FIFTH EDITION

Transurethral Resection

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Preface

Thirty-three years ago, when the first edition of this book was written, throughout Europe nearly all prostates were operated on by one of the open methods. Transurethral resection was rarely performed, regarded with suspicion and carried a considerable morbidity. Since those days everything has changed, and there have been many improvements and refinements in the operation and the investigation and preparation of the patient, while a whole new range of alternative methods of management have been introduced. The senior authors welcome the fresh input of their younger colleague John Reynard, who has already made his reputation at the growing edge of urology. One thing has not changed: transurethral resection is difficult to learn and to teach, and this book is aimed at the newcomers to urology who wish to learn how to do it safely.

John P Blandy
Richard G Notley
John M Reynard

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Chapter 1
History

The ancients, who thought that the bladder was divided by a horizontal septum, knew little about obstruction at its outflow, though Galen must have divided the prostate and bladder neck regularly when performing lateral lithotomy[1]. Oribasius of Pergamum, writing his synopsis at the command of the Emperor Julian in the fourth century AD, proposed to cut through the prostate by a perineal incision in cases of retention of urine where it was impossible to pass a catheter, considering that the risk of fistula after this operation was preferable to death from unrelieved retention. Ambroise Paré seems to have been aware of the entity of bladder neck obstruction, and devised catheters with a sharp cutting cup at the tip with which pieces of the bladder neck could be torn away (Fig. 1.1). Morgagni, Valsalva and Bartholin all wrote on the subject[1–3], but it was John Hunter who demonstrated, in a series of specimens, the progressive effects and complications of prostatic obstruction. One of these was a classic example of obstruction by enlargement of the middle lobe[4] which his brother-in-law Everard Home subsequently published and claimed as his own original observation—plagiary soon denounced by his contemporaries[5] (Fig. 1.2).

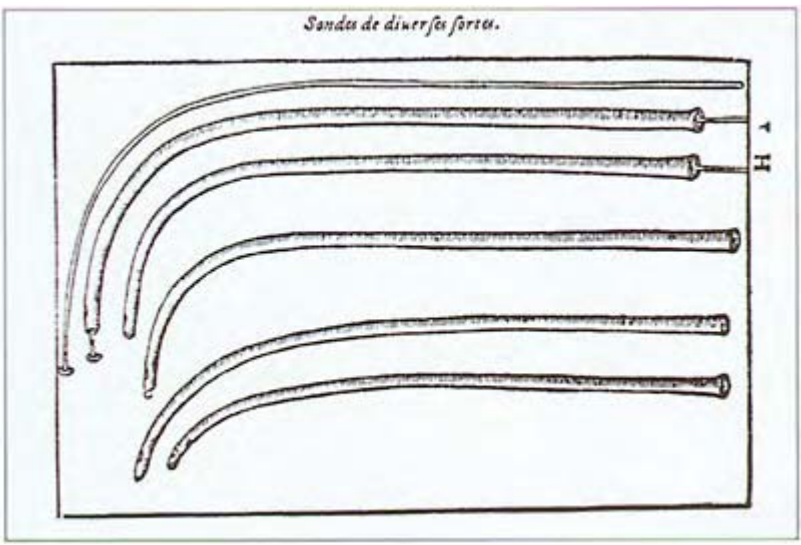

Figure 1.1 *Catheters armed with cups for removing 'carnosities' from the*

urethra and possibly also the bladder neck. Ambroise Paré 1510–1590.

Figure 1.2 *John Hunter's specimen showing a large middle lobe. Courtesy of the Trustees of the Hunterian Museum, the Royal College of Surgeons of England.*

As for treatment, there was only the catheter and men were admitted to hospital to be 'schooled' in how to pass it. Even at the end of the nineteenth century the mortality of catheterization was still as high as 20% in the first 6 months[6].

Probably the first surgeon to attempt an open division of the bladder neck was Sir William Blizard in about 1806 (Fig. 1.3) who described a patient in the London Hospital who lay with an indwelling catheter and subsequently died with an abscess in each lateral lobe of the prostate[5]. Blizard reflected that:

> This person might have been successfully treated by dividing the prostate with a double gorget cutting on both sides introduced in the usual way on a staff into the bladder. It would have relieved the immediate distress, and might have laid the foundation for a cure. This is not a speculative remark. I have several times performed such an operation in cases of disease of the

> prostate gland which I have thought within its scope of relief, with complete success.

