

See One, Do One, Modify One: Prostate Surgery in the 1930s

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Introduction

The link between science, medicine and public trust has been much discussed.¹ Surgery shared in the public confidence in the efficacy of scientific medicine and the good intentions of its practitioners. This does not seem to have been directly linked to evidence of either.² Harry Marks has argued that drug manufacturers were not included in the trust accorded to medical practitioners. Regulations and restrictions on the introduction of new drugs in America from the late 1930s were linked to widespread suspicion of commercial motives.³ The motives of surgeons were not suspected in the same way, and surgery in the 1930s was not subjected to the same tests of safety (or efficacy) that were beginning to be applied to drugs. Surgeons were free to adopt, adapt, or invent any surgical procedure as they saw fit. Was their surgery based on what Marks has called “the vagaries of clinical opinion”, and Christopher Lawrence the “incommunicable knowledge” behind clinical judgment?⁴ Or were surgeon citizens of “the republic of science”, basing their practice on what was considered at the time to be acceptable evidence?⁵

This paper examines how surgeons in North America, Britain and Australia chose between treatment options in the case of a widespread condition in older men that was

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Use of the diaries of Malcolm Earlam and John Laidley was made possible through the kindness and generosity of the Melbourne urologist, Peter Lawson, Honorary Archivist of the Urological Society of Australasia. My title is a paraphrase of a saying common among surgeons: “see one, do one, teach one”. For a recent example, see Atul Gawande, *Complications: a surgeon's notes on an imperfect science*, New York, Metropolitan Books, 2002, p. 33.

¹E Richard Brown, *Rockefeller medicine men: medicine and capitalism in America*, Berkeley, University of California Press, 1979; W F Bynum, *Science and the practice of medicine in the nineteenth century*, Cambridge University Press, 1994; John Harley Warner, ‘The history of science and the sciences of medicine’, *Osiris*, 1995, 10: 164–93.

²Archibald L Cochrane, *Effectiveness and efficiency: random reflections on health services*, London, British Medical Journal and Nuffield Provincial Hospitals Trust, 1972; Ivan Illich,

Limits to medicine: medical Nemesis, the expropriation of health, London, Boyars, 1976; Thomas McKeown, *The role of medicine: dream, mirage or Nemesis?*, London, Nuffield Provincial Hospitals Trust, 1976.

³Harry M Marks, *The progress of experiment: science and therapeutic reform in the United States, 1900–1990*, Cambridge University Press, 1997, see especially pp. 38–9.

⁴*Ibid.*, p. 230; Christopher Lawrence, ‘Incommunicable knowledge: science, technology and the clinical art in Britain 1850–1914’, *J. contemp. Hist.*, 1985, 20: 503–20; *idem*, ‘Still incommunicable: clinical holists and medical knowledge in interwar Britain’, in Christopher Lawrence and George Weisz (eds), *Greater than the parts: holism in biomedicine, 1920–1950*, London, Oxford University Press, 1998, pp. 94–111; see also Judy Sadler, ‘Ideologies of “art” and “science” in medicine: the transition from medical care to the application of technique in the British medical profession’, in Wolfgang Krohn, Edwin T Layton Jr, and Peter Weingart (eds), *The dynamics of science and technology*, Dordrecht, D Reidel, 1978, pp. 177–215.

⁵Marks, *op. cit.*, note 3 above, pp. 230–1.

generally called “prostatic obstruction”.⁶ At the time, there was no “scientific” evidence of variations in the efficacy and safety of surgical procedures and, in any case, performing a surgical procedure was not delivering a standard product analogous to prescribing a drug.⁷ As in the case of drugs, the impact varied from patient to patient, depending on factors such as age, sex, body morphology and co-morbidity, but surgery also varied by surgeon.⁸ Factors included the individual level of skill (which in turn was linked to how often the procedure had been practised), and the wide range of personal modifications that surgeons made to procedures, instruments and pre- and post-operative care.⁹ Clearly surgeons had personal preferences and talked about procedures that they “liked”. But did this always reflect the vagaries of clinical judgement, or was it sometimes an acknowledgment of variation in their own level of skill?

Among the sources used are the surgical travel diaries of two Australian urologists, John Laidley and Malcolm Earlam.¹⁰ In the 1930s and 1940s they each made study trips to Britain and North America and they kept diaries of their travels, largely it seems, for the benefit of each other. These diaries throw some light on the decision-making processes of urologists in both Britain and America as they tried various treatments for “prostatic obstruction”.

Prostatic Obstruction and its Treatment

The prostate lies just below the bladder and like a tiny fist or doughnut it surrounds the upper part of the urethra, which carries urine from the bladder and down through the penis. For most of the twentieth century, it was assumed that the enlargement of the prostate with age had a direct causal relationship with a range of lower urinary tract symptoms, which men commonly experience as they get older. The case of what is now generally called benign prostatic hyperplasia illustrates that the construction of a group of symptoms as a disease and the construction of a disease as surgical are processes that may be reversed.¹¹ In the 1980s and 1990s proponents of evidence-based medicine pointed out that there was no direct correlation between the size of the prostate and urinary symptoms in men, or with

⁶In the sources used for this paper—surgical diaries, the correspondence pages of medical journals, published conference proceedings and articles in urological journals—there are only the most tantalizing glimpses of patient preferences. Interestingly, most refer to the cost of surgery. See, for example, Gershom J Thompson, ‘Transurethral operations’, *J. Am. med. Ass.*, 1936, **107**: 1954–8, p. 1958; Hermon C Bumpus, ‘Transurethral prostatic resection,’ *Br. J. Urol.*, 1932, **4**: 105–20, p. 120.

⁷R Doll, ‘Controlled trials: the 1948 watershed’, *Br. med. J.*, 1998, **317**: 1217–20.

⁸For the intellectual problems of controlled comparisons in the 1930s, see B H Lerner, ‘Scientific evidence versus therapeutic demand: the introduction of sulfonamides revisited’, *Ann. intern. Med.*, 1991, **115**: 315–20; Harry M Marks, ‘Notes from the underground: the social organization of therapeutic research’, in Russell C Maulitz and Diana E Long (eds),

Grand rounds: one hundred years of internal medicine, Philadelphia, University of Pennsylvania Press, 1988, pp. 297–338; M L Meldrum, ‘A brief history of the randomized controlled trial: from oranges and lemons to the gold standard’, *Hematology/oncology Clinics of North America*, 2000, **14**: 745–60.

⁹Outcomes also varied according to the level of nursing care. See Janet McCalman, ‘The power of care: the Women’s Hospital 1884–1914’, *Nurs. Inq.*, 1998, **5**: 204–11.

¹⁰M S S Earlam and J W S Laidley, ‘The surgical diaries of M S S Earlam and J W S Laidley, 1936–7, 1938 and 1948’, Archives of the Urological Society of Australasia, item 78, held in the archives of the Royal Australasian College of Surgeons, Melbourne.

¹¹For the social construction of disease, see Charles Rosenberg and Janet Golden (eds), *Framing disease: studies in cultural history*, New Brunswick, Rutgers University Press, 1991.

relief of symptoms following surgery.¹² Benign prostatic hyperplasia came to be regarded as a natural bodily phenomenon rather than a disease, and urinary symptoms came to be regarded as appropriately managed by a range of treatments, not just surgery.

