. At the same time, the 'delay' in the onset of painful symptoms greatly increased the difficulty, and physical hardship, of treatment.

Very infrequently, surgeons commented on the pain thresholds of women, writing admiringly of the fortitude of women who underwent breast operations against a medical and cultural background that portrayed women as weaker and as more fragile than men. When male surgical writers made infrequent comments regarding the emotive aspects of operations, they remarked on women whose stoicism seemed to fly in the face of feminine weakness. John Ward, a minister who also acted as a medical practitioner in Stratford-upon-Avon, remarked on the stoicism of one Mrs. Townsend of Alverston, who had an operation for cancer of the breast. Ward described how Townsend underwent repeated incisions on her breast, which she was able to withstand: 'After the initial operation her wound was opened daily: "Every time they dress itt, they cutt off[f] something of a cancer that was left behind; the chyrgurgions were for applying a caustick, but Dr Needham said no, not till the last [not till the end], since shee [*sic*] could endure the knife".⁹²' Ward recounted that the men who performed the repeated incisions remarked on the endurance of Townsend, comparing her endurance as a woman favourably to their own and to other

⁸⁶ *ibid.*, 167.

⁸⁷ Churchill, *op. cit.* (note 14), 128.

⁸⁸ Purmann, *Op. cit.* (note 70), 124.

⁸⁹ Dunn, *op. cit.* (note 64), 90.

⁹⁰ RCS MS 0183, v. 2, ff. 85–6.

⁹¹ Churchill, *op. cit.* (note 14), 122–3; Churchill, *Female Patients*, *op. cit.* (note 1), 124–5; Marilyn Yalom, *A History of the Breast* (New York: Alfred A. Knopf, 1998), 211–2.

⁹² Quoted in Wear, *op. cit.* (note 6), 246.

men's fortitude. Ward wrote: 'One of the chyrurgeons told her afterwards, that hee would have lost his life, ere hee would have suffered the like; and the Dr said he had read that women could endure more than men, but did not beleeve it till now'.⁹³ Townsend died of her cancer, and Ward and one Mr Eedes dissected the remaining breast, finding it 'very cancerous'. Male commentators repeated similar statements praising the fortitude of other women, such as the English Mary Astell who underwent a mastectomy in 1731. According to a near-contemporary account of her life, Astell 'went thro' the operation without the least struggling or resistance; or even so much as giving a groan or a sigh'.⁹⁴ Astell died shortly after her surgery, after apparently ordering her coffin to be made and refusing company at her bedside.⁹⁵ Women, generally thought to be more unhealthy, delicate and sensitive than men, were very occasionally portrayed in positive terms when they suffered from pain inflicted by surgery.

Like operations for breast tumours, castration was an obviously sexed operation, but it has received little attention from historians, perhaps because of its infrequent appearance in surgical records. The connections between castration, surgical pain and gender are largely unexplored, although several scholars investigating the *castrati* phenomenon in continental Europe have explored connections between sexuality and *castrati*.⁹⁶ The overall cultural importance of the testicle may, as Will Fisher has argued, have declined over the sixteenth and seventeenth centuries.⁹⁷ Fisher cited, for example, Thomas Vicary's statement in 1586 that the testicles were a principal organ, whereas, he noted, Nicholas Culpepper did not include them as such in his 1668 treatise.⁹⁸

English surgical tracts portrayed castration as a last resort that was only undertaken under the presence of great pain or clear threat of death.⁹⁹ The texts stressed both the pain of the conditions which led to surgical operations on the testicles and the pain of the procedures. As Valeria Finucci has noted for Italy, and Edward Behrend-Martínez for Spain, specific health problems led to castration.¹⁰⁰ Practitioners specified a 'sarocel' (an

⁹³ *Ibid.*, Wear includes the quotation, but does not speculate about gendered aspects. John Ward, *The Diary of the Rev'd John Ward, A.M., Vicar of Stratford-Upon-Avon: Extending from 1648 to 1679* (London: Henry Colburn, 1839), 245. Wendy Churchill has also cited this case, in order to highlight the sensitivity male practitioners demonstrated towards their suffering female patients. See Churchill, *op. cit.* (note 14), 136 and Churchill, *Female Patients, op. cit.* (note 1).