Of Blizard's contemporaries, Guthrie (Fig. 1.4) at the Westminster Hospital, with an international reputation for the conservative treatment of limb wounds before and after Waterloo, noted the role of the bladder neck in outflow obstruction:

> No greater error has been committed in surgery than that which supposes the third lobe, as it is called, of the prostate to be the common cause of those difficulties in making water which occur so frequently in elderly people and sometimes in young ones. I do not deny that a portion of the prostate does enlarge and project into the bladder, preventing the flow of urine from it; but I mean to affirm that this evil takes place more frequently, and is more

Figure 1.3 *Sir William Blizard. Courtesy of the President and Council of the Royal College of Surgeons of England.*

Figure 1.4 *Sir George James Guthrie. Courtesy of the President and Council of the Royal College of Surgeons of England.*

> effectually caused by, disease of the neck of the bladder, totally unconnected with the prostate, than by disease of that part[5].

Understanding the nature of the ‘bar at the neck of the bladder’, Guthrie devised a means of dividing it which would be less traumatic than Blizard’s perineal incision. He ordered a sound to be made for him with a concealed knife which could be projected to cut through the ‘bar, dam or stricture’ without injuring the adjacent parts (Fig. 1.5). It is often said that Guthrie had in mind the kind of bladder neck stenosis which may occur

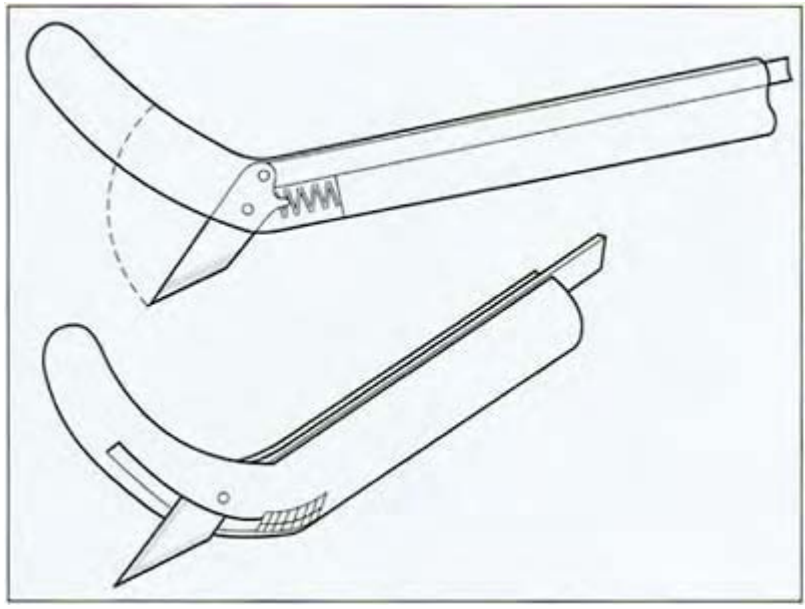

Figure 1.5 *Guthrie's concealed knife, based on his description.*

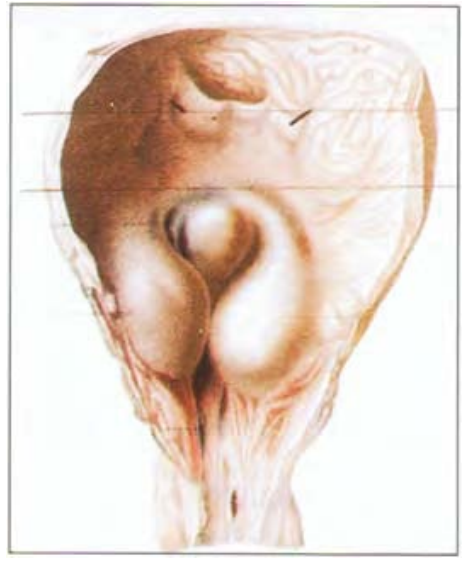

Figure 1.6 *Guthrie's prostate specimen, supplied to him by Goldwyer Andrews of the London Hospital.*