However, in the 1930s, there was no debate as to whether urinary symptoms in men resulted from enlarged prostates, and there was little debate as to whether this problem should be treated surgically. Debates about treatment for “prostatic obstruction” were not part of a turf war between physicians and surgeons.¹³ The debates centred around which operation to perform, not whether to operate at all, and although there was a turf war, it was between general surgeons and specialist urologists.¹⁴

The urinary symptoms that were regarded as evidence of “prostatic obstruction” sometimes included the potentially fatal inability to urinate at all. One of the earliest treatments for this condition was the insertion of a catheter, either permanently or on an intermittent basis. This procedure offered the patient what was known as “catheter life”, but, although it could relieve the urinary retention, it was associated with ubiquitous urinary tract infections and high mortality rates. Cystotomy was sometimes performed, providing an opening from the bladder through the abdominal wall, but this, too, carried high mortality rates. For instance, in 1937 Harry Rolnick and Lester Riskind reported a mortality rate of 28.6 per cent for cystotomy on patients in the Cook County Hospital in Chicago, although mortality was significantly lower for the same procedure in their private practice.¹⁵ Neither “catheter life” nor cystotomy actually cured the patient and so more drastic procedures were developed to remove the enlarged part of the prostate.

During the 1920s, there were really only two ways to remove the prostate. At the end of the nineteenth century, perineal prostatectomy (approaching the gland from below, behind the scrotum and in front of the rectum) was popularized by Hugh Young at the Johns Hopkins Hospital and it remained the favoured surgical approach in America until the 1930s.¹⁶ An

¹²National Health and Medical Research Council, *Clinical practice guidelines: the management of uncomplicated lower urinary tract symptoms in men*, Canberra, Commonwealth of Australia, 1996.

¹³For debates over new surgical procedures that did involve a turf war between surgeons and physicians, see David S Jones, ‘Visions of a cure: visualization, clinical trials, and controversies in cardiac therapeutics, 1968–1998’, *Isis*, 2000, **91**: 504–41; Dale C Smith, ‘Appendicitis, appendectomy, and the surgeon’, *Bull. Hist. Med.*, 1996, **70**: 414–41.

¹⁴It should be noted that, by the 1930s, urology was already a well-established specialty in the United States. This was not the case in Britain until at least the 1950s. In the 1930s there were some specialist full-time urologists in Britain, but many general surgeons continued to perform prostate surgery. On the relatively late emergence of urology as a specialty in Britain, see John Blandy and JP Williams, *The history of the British Association of Urological Surgeons 1945–1995*, London, BAUS, 1995; D Shackley, ‘A century of prostatic surgery’, *Br. J. Urol.*, 1999, **83**: 776–82; Sir David Innes Williams, ‘The development of urology as a specialty in Britain’, *Br. J. Urol.*, 1999, **84**: 587–94.

For a more general discussion of the differences in specialization patterns in Britain and the United States, see Rosemary Stevens, *Medical practice in modern England and the impact of specialization and state medicine*, New Haven, Yale University Press, 1966; *idem*, *American medicine and the public interest*, New Haven, Yale University Press, 1971.

¹⁵Harry C Rolnick and Lester A Riskind, ‘Mortality in prostatic surgery’, *J. Urol.*, 1937, **37**: 12–17. Rolnick and Riskind discuss at some length the reasons for the very high mortality at the Cook County Hospital. Patients suffering from “prostatic obstruction” were often sick old men with impaired renal function, severely infected bladders and significant co-morbidities. In the early 1930s, the patients in the County Hospital were poor sick old men.

¹⁶Bertram M Bernheim, *The story of the Johns Hopkins*, Kingswood, Surrey, World’s Work, 1949; A McGehee Harvey, *et al.*, *A model of its kind. Volume 1: A centennial history of medicine at Johns Hopkins University*, 2 vols, Baltimore, Johns Hopkins University Press, 1989; Leonard Murphy, *The history of urology*, Springfield, IL, Charles C Thomas, 1972, p. 132.

alternative operation was suprapubic prostatectomy, approaching the prostate from above, through the lower abdomen and down through the bladder. This procedure was particularly associated with St Peter's Hospital for Stone in London.¹⁷ Some Australian and New Zealand surgeons preferred the modified version of the operation for suprapubic prostatectomy that was developed by the Sydney urologist Harry Harris and first reported in 1928.¹⁸

Although there was considerable debate about these two operations, the main controversy over the treatment of prostatic obstruction in the 1930s concerned a new operation for the "endoscopic" removal of prostatic tissue. The growth of the specialty of urology was particularly associated with the development of such endoscopic procedures, using instruments that could be inserted into the urethra and bladder without making an incision in the skin.¹⁹

By the beginning of the twentieth century there was a range of instruments known as cystoscopes that could be used to see inside the bladder, mainly as an aid to diagnosis. In addition, early in the century Hugh Young developed what was called a "punch" operation which used a tubular knife passed down an endoscopic instrument to cut away pieces of the prostate by "feel".²⁰ These two separate endoscopic activities—"seeing" and "feeling" inside the body—were put together by many urologists in conjunction with instrument makers, in attempts to both see and cut at the same time. In the 1920s and 1930s urologists and instrument makers, particularly in North America, had many of the characteristics of what the sociologist of science Weber Bijker has described as a social group working within a technological frame.²¹ Their agreed goal was to develop a viable means of removing all or part of the enlarged portions of the prostate endoscopically. One of the key problems was controlling bleeding, and "diathermy" machines were devised, that provided suitable electric current to both cut tissue and coagulate blood vessels.²²

The resectoscope was invented by Maximilian Stern in 1926.²³ This instrument combined the ability to see and the ability to cut and coagulate, using a loop of tungsten and electric current. Stern referred to the resection of prostatic tissue as "minor surgery" and "a mere cystoscopic procedure", and, initially, those who read his article assumed that his instrument was not difficult to use.²⁴ This was far from being the case. The tungsten loops on the early resectoscopes kept breaking and the diathermy machines of 1926 did not produce a current that would effectively cut tissue under water.²⁵ In 1931, however, T M Davis reported 230 cases of resection with no deaths, using a more robust cutting loop and a more powerful cutting current.²⁶ Davis also gave the impression that his instrument was

¹⁷ J Swift Joly, 'Removal of the prostate: indications and methods', *Br. med. J.*, 1932, ii: 192–6.

¹⁸ S Harry Harris, 'Prostatectomy with complete closure', *J. Coll. Surg. Australasia*, 1928, 1: 65–7; *idem*, 'Prostatectomy with complete closure', *Med. J. Aust.*, 1928, ii: 288; *idem*, 'Suprapubic prostatectomy with closure', *Br. J. Urol.*, 1929, 1: 285–95.

¹⁹ Shackley, *op. cit.*, note 14 above; Williams, *op. cit.*, note 14 above.

²⁰ Murphy, *op. cit.*, note 16 above, pp. 425–6.

²¹ Wiebe E Bijker, *Of bicycles, bakelites, and bulbs: toward a theory of sociotechnical change*, Cambridge, MA, MIT Press, 1995, pp. 122–5.