⁹⁴ George Ballard, *Memoirs of Several Ladies of Great Britain, Who Have Been Celebrated for Their Writings or Skill in the Learned Languages Arts and Sciences* (Oxford: Printed by W. Jackson, for the author, 1752), 459. This quotation is partially cited in Yalom, *op. cit.* (note 91), 221.

⁹⁵ *Ibid.*, 460. The English novelist Fanny Burney provided one of the first accounts of a mastectomy written from the first-person, which emphasised the pain she experienced, and, in contrast to the above account, Burney did not remain silent. See 'Journal Letter to Esther Burney, 22 March–June 1812', Reprinted in Peter Sabor and Lars E. Troide (eds), *Frances Burney: Journals and Letters* (London: Penguin Books, 2001); Yalom, *A History of the Breast*, 221–5.

⁹⁶ Edward Behrend-Martínez, 'Manhood and the Neutered Body in Early Modern Spain', *Journal of Social History* (Summer 2005), 1075.

⁹⁷ Will Fisher, *Materializing Gender in Early Modern English Literature and Culture* (Cambridge: Cambridge University Press, 2006), 70.

⁹⁸ *Ibid.*, 70.

⁹⁹ Surgical tracts published in English do not seem to have considered the pain suffered by *castrati* on the continent, perhaps because their overall commentary on castration was brief.

¹⁰⁰ Valeria Finucci, *The Manly Masquerade: Masculinity, Paternity, and Castration in the Italian Renaissance* (Durham, NC: Duke University Press, 2003), 250–2; Behrend-Martínez, 'Manhood and the Neutered Body', 1079.

immoderate growth on the testicle) and cancer as reasons for castration.¹⁰¹ While surgical discussions of pain in women's breasts were silent on the issue of how their loss might influence their sexuality, discussions about castration occasionally included concerns for sexual functioning.

Men were understandably reluctant to undergo castration. They suffered from a number of conditions causing their testicles to swell and surgeons customarily treated them without resorting to surgical removal. In 1648, Joseph Binns, surgeon at St Bartholomew's Hospital in London, treated one Henry Hooker for an injured testicle that was 'swollen to the magnitude of his head' a year and a half after sustaining an injury. Binns drained the testicle, which he claimed healed in three weeks.¹⁰² Castration was a last resort. Dunn warned: 'We must never *Castrate*, without an absolute Necessity, that is, but where there is Danger of Death without it'.¹⁰³ As Wilson has noted, Turner had difficulty in gaining surgical consent for castration, as well as for cauterisation, and for other amputations.¹⁰⁴

The decision whether or not to castrate was determined primarily by whether or not the operation could be perceived as successful with the loss of sexual function appearing as a secondary concern. This was due to the belief that, if left alone, a cancerous testicle would lose its function. Le Dran noted that while the point at which the testicle became incapable of producing semen might seem a logical time to remove it, 'as a useless member', this was not the case. He urged caution instead, proposing to wait until it was certain that the disease could not be cured through other means. He also warned that the operation should not proceed if the disease greatly swelled the spermatic cord, which was an indication that even castration might not halt the cancer's progress.¹⁰⁵ Several surgeons considered the extent of the tumour as the key determinant of whether or not to perform castration, perceiving those that had reached the abdominal muscles as inoperable.¹⁰⁶

It was the progress of the tumour, and the potential for a positive surgical outcome, which determined the course of action, rather than a concern for men's reproductive functions. Lorenz Heister connected reproductive function with the growth of testicular sarcocele that threatened to become cancerous, reporting that the tumours became increasingly large and painful, and rendered men impotent.¹⁰⁷ Perhaps the growths themselves suggested a loss of sexual function, and surgeons were less concerned that

¹⁰¹ Dunn, *op. cit.* (note 64), 55, 61; Wellcome MS MSL 40/B, f. 58r, John Hunter's Lectures; René-Jacques Croissant de Garengot, *A Treatise of Chirurgical Operations, According to the Mechanism of the Parts of the Humane Body, and the Theory and Practice of the Most Learned and Experienced Surgeons in Paris*, Mr St Andre (trans.) (London, 1723), 180.