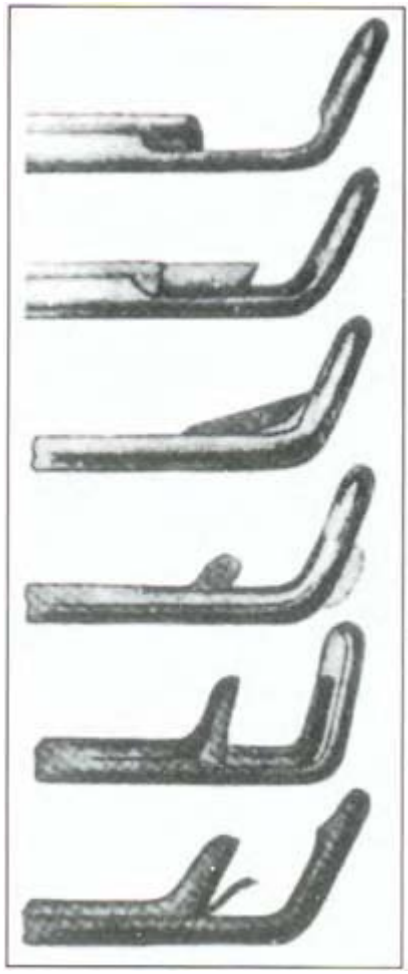

Figure 1.7 *Concealed knives devised by Civiale and Mercier.*

without enlargement of the prostate, but in his illustration (Fig. 1.6) of a specimen lent to him by Goldwyer Andrews, Blizard's colleague and successor at the London Hospital, it is clear that he was thinking of typical middle lobe enlargement, and the concealed knife was intended to cut the ring of bladder muscle that imprisons and traps the adenoma.

Concealed knives similar to that of Guthrie were later devised by Civiale and Mercier[7] (Fig 1.7). Mercier claimed to have done 300 successful operations—a figure doubted by Guyon[8]. Years later, when Hugh Hampton Young devised his punch, he generously gave credit and priority to Mercier[9].

Inevitably any kind of incision or cold punch resection was more or less blind and bloody: to overcome these defects surgery had to wait for the application of electrical

engineering to urology. The first step was taken by Bottini[10], who devised an instrument like a lithotrite whose male blade was heated by direct current to burn a channel through the neck of the bladder (Fig. 1.8). There was no bleeding until the slough came away, but it was still blind, and it was difficult to know exactly which tissues were being burnt. Bottini claimed to have done 57 cases with two deaths and 12 failures[10].

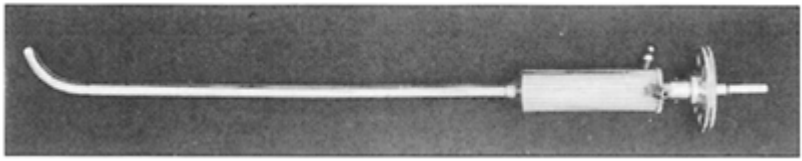

Figure 1.8 *Bottini's instrument for heating the prostate. Courtesy of the Institute of Urology.*

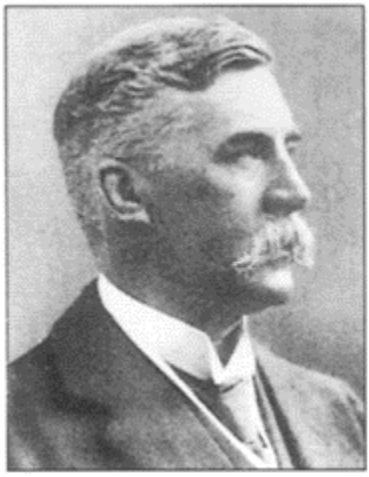

Figure 1.9 *Edwin Hurry Fenwick.*

Bottini's work was taken up by his contemporaries. Fenwick (Fig. 1.9), Chetwood and Wishard all attempted to improve Bottini's instrument, but the results were unimpressive[11–13]. 'No permanent good ever came of it', wrote Reginald Harrison of St Peter's Hospital[14], who preferred to open the bladder or perform urethrotomy so as to be able to dilate the internal meatus with his finger. If the patient was unfit for either of these procedures, then he was to be given a permanent suprapubic tube of the improved pattern then being introduced by Buckston Browne[14].

At the end of the nineteenth century the standard treatment at St Peter's Hospital was still 'catheter schooling', supplemented by vasectomy (since this was believed to lead to testicular atrophy, and in turn to shrinkage of the prostate[6]). Looking back on these years,

Frank Kidd[15] noted that up to 8% of men treated in this way would be dead of uraemia or infection within a month.