²² T H Lynch and John M Fitzpatrick, 'Energy sources in urology', in Tony Mundy, *et al.* (eds), *The scientific basis of urology*, Oxford, Isis Medical Media,

1999, pp. 277–93, on p. 277; Reed Nesbit, *Transurethral prostatectomy*, Springfield, IL, Charles C Thomas, 1943, pp. 126–31; John Blandy, *Transurethral resection*, Tunbridge Wells, Pitman Medical, 1971.

²³ Maximilian Stern, 'Resection of obstructions at the vesical orifice', *J. Am. med. Ass.*, 1926, 87: 1726–30.

²⁴ *Ibid.*, p. 1726; Nesbit, *op. cit.*, note 22 above, p. 135.

²⁵ *Ibid.*, p. 134. In the 1930s, water was used as an irrigating fluid to help keep the field of vision clear.

²⁶ T M Davis, 'Prostatic operation: prospects of the patient with prostatic disease in prostatectomy vs resection', *J. Am. med. Ass.*, 1931, 97: 1674–9; A J Crowell and T M Davis, 'Motion picture demonstration of prostate resection', *J. Urol.*, 1931, 26: 629–38.

easy to use, claiming that resection was “a minor surgical operation”.²⁷ Also in 1931, the Stern-McCarthy resectoscope emerged from the combined efforts of the instrument maker Frederick Wappler and the urologist Joseph McCarthy.²⁸ The diathermy machine used with the Stern-McCarthy resectoscope provided a more effective current for coagulating as well as cutting, and the visualization of the operative field was better than that provided by the Stern resectoscope. This was the instrument which first made the operation of transurethral resection of the prostate seem feasible to a large number of surgeons. They rushed to buy resectoscopes and diathermy machines in numbers which the American urologist Reed Nesbit described twelve years later as having attained “panic proportions”.²⁹ As American urologist James Sargent put it in 1933: “Almost overnight men everywhere bought their machines and started whittling.”³⁰

What was Considered to be Good Surgical Practice in the 1930s?

In 1927, the brand new Royal Australasian College of Surgeons set itself six objectives.³¹ They included “the intensive study of the science and art of surgery, and the extension of surgical knowledge by means of research”.³² It has been traditional to regard the science and art of surgery as two separate, and possibly conflicting, concepts.³³ However, in the 1930s it was fashionable among surgeons to emphasize the importance of both together, whilst either overtly or implicitly downplaying the importance of manual dexterity.

For instance, in a 1937 article entitled ‘The complete surgeon’, the New Zealand surgeon James Elliott reported John Hunter as saying that a good carpenter could be taught to operate.³⁴ The author went on to argue that acquiring the other surgical skills of diagnosis, patient management and clinical judgement was more complex and required “a wide and general culture”.³⁵ In North America, as Peter Olch has pointed out, the requirements for Fellowship of the American College of Surgeons (founded in 1913) stressed operative competence rather than medical knowledge or surgical judgement.³⁶ Over the next two decades, criticism of the American College of Surgeons grew, particularly from the élite interests represented by the American Surgical Association, who accused the American College of Surgeons of accrediting mere “operators”.³⁷ Evarts Graham and the Canadian surgeon Edward Archibald (President of the American Surgical Association) were among those instrumental in the founding of the American Board of Surgery in 1937.³⁸ Certification

²⁷ Crowell and Davis, *ibid.*, p. 638; Davis, *ibid.*, p. 1674.

²⁸ Joseph Francis McCarthy, ‘A new apparatus for endoscopic plastic surgery of the prostate, diathermia and excision of vesical growths’, *J. Urol.*, 1931, **26**: 695–6.

²⁹ Nesbit, *op. cit.*, note 22 above, on p. 136.

³⁰ James C Sargent, ‘Some dangers and difficulties of transurethral resection’, *J. Urol.*, 1933, **30**: 559–65, on p. 559.

³¹ Initially, it was called the College of Surgeons of Australasia. Colin Smith, ‘The shaping of the RACS 1920–1960’, in D E Thiele, P H Carter and Colin Smith (eds), *Royal Australasian College of Surgeons, handbook*, Melbourne, RACS, 1995, pp. 11–54.

³² *The College of Surgeons of Australasia (which includes New Zealand) by-laws*, Dunedin, 1927, p. 3.

³³ Lawrence, ‘Incommunicable knowledge’, *op. cit.*, note 4 above; *idem*, ‘Still incommunicable’, *op. cit.*, note 4 above; Sadler, *op. cit.*, note 4 above.

³⁴ James Elliott, ‘The complete surgeon’, *Aust. N. Z. J. Surg.*, 1937, **7**: 177–80, on p. 177.

³⁵ *Ibid.*, p. 180.

³⁶ Peter D Olch, ‘Evarts A. Graham, the American College of Surgeons, and the American Board of Surgery’, *J. Hist. Med. Allied Sci.*, 1972, **27**: 247–61, on p. 250.

³⁷ *Ibid.*, p. 250.

³⁸ J Stewart Rodman, *History of the American Board of Surgery, 1937–1952*, Philadelphia, J B Lippincott Company, 1956, p. 1.

by the American Board of Surgery stressed the science of surgery, not just the operative competence required for Fellowship of the American College of Surgeons. In Britain, too, it was argued that a “first-class operator” was not the same as a “first-class surgeon”. In reference to Harry Harris, the London general surgeon, Sir William Wheeler wrote:

From Harris’s insistence upon scientific treatment before and after operation and the necessity for care and judgement in the general management of the case we may infer that he was one of those who considered the term “operating surgeon” as obnoxious and that he realized the fundamental distinction which often exists between first-class operators and first-class surgeons. Harris was by no means a mere technician; he was . . . an “operating physician”, a term which accurately signifies the modern line of thought.³⁹

In this context, the “science and art of surgery” in the 1930s should be understood as a concept in support of full-time surgeons and in opposition to the practice of surgery by “unqualified” general practitioner–surgeons, or “mere operators”. The diaries of Malcolm Earlam and John Laidley also provide glimpses of how they thought surgeons ought to behave. For instance, of one American surgeon Earlam wrote: “on 2 days acquaintance [he] impresses me as a tradesman who has settled into a routine method of doing most things and is thus saved from having to do any great amount of mental exercise about his patients. So far he impresses me, generally, less than anyone I have met here.”⁴⁰ Part of the definition of a “first-class surgeon”, it seems, was someone who was always in search of better results for their patients. As will be shown below, many urologists in the 1930s did indeed frequently modify the details of their surgical care. It is possible that this was mainly a characteristic of élite surgeons working in famous teaching hospitals, rather than all surgeons, but the search for improved outcomes was certainly widespread. It was not, however, very systematic.