¹⁰² BL Sloane MS 153, Joseph Binns, Surgeon, Medical Case Book, 1633–63, f. 18v. Binns also treated one Mr Newman for a 'tumor in his left Stone' with plasters and pills to induce stools. BL Sloane MS 153, f. 82.

¹⁰³ Dunn, *op. cit.* (note 64), 55.

¹⁰⁴ Wilson, *op. cit.* (note 18), 51.

¹⁰⁵ Henri-François Le Dran, *The Operations in Surgery of Mons. Le Dran, Senior Surgeon of the Hospital of La Charité, Consultant Surgeon to the Army, Member of the Academy of Surgery at Paris, and Fellow of the Royal Society at London*, Thomas Gataker, surgeon (trans.) (London, 1749), 145.

¹⁰⁶ Lorenz Heister, *A General System of Surgery in Three Parts*, 2 vols (London: 1743), II, 64. Originally published in German in 1719; published in Latin in 1739, under the title *Institutiones Chirurgicae*; Garengot, *op. cit.* (note 101), 181–2; Le Dran reported that when the disease of the spermatic cord extended into the abdomen, this made the operation difficult, but not impossible. Le Dran, *op. cit.* (note 105), 144. See also, Henri-François Le Dran, *Observations in Surgery: Containing One Hundred and Fifteen Different Cases, with Particular Remarks on each, for the Improvement of Young Students. Written originally in French, by Henri-François Le Dran, Of the Academy of Arts, Sworn Surgeon at Paris, Senior Master of that Company, eldest Surgeon and Demonstrator of Anatomy at the Hospital La Charité*, J.S., Surgeon, 2nd edn (trans.) (London, 1740), 258–9.

¹⁰⁷ Heister, *Ibid.*

castration would create impotence. Moreover, Heister comments: ‘Castration is therefore absolutely necessary for removing a cancerous Sarcocele, which is otherwise incurable: Nor is the Objection to it [removal] great, because one sound Testicle is sufficient for Procreation’.¹⁰⁸ The imminent danger of an otherwise incurable cancer outweighed the risk of impotence or sterility.

Surgeons rarely commented on the pain of castration although some recommended particular techniques to minimise the pain they inflicted. Heister maintained that castration should be performed with ‘Circumspection and Tenderness’, and that tying the spermatic vessels near the abdomen would cause less pain.¹⁰⁹ René-Jacques Croissant de Garengéot advised that proper ligatures should be made in order to numb the area where the surgeon cut with surgical scissors (while separating the testicle from the scrotum). Garengéot stated that this would prevent both haemorrhage and pain.¹¹⁰ The surgical literature paid less attention to castration than to operations on breast cancers. There were striking similarities, however, in that for both sets of operations the surgeries occurred in the presence of significant pain, followed the failure of other methods, and threatened death.

Research into the sexed body has focused on women, as medical practitioners paid close attention to the female-specific flows of menstruation and lactation.¹¹¹ Lithotomy, the operation to remove bladder stones, however, occasioned particular dangers and excess pain, for men. Furthermore, attention to the intricacies of this operation in men allowed surgeons to display their skill and technique by laying claim to inflicting less suffering on their patients. The pain of bladder stones was a strong motivator for surgery, and its symptoms included ‘sharp Pain’, stranguary (difficulty urinating), and bloody urine.¹¹² Both men and women were subject to bladder stones, but surgeons described men as more commonly afflicted.¹¹³ The reason for this sex-differentiated incidence was due to physiological differences, as Edward Dunn wrote:

Women are subject to a Suppression of Urine, and to the Stone, but seldomer than Men, by Reason of the Urine’s shorter stay in the *Bladder*; it is easier, and oftener voided than in Men, by Reason of the Situation of the *Bladder*, the Largeness of the *Urethra*, the small Distance from its *Exit*, and its *Direction*.¹¹⁴

Male physiology also accounted for why stones in men were more difficult to remove surgically, causing them greater pain during surgery and recovery.¹¹⁵ François Tolet’s *A Treatise of Lithotomy, or, Of the Extraction of the Stone out of the Bladder* provided a multifaceted explanation for why men were more likely to suffer in the operation and cure of the stone, writing: ‘because their *Urethra* is crooked, long and narrow, and their way of living renders that part many times subject to more Diseases than those Parts in Women’.¹¹⁶ His description demonstrates a combination of gendered assumptions about the promiscuity of male sufferers, along with an awareness of their urological system.

¹⁰⁸ *Ibid.*, 65.

¹⁰⁹ *Ibid.*

¹¹⁰ Garengéot, *op. cit.* (note 101), 184.

¹¹¹ Churchill, ‘Medical Practice’, *op. cit.* (note 1); Churchill, *Female Patients*, *op. cit.* (note 1), 93–106.

¹¹² Stanley, *Op. cit.* (note 3), 85. On lithotomy, see Harold Cook, *Trials of an Ordinary Doctor: Joannes Groenevelt in Seventeenth-Century London* (Baltimore, MD: Johns Hopkins University Press, 1994), 76–105; Dunn, *op. cit.* (note 64), 67.

¹¹³ Into the nineteenth century the majority of patients undergoing lithotomy continued to be males, see Stanley, *op. cit.* (note 3), 85.

¹¹⁴ Dunn, *op. cit.* (note 64), 73.

¹¹⁵ As the male urethra is longer than the female, lithotomy was more complicated in males: Stanley, *op. cit.* (note 3), 85.

¹¹⁶ Tolet, *op. cit.* (note 42), 87.

Douglas instructed that lithotomy was easier to perform and less dangerous in women, as surgeons found it easier to use a catheter to locate their bladder stones.¹¹⁷ Douglas attributed the difficulty to the structure of the male urethra, possible blockages in the urinary passage, and positioning of the body, requiring expert use.¹¹⁸

Surgical writers presented women as requiring a modified technique when undergoing lithotomy, but they did not discuss whether or not the changes influenced their female patients' pain. Douglas' description of the operation in women warned that they required special consideration when presenting with large stones, as surgeons ran the risk of leaving the patient incontinent. However, immediately after describing an alternative method for the extraction of large stones from women, Douglas reiterated that lithotomy was an easier operation on women and they recovered more quickly than men.¹¹⁹ Sauveur François Morand also advised that women with large stones should be treated with a different technique in order to avoid incontinence caused by a laceration of the sphincter.¹²⁰ He suggested that this alternative technique, the 'high operation', was easier to perform and less painful.¹²¹

Perceived differences in male and female bodies, therefore, led surgeons to portray the process of lithotomy as more difficult, and more likely to cause complications and pain, in men than in women, with the exception of large stones in women. The procedure was therefore sex differentiated, and required particular professional knowledge in each case. The portrayal of pain in both breast and testicular conditions, as well as in their operations, shared many similarities. Surgeries for breast cancers and castrations were seen as a last resort, resulting from either extreme pain or the threat of death. Both conditions related to specific sexed physiology, but surgeons rarely commented on the direct effects of the loss of breasts or testicles. Nevertheless, these operations had different implications. The nature of women's physiology, the very close connections between their flows of menstruation and lactation, meant that surgeons viewed the pain of breast cancers as the possible signs of a further spread of cancer that needed to be prevented. They had virtually nothing to say about the loss of sexual function or reproductive function that might be occasioned by breast amputation. Due to the nature of their reproductive systems, men lacked this notion of sympathetic transmission between body parts. However, violent pain threatened male virility.