It was in this climate that enucleative prostatectomy by the suprapubic or perineal route was introduced[7]. First recorded at St Bartholomew's Hospital in 1884[16] it was independently developed by Goodfellow in Tombstone, Arizona (1885)[17], McGill in Leeds (1887)[18], Mansell-Moullin at the London Hospital (1892)[19], Fuller in New York (1895)[20] and Freyer at St Peter's (1900)[21] (Fig. 1.10). Thanks very largely to Freyer's enthusiasm and energy the transvesical or Freyer operation

Figure 1.10 *Sir Peter Freyer.*

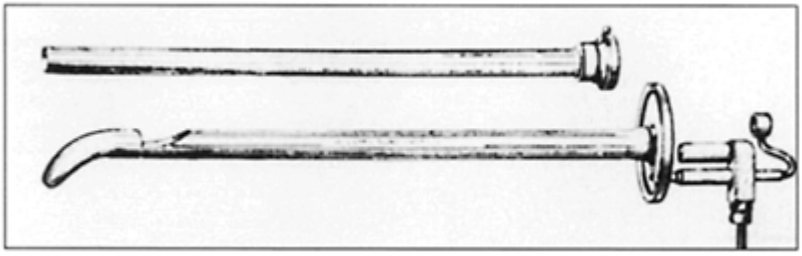

Figure 1.11 *Hugh Hampton Young's punch.*

soon overtook all other forms of treatment, but even the pioneers in the field were concerned that the amount of tissue removed ‘is often so small that it seems ridiculous to have to perform suprapubic operation for its removal’[22].

It was this concern which led Hugh Hampton Young, one of the pioneers of perineal prostatectomy, to look again at Mercier’s concept of using a sharp tubular knife, like a cork-borer (Fig. 1.11). ‘I called my instrument a prostatic excisor and the operation excision. The internes promptly dubbed the instrument ‘the punch’[22]. The first punch was very simple and without any means of haemostasis: this was only possible thanks to the development of diathermy[23].

Soon after the discovery that very high-frequency alternating current did not excite nerve or muscle, the heating effect at the site of contact would be used to cauterize warts on the skin, and by 1910 Beer was using the same current through a cystoscope to cauterize ‘warts’ in the bladder[24]. The electric cystoscope, pioneered in Germany by Nitze, and introduced to the UK by Fenwick, was now in general use, although it had taken Fenwick a decade to overcome the early prejudice against it. Fenwick was once laughed off the rostrum at the Medical Society of London for suggesting that the electric cystoscope was anything more than a gimmick, since every proper surgeon knew that the right way to explore the bladder was with a finger introduced via the perineum[25].

With the early operating cystoscopes and the early spark-gap diathermy machines one could produce a controlled Bottini burn at the neck of the bladder, although it took a series of sittings before a sufficiently large channel could be burned away. This method was developed in New York by Stevens[26] and Bugbee[27], and in France by Luys[7],[28] (Fig. 1.12).

Young’s approach was far more bold: he tried to cut away the tissue, and then stop the bleeding with the diathermy (Fig. 1.13). This combination of the cold punch with diathermy haemostasis was rapidly developed by Young, Braasch, Bumpus and Caulk[29] until by 1930 Caulk reported that he could resect 85% of his cases with the punch, and had only one death in 510 cases[30]. The ‘cold punch’ had arrived. It did, however, have a major

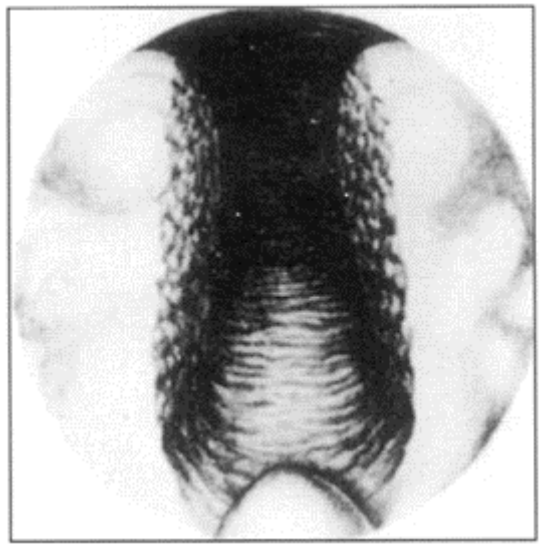

Figure 1.12 *'Forage' of the prostate. From Luys (1935)*[28].

Figure 1.13 *Gershom Thomson's combination diathermy and punch. Courtesy of the Institute of Urology.*