Few of the original reports of new surgical procedures in the 1930s include any evidence of efficacy or morbidity, although most do include mortality rates.⁴¹ For instance Harry Harris’s original publication consisted of a brief description of his technique for suprapubic prostatectomy, with six illustrations. He reported twenty cases with “complete ultimate success and without mortality” and wrote that: “Complete operative details will be published at a later date.”⁴² Similarly, Maximillian Stern’s original article consisted of a description of his resectoscope and how to use it, and the advice: “Practice in controlling the speed of the cutting thrust should be obtained on pieces of tough meat in a bowl of water.”⁴³ Stern did examine his patients two or three weeks after the operation, and made “before” and “after” drawings of the view through the cystoscope, but he gave few details of results. “As my group of cases includes only forty-six,” he wrote, “I will not attempt to establish any statistical records as to the possibilities of the various types treated.”⁴⁴ However, for brevity combined with impact, Joseph McCarthy’s original paper may set something of a record. It is just two pages long and simply provides a description of the Stern-McCarthy resectoscope and a photograph of the diathermy machine, whose silent operation McCarthy described as “a solace to the occasional apprehensive patient”.⁴⁵

³⁹ W I de C Wheeler, ‘Prostatectomy’, *Br. med. J.*, 1937, i: 581.

⁴⁰ Earlam and Laidley, *op. cit.*, note 10 above, Earlam, 30 Nov. 1936.

⁴¹ Doll, *op. cit.*, note 7 above; Marks, *op. cit.*, note 8 above.

⁴² Harris, *J. Coll. Surg. Australasia*, *op. cit.*, note 18 above, p. 67.

⁴³ Stern, *op. cit.*, note 23 above, p. 1727.

⁴⁴ *Ibid.*, p. 1728.

⁴⁵ McCarthy, *op. cit.*, note 28 above, p. 696.

Effectively, members of the international community of surgeons were invited to join with the pioneers in trying out these new operations, often without detailed information on how to perform them and almost always in advance of any real evidence on outcomes. Subsequently, more details of the advantages and disadvantages of these procedures were published by other surgeons, as well as by the originators.⁴⁶ As will be shown below, the main grounds on which surgeons continued to perform such operations, with or without their own modifications, depended on their own first-hand experience. This might be experience with their own patients, or experience gained watching other surgeons at work. Other surgeons' published results were not ignored, but neither were they automatically believed. This did not represent a disregard for science. It represented a healthy scepticism about the motives of their colleagues. Whatever the public may have assumed about the relationship between truth, science and surgery, surgeons did not take the probity of their colleagues for granted.⁴⁷

Evidence of what surgeons thought of each other is inherently hard to come by, and the diaries of Earlam and Laidley are therefore particularly valuable because they offer a glimpse of precisely the kind of grounds on which surgeons decided whether or not to believe what other surgeons said about their surgery. For instance, of one British surgeon Laidley noted: “[He] went to America last year. Has no use for Thompson or the Mayo. Says the Mayo resectoscope is 32F & when he asked after post op. stricture Thompson denied its incidence. Later after dinner one night another member of the clinic confessed that post op. stricture was worrying them to death.”⁴⁸ Or again, the Irish urologist Terence Millin, referring to a London urologist, told Laidley that: “He is getting post operative stricture though he denies in public that he does so. Millin has seen 2 cases already of his.”⁴⁹ In other words, the patients consulted Millin about a problem resulting from surgery performed by someone else—a particularly convincing form of evidence on post-operative complications.

In contrast, the reporting of poor results seems to have been taken as evidence of honesty. For instance, Earlam described the Californian urologist Irving Wills as “a very likeable approachable fellow about 40, I should say very sound and perfectly honest in his statements about his own mortality and his unsatisfactory results”.⁵⁰

When deciding between the three main options for the treatment of prostatic obstruction, urologists assessed the available evidence, published or otherwise, on the basis of whether or not the source was considered trustworthy, and they made up their own minds as to the strengths and weaknesses of each operation. The procedures will now be considered in turn, to illustrate some of the ways in which they were modified by individual urologists in attempts to improve their results.

⁴⁶For example: N G Alcock, ‘Ten months experience with transurethral prostatic resection’, *J. Urol.*, 1932, **28**: 545–59; S Harry Harris, ‘Prostatectomy with closure: five years’ experience’, *Br. J. Surg.*, 1934, **21**: 434–52; Joseph Francis McCarthy, ‘Further developments in the surgery of the prostate’, *J. Urol.*, 1937, **37**: 18–25; A Clifford Morson and J E Semple, ‘A study of the craftsmanship of the Harris technique for prostatectomy’, *Br. J. Urol.*, 1934, **6**: 207–19.

⁴⁷For the importance of trust in what others tell us, and the conditions under which others are trusted, see Steven Shapin, *A social history of truth*, University of Chicago Press, 1994.

⁴⁸Earlam and Laidley, *op. cit.*, note 10 above, Laidley, 21 March 1938.

⁴⁹*Ibid.*, Laidley, 21 March 1938.

⁵⁰*Ibid.*, Earlam, 2 Nov. 1936.

Perineal Prostatectomy

Perineal prostatectomy was mainly performed in North America, especially by urologists who had trained at the Johns Hopkins. It was regarded as carrying a high risk of damage to the rectum, leading to the complications of faecal incontinence, or faecal fistulae, or both. Laidley watched the operation performed in Manchester (by a Johns Hopkins trained urologist) when he was there in March 1938. “Nice technique & competent” was his comment, “but discovered in sewing up afterwards that he had gone into rectum during his approach. This is the third perineal I have ever seen . . . on every occasion the rectum has been entered.”⁵¹ In May 1938, Laidley watched the American urologist Fred Foley at work in Minneapolis. He noted that Foley was performing perineal prostatectomy with an illuminated bulb in the rectum, to help him avoid cutting the external sphincter (leading to incontinence) or entering the rectum (leading to a recto-vesical fistula), thus protecting “the patient from the surgeon in two ways”.⁵²

Foley modified the technique of perineal prostatectomy in an attempt to reduce the risk of damaging the rectum, and in doing so he was behaving in a way that was widely admired by his peers. According to Laidley, Foley performed transurethral resection on about 80 per cent of his cases of prostatic obstruction, but he treated the remaining 20 per cent, mainly large prostates, by his modified version of perineal prostatectomy “as is right and proper for a Johns Hopkins trained man”.⁵³ Other American urologists stopped doing the procedure. For instance, Earlam noted that a San Francisco urologist “was trained in the perineal school, but considers the suprapubic operation a better one. He does not now do perineal prostatectomies”.⁵⁴ Similarly, he visited a Montreal urologist who “was trained in the perineal operation, forsaking it by degrees for the suprapubic”.⁵⁵ The reasons for the change are not given, but it seems clear that urologists did not always continue to perform a particular operation just because that was the one they were first taught.

Suprapubic Prostatectomy

In 1930, John Thomson-Walker reported a mortality rate of 6.1 per cent for suprapubic prostatectomy in his private practice, 9.9 per cent on public hospital patients at St Peter’s Hospital for Stone in London and 19.5 per cent in general public hospitals.⁵⁶ For the Massachusetts General Hospital over the period 1926–30, Channing Swan and Ross Mintz reported a mortality rate of 4.8 per cent for one-stage suprapubic prostatectomy and 6.6 per cent for the two-stage operation.⁵⁷ This compared with a mortality rate of 6.2 per cent for perineal prostatectomy at the same hospital, and represented a significant improvement on the mortality rate of 18.8 per cent before 1926.⁵⁸

Clearly suprapubic prostatectomy was a very dangerous operation. There was therefore considerable interest in 1932 when Harry Harris reported a mortality rate

⁵¹ *Ibid.*, Laidley, 29 March 1938.