Conclusions

There was a great deal of instruction within surgical writings regarding the importance of pain to the entire surgical process. Surgical professionals understood their patients' bodies

¹¹⁷ John Douglas, *Lithotomia Douglassiana, or, A New Method of Cutting for the Stone; First Practised by John Douglas, F.R.S. and Lythotomist to the Infirmary at Westminster: To which is added, What has been Written by the most Judicious Rossetus, and Learned Pietreus, on the Same Subject. Illustrated with Several Copper Plates* (London, 1723), 12.

¹¹⁸ Douglas, *Ibid.*, 4–5.

¹¹⁹ *Ibid.*, 56.

¹²⁰ Sauveur François Morand, *A Dissertation on the High Operation of the Stone: To Which is Added, an Appendix Containing An Account of 60 Odd Patients Cut After this Method, by Various Hands: With Some General Inferences from the Whole*, John Douglas, Surgeon, F.R.S. (trans.) (London, 1729), 47.

¹²¹ *Ibid.*, 54. Morand described the difference in the operation in the following manner: 'That method has been call'd the High Operation, when they begin by opening the Bladder at the fund, and in the middle of the *Hypogastrium*, whereas in the Common Method which is called that of *Marianus*, and may be term'd the Low Operation, they enter the Bladder by dilating its neck'. *Ibid.*, 4. For a secondary description of the high and low operations, see Cook, *op. cit.* (note 112), 95–6.

in ways that included, but were not solely governed by, understandings of the humoral body. Furthermore, this careful attention to pain was often connected in the surgeons' minds with their roles as professionals. The finding that pain had significant medical and surgical meaning in early modern England has important implications in the history of medicine, as it gives significant pause for thought on dualities present in the existing literature: that of physic and surgery, and that of humoralism and the sexed body. The first of these, the division between physic and surgery, has been questioned in the late twentieth and early twenty-first century by scholars, who have drawn attention to the ways in which the two professions were intertwined and related in terms of theory, practice and patients.¹²² The argument detailed here affirms that surgical sources are important and worthy of analysis. A prominent theme that emerged from the consideration of surgically treated and inflicted pain was the attention surgical literature paid to pain management. This may be tied to the known desires for self-identity and professionalism, and the need for surgeons to assert their reputations, which is an argument developed by Celeste Chamberland. Chamberland's investigation of William Clowes found that Clowes and his colleagues faced a conflict between their attempts to assert their professional legitimacy and honourable status with the stigma they experienced as surgeons. Chamberland located the 'persistent stigma' in surgeons' work with their potentially contaminating contact with bodies and their wastes.¹²³ The discourse of pain within surgical works suggests that the fearful infliction of pain by surgeons may have played an additional part in the perceived stigmatisation.¹²⁴ Lynda Payne demonstrated that early modern surgeons were trained in the difficult task of 'humane dispassion', and 'despite feelings to the contrary – "The common opinion is, that Chirurgions desire nothing more than cutting and hacking, and their Joy is at the highest pitch, when with the cutting Instruments in their Hands, they have a glut of hacking Work." – learning and maintaining humane dispassion in surgery was not easy'.¹²⁵ The fear of pain, and of men who inflicted pain for a living, may have stigmatised surgeons more than the close association with bodies and their effluvia.