⁵² *Ibid.*, Laidley, 15 May 1938.

⁵³ *Ibid.*, Laidley, 9 May 1938.

⁵⁴ *Ibid.*, Earlam, 4 Nov. 1936.

⁵⁵ *Ibid.*, Earlam, 30 Nov. 1936.

⁵⁶ Cited in Leonard Murphy, ‘Harry Harris and his contribution to suprapubic prostatectomy’, *Aust. N. Z. J. Surg.*, 1984, **54**: 579–88.

⁵⁷ In other words, where the man was in poor health and a cystotomy was performed first.

⁵⁸ Channing S Swan and E Ross Mintz, ‘A review of the prostatectomies for benign hypertrophy at the Massachusetts General Hospital in the years 1926–1930, inclusive’, *J. Urol.*, 1931, **26**: 67–90, p. 86.

of 2.8 per cent for his modification of suprapubic prostatectomy.⁵⁹ By about 1935 the Harris procedure had been widely adopted in Sydney, Melbourne, Adelaide and Auckland. Unfortunately, few surgeons were able to repeat Harris's low mortality rates, even in Australia and New Zealand. In 1933 the Sydney urologist Bobby Lee Brown wrote: "Under favourable conditions the results have been highly satisfactory, but at other times have been such that my desire to continue with surgery, and urology in particular, has almost ceased."⁶⁰

It has been argued that the Harris operation met with little acceptance outside Australia and New Zealand and it does, indeed, seem to have been ignored in North America.⁶¹ But Harris travelled to Britain and Europe in 1935 and 1936 to demonstrate his procedure, and after that it was performed in Britain by a number of urologists.⁶² Generally, few of these British urologists reported results as good as those claimed by Harris himself, and most modified the Harris procedure. Earlam noted the following variations on suprapubic prostatectomy at St Peter's Hospital for Stone in 1937:

Did a round of the hospital with the R. S. O. one morning, mainly to look at the prostates. Morson of course does his Harris operation, which at Peters carries the highest mortality but the shortest morbidity. Joly does the job as described already [Thompson-Walker suprapubic prostatectomy], substituting a White's tube for the Marion after a few days, later using an indwelling catheter. His people stay in longer than Morson's. Barrington won't use a catheter at all, and his people stay in for weeks and weeks. Sandrey does a Harris plus a [suprapubic] tube.⁶³

Earlam obviously believed that these bewildering variations in technique and type of catheter affected results, but it seems there was no consensus among the urologists at this one hospital as to the best way to perform what was probably their single most common operation. Elsewhere, Earlam noted further variations in the Harris prostatectomy. Millin, for instance, "does a Harris, but admits freely that he only closes the bladder if there is an audience".⁶⁴ In Manchester, J P MacAlpine was using a particularly short incision. "Has only been doing this short wound business recently, but likes it."⁶⁵

Clearly, there was no standard version of suprapubic prostatectomy and virtually every urologist (and many general surgeons) had devised their own variation on the procedure.

Transurethral Resection

Transurethral resection had the great advantage over the other two options of low mortality rates, but it was not an easy operation to perform. In 1932, the Irish urologists Canny Ryall and Terence Millin wrote: "The technique [of resection] is not simple nor is the method one for the occasional cystoscopist."⁶⁶ Throughout the 1930s, the merits of the

⁵⁹ S Harry Harris, 'Prostatectomy with closure of the bladder', *Med. J. Aust.*, 1932, **ii**: 158; Maurice Ewing, 'A place in posterity', *Aust. N. Z. J. Surg.*, 1977, **47**: 531–88; Peter S Lawson, 'Origins of the Urological Society of Australasia', *Aust. N. Z. J. Surg.*, 1990, **60**: 385–91; Murphy, *op. cit.*, note 56 above.

⁶⁰ R K Lee Brown, 'Primary closure in prostatectomy', *Aust. N. Z. J. Surg.*, 1933, **2**: 339–47, on p. 339.

⁶¹ Lawson, *op. cit.*, note 59 above; Murphy, *op. cit.*, note 56 above.

⁶² Terence Millin, 'Treatment of prostatic obstruction', *Br. med. J.*, 1937, **i**: 243; Morson and Semple, *op. cit.*, note 46 above; Eric Riches, 'Hemiprostatectomy', *Br. med. J.*, 1941, **ii**: 824.

⁶³ Earlam and Laidley, *op. cit.*, note 10 above, Earlam, Feb. 1937.

⁶⁴ *Ibid.*, Earlam, Feb. 1937.

⁶⁵ *Ibid.*, Earlam, 9 Feb. 1937.

⁶⁶ Canny Ryall and Terence Millin, 'An alternative to prostatectomy', *Lancet*, 1932, **ii**: 121–5, on p. 125.

operation were hotly debated on both sides of the Atlantic, and much of the debate centred around the undeniable difficulty of mastering the manual skills involved in the procedure.⁶⁷ Were poor results an inherent feature of the technique, or did they reflect the fact that the urologist concerned had not yet developed the requisite manual skills? As the American urologist John Emmett put it in 1937: “some prostatectomists who have not trained themselves sufficiently in transurethral resection to relieve obstruction adequately by this means, unqualifiedly condemn the procedure in everyone’s hands”.⁶⁸ In the terms of the twenty-first century, transurethral resection of the prostate had a very long learning curve.⁶⁹ In 1932, Robert Day, another American urologist, asked:

... how does one get to be an expert, and how much bungling is inevitable in the process of becoming one? ... Let no one, no matter how experienced and skilled in other cystourethroscopic procedures, delude himself into believing that he will not do considerable bungling during his apprenticeship, and that many of his results will not be deficient.⁷⁰

Resection built on the specialist skills that urologists developed whilst performing cystoscopies, and cystoscopy itself was a difficult skill to master. In explaining why not all Americans were in favour of transurethral resection in 1936, Irving Wills told Earlam that: “The men who condemn it are very largely members of the older generation, who have never acquired a completely efficient cystoscopic technique”.⁷¹ In other words, they condemned the procedure because they could not do it. However, some surgeons “believed” in the operation, despite its difficulty. Earlam and Laidley published their own early results from resection in 1936 and noted:

... transurethral surgery of the adenomatous prostate is ... far from being the simple matter that one might imagine it to be from a perusal of some of the published reports ... the actual removal of obstructing tissue may often be much more easily contemplated than carried out. At first the cutting loop, instead of biting deeply into the prostatic tissue, merely slides over its surface, and the experience of a good number of resections is necessary before the operator acquires the knack of automatically placing the loop and adjusting the axis of the resectoscope in that position which by repeated trial and error has been found to afford him optimum mechanical advantage.⁷²

Yet the difficulties of the procedure did not lead Earlam and Laidley to reject it as a method. On the contrary, they wrote, “We find it difficult to conceive that any better method

⁶⁷The literature on the subject is enormous and there is hardly an issue of the *Journal of Urology* in this era which does not feature articles on the topic. For instance, B S Abeshouse, ‘A comparison of results in the treatment of prostatic obstruction by transurethral resection and prostatectomy’, *J. Urol.*, 1939, **42**: 1101–22. See also the discussion of his paper on pp. 1123–9. In Britain, the issue was debated more in the correspondence pages of the *Lancet* and the *British Medical Journal* than in papers in the *British Journal of Urology*. See also Hugh Lett, ‘The treatment of prostatic obstruction other than by enucleation’, *Br. J. Surg.*, 1937, **25**: 191–203.