The paradox was thus a surgical literature that paid close attention to the diagnostic and prognostic meaning of pain, as well as debating the appropriate techniques to minimise hurt, while much less frequently focusing on the emotive aspects of suffering on their patients. The emphasis of surgeons on their skills was rooted in the attempt of these writers to comport and present themselves as professionals, but also may have been a

¹²² Margaret Pelling and Charles Webster, 'Medical Practitioners', in Charles Webster (ed.), *Health, Medicine, and Mortality*, 165–235; Lauren Kassell, 'How to Read Simon Forman's Casebooks: Medicine, Astrology, and Gender in Elizabethan London', *Social History of Medicine* 12.1 (1999), 8; A.L. Wyman, 'The Surgeoness: The Female Practitioner of Surgery 1400–1800', *Medical History* 28 (1984), 22; Lucinda McCray Beier, 'Seventeenth-century English surgery: the casebook of Joseph Binns', in Lawrence (ed.), *Medical Theory, Surgical Practice*, *op. cit.* (note 2), 53–5; Lucinda McCray Beier, *Sufferers & Healers: The Experience of Illness in Seventeenth Century England* (New York: Routledge & Kegan Paul, 1987), 61; Malcolm Nicolson, 'Giovanni Battista Morgagni and eighteenth-century physical examination', in Lawrence (ed.), *Medical Theory, Surgical Practice*, *op. cit.* (note 2), 105; Sandra Cavallo, *Artisans of the Body in Early Modern Italy: Identities, Families and Masculinities* (Manchester: Manchester University Press, 2007).

¹²³ Celeste Chamberland, 'Honor, Brotherhood, and the Corporate Ethos of London's Barber-Surgeons' Company, 1570–1640', *Journal of the History of Medicine and Allied Sciences* 64, 3 (2009), 300–32. For other works discussing the identity of early modern surgeons, see also: Payne, *op. cit.* (note 9); Wear, *op. cit.* (note 6), 212; Pelling and Webster, 'Medical Practitioners', 165–235; Mary Lindemann, *Medicine and Society in Early Modern Europe* (Cambridge: Cambridge University Press, 1999), 109–16.

¹²⁴ Payne, *op. cit.* (note 9).

¹²⁵ Payne, *op. cit.* (note 9), 87. The internal quotation is from *Course of Chirurgical Operations, Demonstrated in the Royal Garden at Paris by M. Dionis* (London, 1710).

necessary part of performing a demanding, desensitising, occupation. Surgeons had to pay attention to pain, as they have clearly been advised to in surgical treatises, but they also had to maintain a level of ‘necessary inhumanity’, in order to perform their work.¹²⁶ In this light, the surgical writers’ sustained focus on their specific methods of technique might be comprehended as the small measures they were able to control in the face of physical suffering ranging from minor complaints to outright anguish. While surgeons could do little to control their patients’ reactions beyond methods such as hiding surgical instruments to reduce fear and using physical restraints, they could offer themselves and their patients reassurance that they were using the best available remedies, techniques, and skill. Awareness of pain was central to this.

Surgeons used their understanding of pain in diagnosis, treatment options and pain management in both sexes. Although humoralism was the predominant discourse of pain in surgical manuals, surgical writers of the early modern period also used additional language to describe pain causation; this was integrated within, or ran alongside, humoral theory. Surgical manuals characterised pain due to wounds as stemming from ‘a solution in continuity’, or a division of the flesh. For practitioners and medical authors, the sexed body possessed significant commonalities arising from the fact that all were adult, human, living bodies. The surgical understanding of pain causation in the bodies of men and women was largely shared across the sexes, as it was located in beliefs about the humoral workings of the body and understandings of the nerves. However, ideas about differences between the sexes also appear with regularity within early modern sources. This draws attention to the importance of studying areas of physiology (often isolated in the secondary literature to studies considering early modern anatomical practices) in the larger context of early modern medical theory and practice.

Ultimately, surgeons portrayed a complex and multi-dimensional understanding of their patients’ bodies in pain, despite rarely recording their emotional responses. Their relationship with their patients’ bodies emphasised the complexity of the body as a living combination of humours, nerves and sexed physiology, which all needed to be taken into account in order for them to perform their tasks to the best of their professional ability. This demonstrates an awareness of, and sensitivity to, pain that should not be underestimated.

¹²⁶ Payne, *op. cit.* (note 9), 7, 87.