⁶⁸John L Emmett, ‘Relief of post-prostatectomy vesical dysfunction by transurethral surgery’, *J. Urol.*, 1937, **37**: 569–78, on p. 569.

⁶⁹The classic example of the long learning curve in the late twentieth century is laparoscopic cholecystectomy: Alfred Cuschieri, ‘Whither minimal access surgery? Tribulations and expectations’, *Am. J. Surg.*, 1995, **169**: 9–19; A Hasan, M Pozzi and J R L Hamilton, ‘New surgical procedures: can we minimise the learning curve?’, *Br. med. J.*, 2000, **320**: 171–3.

⁷⁰Robert Day, ‘Endoscopic resection of the prostate: an analytical study’, *J. Urol.*, 1932, **28**: 569–79, on p. 570.

⁷¹Earlam and Laidley, op. cit., note 10 above, Earlam, 2 Nov. 1936.

⁷²J W S Laidley and M S S Earlam, ‘Transurethral prostatic resection: a series of operations on one hundred patients’, *Med. J. Aust.*, 1936, **i**: 80–8, on p. 87.

for the surgical treatment of median bar could possibly be evolved.”⁷³ They went on to say, “We . . . regard our modified successes and our failures as due to our own shortcomings in technique, and not to the type of operation performed.”⁷⁴

Acquiring the skill necessary to remove tissue accurately and expeditiously took a great deal of practice. Laidley noted that the Manchester urologist K H Watkins “is a keen resectionist but has only done 100 cases & has not yet developed his technique to its utmost or fully realized its possibilities”.⁷⁵ As they practised, virtually all urologists developed their own variations of the technique, or the instruments, or pre- and post-operative care. Wills in California, for instance, measured the coagulation time of his patients. “He omitted this on one patient recently, to save him expense—he bled for 3/52 and had a very prolonged coagulation time. Had he estimated this previously, he says, he would not have done him.”⁷⁶ Vincent O’Conor in Chicago had come to the conclusion that “the patients who acquire normal micturition the quickest are those in whom very little coagulation has been done. Over the last 30 or so resections he has been going for his big bleeders and letting the others ooze”.⁷⁷ Foley, “[p]ostoperatively of late . . . has been routinely using continuous 2 way irrigation and likes it . . . He says since he has done this he has had no single case of catheter blockage due to clot”.⁷⁸ Foley had designed equipment for the purpose. Millin also designed instruments: “Like many of the Americans, he is trying to evolve the perfect resectoscope of his own”.⁷⁹

Urologists, of course, argued that resection should not be attempted by general surgeons, but should be left to them. This argument relied on the superior manual skill that urologists acquired with practice, because they performed the procedure so much more often than general surgeons. This was, in effect, the argument for specialization in urology.⁸⁰ However fashionable it might have been to sneer at “mere operators”, manual skill did matter. Because of the difficulties in learning and performing the procedure, transurethral resection did not become a part of the repertoire of the general surgeon. A competent transurethral resectionist almost by definition had to be a urological specialist. But they also had to believe in the procedure in order to go to the trouble of practising it often enough to acquire the requisite skill. Not surprisingly, more of the younger urologists were prepared to learn the new procedure than their more established colleagues, and Earlam and Laidley make a number of references to the association of the technique with the younger generation of surgeons.

However, not all of even the younger urologists “liked” transurethral resection, and the technique illustrates very clearly the dilemma faced by surgeons in the absence of good scientific evidence on efficacy or morbidity. How could they decide whether their own poor results would improve with practice, or were an inherent feature of the technique? The rest of this paper examines this issue in greater detail.

⁷³ *Ibid.*, on p. 83.

⁷⁴ *Ibid.*, on p. 88.

⁷⁵ Earlam and Laidley, *op. cit.*, note 10 above, Laidley, 30 March 1938.

⁷⁶ *Ibid.*, Earlam, 2 Nov. 1936.

⁷⁷ *Ibid.*, Earlam, 25 Nov. 1936.

⁷⁸ *Ibid.*, Earlam, 16 Nov. 1936.

⁷⁹ *Ibid.*, Earlam, Feb. 1937.

⁸⁰ See, for example, Hugh Lett’s comment that “these operations were not for every surgeon to undertake” following a discussion in the Section of Urology of the Royal Society of Medicine: Hugh Lett, *et al.*, ‘Perurethral treatment of the enlarged prostate’, *Lancet*, 1933, i: 1180–1, on p. 1181.

Seeing is Believing

In 2003, transurethral resection of the prostate, using an instrument which would be recognizable to Stern, Davis and McCarthy, was the gold standard for all but the largest prostates, where surgical intervention was indicated for the treatment of lower urinary tract symptoms in men. But in the 1930s it was by no means obvious that transurethral resection would become the procedure of choice for so many urologists in so many cases. On the contrary, the procedure was widely attempted in 1931 and 1932, by general surgeons as well as urologists, and then almost as widely rejected as impossible to perform successfully. Surgeons took Stern and Davis's remarks at face value, that transurethral resection was a "minor surgical operation". When they found for themselves that it was nothing of the sort, they put their brand new resectoscopes away to gather dust and returned to the open operations for "prostatic obstruction", dismissing the published results of resection as suspect, if not positively dishonest.⁸¹

Surgeons were disinclined to believe published results if they conflicted with their own experience.⁸² It may be suspected that some surgeons who had poor results from transurethral resection did not believe that it was possible to get good results from resection. Importantly, this may have contributed to their failure. As the historian of science Mario Biagioli explains: "it is not simply that an experiment is 'right' because it can be replicated, but it also becomes replicated by being accepted as 'right' . . . in a sense, one has to accept an experiment before one can reproduce it".⁸³

For urologists to persevere with the hard work of practising many hundreds of resections, they had to believe that their results would improve and that good results were attainable. Often, those who did so had travelled to view the work of other surgeons for themselves. Seeing is believing, and in 1937 the Melbourne urologist Henry Mortensen criticized a colleague who argued that transurethral resection produced bad results, because the colleague in question had only seen British and not American urologists at work:

I feel sorry that Dr. Campbell, whilst returning from his recent stay abroad, did not take the opportunity of obtaining first-hand information on this important subject by visiting the principal American urological centres, where resection is practised. There he would have had demonstrated to him more cases in one week than it was his privilege to see in his twelve months period at Saint Peter's. Then I am sure he would have refrained from suggesting that practically all urines sterile prior to resection become infected subsequently.⁸⁴

Similarly, in 1937 the British urologist Walter Galbraith criticized a colleague who thought that the Harris prostatectomy produced poor results:

If your readers have not had an opportunity of seeing a plastic operation (Harris) performed by a surgeon experienced in the correct Harris technique and of noting the amazing wellbeing of the

⁸¹ Nesbit, *op. cit.*, note 22 above, pp. 107–9.

⁸² Good published results were thus inherently suspect, while bad published results were not. In 1932, the American urologist N G Alcock made public his poor results from early attempts at resection. He described his first fifty resections as "extremely trying and somewhat discouraging" and his paper was subsequently much admired and

cited by other urologists: Alcock, *op. cit.*, note 46 above.

⁸³ Mario Biagioli, "Tacit knowledge, courtliness, and the scientist's body", in Susan Leigh Foster (ed.), *Choreographing history*, Bloomington, Indiana University Press, 1995, on p. 71.

⁸⁴ Henry Mortensen, 'The relief of prostatic obstruction', *Med. J. Aust.*, 1937, ii: 35–6.

patient immediately following the operation and the smooth, comfortable, and speedy convalescence, then I ask them to take the earliest opportunity of doing so . . .⁸⁵

In the 1930s, this pattern of watching other surgeons operate built on what was already a considerable tradition of travelling to learn. In the early years of the twentieth century, the runaway success of Franklin Martin's "wet clinics", where he provided the opportunity to watch surgery performed, set in train the formation of the American College of Surgeons.⁸⁶ By then, Harvey Cushing, William Mayo, George Crile and other elite American surgeons had already organized a surgical travelling club to watch surgeons at work around America, and subsequently also around Britain and Europe.⁸⁷ The idea became popular and other surgical travelling clubs were formed in North America and Britain.⁸⁸ Travelling to learn was associated with a clear appreciation that not everything necessary for the successful performance of a procedure could be specified in a written text.⁸⁹ As Biagioli commented: "the knowledge necessary for the successful replication travels with bodies and not only with texts".⁹⁰

In 1938, Nesbit and Wappler developed a modified resectoscope with a trigger grip.⁹¹ The great advantage of the new instrument was that it could be worked with one hand, allowing the urologist to put a finger in the rectum and push the prostate up towards the cutting loop. Nesbit did not publish the technique until 1939, but word of the new instrument got around and Laidley was told about it by both Millin in London and Wappler in New York.⁹² At the beginning of May 1938, Laidley went to Ann Arbor, Michigan, where he watched Nesbit operate, talked to him and to the other staff at the unit and made notes on post-operative care.⁹³ Laidley would not actually have been able to see what was happening at the cutting end of the resectoscope, but Nesbit allowed him to put his finger in the rectum before and after the procedure, to feel the prostate. "Full marks for every advance in technique", wrote Laidley. "The finger in the rectum is so obviously a help it is a wonder we have not tried it".⁹⁴

Laidley was also enthusiastic about the post-operative care. "The regular use of the Foley catheter and also of a combined irrigation drainage apparatus will do wonders for our cases." Laidley came away from Ann Arbor full of enthusiasm for the modified resection

⁸⁵ Walter Galbraith, 'Prostatectomy by the two-stage method', *Br. med. J.*, 1937, i: 472–3.

⁸⁶ Loyal Davis, *Fellowship of surgeons: a history of the American College of Surgeons*, Springfield, IL, Charles C Thomas, 1960. Ira M Rutkow, *American surgery: an illustrated history*, Philadelphia, Lippincott-Raven, 1998, p. 248.

⁸⁷ Rutkow, op. cit., note 86 above, pp. 246–7; Owen H Wangenstein, 'Surgery and surgical travel groups', *Surgery Gynec. Obstet.*, 1978, 147: 246–54.

⁸⁸ Sir Berkeley Moynihan founded the Chirurgical Club, a travelling club for provincial British surgeons, in 1909 and the Association of Surgeons of Great Britain and Ireland in 1920. *Ibid.*, p. 253; Rutherford Morison, 'Lord Moynihan, a personal appreciation', *Br. J. Surg.*, 1936, 24: 4–6. A number of surgeons were also making films of their operations in the 1930s, including Harry Harris, Fred Foley and T M Davis.

⁸⁹ Michael Polanyi, *Personal knowledge*, London, Routledge & Kegan Paul, 1958; *idem*, *The tacit dimension*, New York, Anchor Books, 1967.

⁹⁰ Biagioli, op. cit., note 83 above, p. 71. See also H M Collins, 'The TEA set: tacit knowledge and scientific networks', *Science Studies*, 1974, 4: 165–86; David Turnbull, *Masons, tricksters and cartographers, comparative studies in the sociology of scientific and indigenous knowledge*, Harwood Academic, 2000, p. 42.

⁹¹ Reed Nesbit, 'A modification of the Stern-McCarthy resectoscope permitting third-dimensional perception during transurethral prostatectomy', *J. Urol.*, 1939, 41: 646–8.

⁹² Earlam and Laidley, op. cit., note 10 above, Laidley, 21 March and 14 Apr. 1938.

⁹³ *Ibid.*, Laidley, 3–5 May 1938.

⁹⁴ *Ibid.*, Laidley, 4 May 1938.

technique. He noted that “Nesbit . . . has set my aims for resection on a far higher plane. So frequently in the past we have been satisfied with a measure of relief. Now he wants cure and so should we.”⁹⁵

Seeing was believing and the question arises as to whether, by the standards of the 1930s, practising evidence-based surgery involved travelling to watch new procedures performed by their originators, to see in person what was done in the operating theatre, the nature of pre- and post-operative care, and the state of the patients on the wards.

Transurethral Resection and Music

In 1940, Fred Foley argued that any general appraisal of such a technically difficult procedure as transurethral resection was impossible. Success varied with the “skill, ability and experience of the operators”.⁹⁶ He went on to outline the factors that he considered governed the development of the resectionist and determined his skill. “In the first place,” he argued, “a liking for the procedure is essential. Without this the status of a resectionist will be about the same as the status of a musician who dislikes music.”⁹⁷ Foley argued that the main variable in the indications for transurethral resection was the skill of the resectionist. For the competent, the operation was indicated in 80 to 95 per cent of cases of prostatic obstruction, whereas the incompetent should not perform the operation at all. He did not say how the requisite skill was to be acquired, although he did point out that, in the past, the development of transurethral resection produced “poor results and a mortality that now seem shocking”.⁹⁸ The procedure was developed (and improved) by many urologists practising on many patients.

It is not clear whether other urologists agreed with Foley that their own level of skill should determine whether or not they performed resection. However, the frequency with which the operation was performed does seem to have varied according to whether or not the urologist concerned “liked” the operation, in addition to a range of other factors. In America, Earlam found that transurethral resection was generally more popular among the younger urologists, and that it was more frequently adopted as a technique when the prostate was relatively small. For instance, he noted that Frank Hinman “does not like the transurethral operation for large prostates but does quite a number for the smaller varieties”.⁹⁹

In 1936, Louis M Orr Jr conducted a survey of selected members of the American Urological Association, chosen to represent all areas of the country. He found that they were performing nearly three times as many resections as open prostatectomies and that those who carried out the largest number of resections were the ones who also got the best results. However, more than half of those surveyed only advocated resection for small prostates.¹⁰⁰

In England, many surgeons tried the technique in the 1930s, but few remained enthusiastic for long. Millin at All Saints’ Hospital, Kenneth Walker at St Paul’s, Ogier Ward at

⁹⁵ Ibid., Laidley, 5 May 1938.

⁹⁶ Frederic E B Foley, ‘The present status of transurethral resectionists, competent and otherwise’, *J. Urol.*, 1940, **43**: 565–71, on p. 565.

⁹⁷ Ibid., p. 567.

⁹⁸ Ibid., p. 570.

⁹⁹ Earlam and Laidley, *op. cit.*, note 10 above, Earlam, 5 Nov. 1936.

¹⁰⁰ Louis M Orr, ‘Discussion’, *J. Urol.*, 1937, **37**: 28–31.

St Peter's Hospital for Stone and Eric Riches at the Middlesex Hospital all had lengthy experience of resection.¹⁰¹ Riches was still advocating resection in 1941 and wrote that: "endoscopic resection undoubtedly has an important place in prostatic surgery".¹⁰² In 1938, Ward also seems to have remained keen on the technique and published his own modification.¹⁰³ However, the procedure seems to have seldom been used at St Peter's before then.¹⁰⁴ Early in 1937, Earlam noted that at St Peter's "The R.S.O. has not seen a single good result following resection!"¹⁰⁵

Walker at St Paul's Hospital and Millin at All Saints' had been among the pioneers of transurethral resection in Britain, but by 1937, both were tending to reduce the proportion of cases of prostatic obstruction where they thought it appropriate.¹⁰⁶ Millin estimated that he was resecting about 32 per cent of his cases, and Walker was restricting the procedure to about 20 per cent of cases, mainly for small prostates and men who were otherwise poor operative risks. According to Millin:

I introduced the modern transurethral ... prostatic resection operation into this country in September, 1930, and after an experience of more than 400 cases (largely municipal hospital patients) am satisfied that the functional results are not so satisfactory as enucleation for general enlargement of the gland ... in 1932–3 I employed the endoscopic technique in approximately 90% of prostatic obstructions in hospital practice, but after careful follow-up of many cases have reached the above conclusion. The brilliant work, moreover, of the late S. Harry Harris has given urological surgeons a more exact method of securing haemostasis in the open surgery of the prostate ...¹⁰⁷

Millin had been to America and seen other urologists at work, but he decided to reduce the frequency with which he performed the operation on the basis of his own results. Similarly, Walker ceased being a strong advocate for resection, as a result of his own experience.¹⁰⁸ He made it plain that he was not opposed to transurethral resection, but he emphasized the common problems of haemorrhage and, particularly, sepsis, which in this pre-antibiotic era was sometimes fatal. He argued that in England the majority of urologists "have accepted perurethral resection as a valuable addition to our methods of treating the obstructing prostate", but that they used the technique in moderation—by which he meant in about one in five cases.¹⁰⁹ By the late 1930s, only a few British urologists met Foley's first prerequisite for success. Most had decided that they did not much like the procedure of transurethral resection.

¹⁰¹ Millin, *op. cit.*, note 62 above; Eric Riches, 'Prostatic obstruction, with special reference to per-urethral operations', *Lancet*, 1932, ii: 858–9; Kenneth M Walker, 'Transurethral resection of the prostate: a review of fourteen years' work', *Br. med. J.*, 1937, i: 901–3; R Ogier Ward, 'Subvesical diathermy prostatectomy', *Br. med. J.*, 1938, ii: 175–6. It should be noted that rather more British surgeons continued to perform the cold punch operation than transurethral resection. Blandy and Williams, *op. cit.*, note 14 above, pp. 11–16.

¹⁰² Riches, *op. cit.*, note 62 above.

¹⁰³ Ward, *op. cit.*, note 101 above.

¹⁰⁴ Mortensen, *op. cit.*, note 84 above.

¹⁰⁵ Earlam and Laidley, *op. cit.*, note 10 above, Earlam, Feb. 1937.

¹⁰⁶ Millin, *op. cit.*, note 62 above; Kenneth Walker, 'A survey of prostatic enlargement and its treatment', *Br. med. J.*, 1938, ii: 53–7; *idem*, *op. cit.*, note 101 above.

¹⁰⁷ Millin, *op. cit.*, note 62 above.

¹⁰⁸ Walker, *op. cit.*, note 101 above.

¹⁰⁹ Walker, *op. cit.*, note 106 above, p. 54. In 1937, F McG Loughnane of All Saints' was advocating resection in 96 per cent of cases, but it is difficult to find other British urologists who were still enthusiastic about resection. F McG Loughnane, 'Treatment of prostatic obstruction', *Br. med. J.*, 1937, i: 144–5.

Conclusion: Messy Worksites

Malcolm Earlam was impressed with Vincent O'Connor in Chicago, praising his careful consideration of cases and conservative approach, but his comments on O'Connor's surgery produce a picture that is at first somewhat disconcerting to the lay reader. "He has had the same experience as we have, *vis*. Some of the resections he has been most pleased with have been followed by the world's worst results . . . while others that looked like the dog's dinner have turned out 100%."¹¹⁰

It is clear from this and other entries in the diaries that the surgery that Earlam and Laidley were watching was not about technically competent urologists producing reliable outcomes. On the contrary, it was about uncertainty and trial and error. Many of the operating theatres they visited seem to have been "messy worksites" where new knowledge was being produced; laboratories rather than workshops turning out standard products.¹¹¹ Not all urologists were continually modifying their techniques in the light of results, but most were. Importantly, they were modifying them in the light of their *own* results, rather than in the light of results published by others. As has been shown above for Millin and Walker, new techniques were tried and accepted or rejected on the basis of their own experience.

In the 1930s, which operation a patient with "prostatic obstruction" was likely to receive varied with where he lived, the size of his prostate and the age of his urologist. At the time, both Foley and Day specifically argued that there were no absolute grounds for deciding which operation to use. On the contrary, a urologist should perform the operation that he was best at, or in the words of the 1930s, the operation which produced the best results "in his hands".¹¹²

Earlam and Laidley clearly admired those urologists who were continually trying to improve their results by tinkering with their operations and their instruments. The two outstanding figures in this regard were Fred Foley in the United States and Terence Millin in Britain. Both subsequently became world famous in urological circles for their inventions, Foley for his catheter and Millin for the new operation to remove the prostate by the retropubic route, which he first published in 1945.¹¹³ The standard of good surgical practice was the continued pursuit of better outcomes for the patient, and surgical careers were built within this culture of innovation in surgery.

In the absence of scientific evidence, surgeons, as Harry Marks put it, attempted to overcome "an irreducible uncertainty by accumulating experience".¹¹⁴ In addition, some surgeons went to considerable trouble to seek out personal evidence of the results of other people's surgery as well as their own, and were continually modifying their own surgery in the light of this experience. But personal experience was evidence of a kind, and sometimes it was the best evidence available. After all, it was no consolation to the patient that another surgeon was getting better results with the same operation.

¹¹⁰Earlam and Laidley, *op. cit.*, note 10 above, Earlam, 25 Nov. 1938.

¹¹¹Turnbull's concept of the contingent assemblage of knowledge seems to fit what Earlam was seeing: Turnbull, *op. cit.*, note 90 above, p. 4.

¹¹²Day, *op. cit.*, note 70 above; Foley, *op. cit.*, note 96 above, p. 571.

¹¹³Terence Millin, 'Retropubic prostatectomy: a new extravesical technique', *Lancet*, 1945, *ii*: 693–6.

¹¹⁴Marks, *op. cit.*, note 8 above, p. 299.