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An Overview of the Principles, the Art and the Philosophy of Functional Reconstruction of the Urinary Tract

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Good, better, best – never let it rest
Till your good is better, and your better best.

John Furphy (1842–1920)
Motto on the traditional Australian
'Furphy Farm Water Cart'

1.1 The Traditional Boundaries of Surgical Disciplines and the Development of Regional Specialities

Personal aptitudes, inclinations and circumstance generally determine the eventual area of a clinician's specialisation. Surgery is naturally attractive to those who are inclined to develop practical skills.

Specialisation was the natural development within the framework of general surgery that gradually took place during the late 1800s and the early 1900s. By the 1920s, this had resulted in three distinct surgical compartments in the pelvis – urological, gynaecological and colorectal.

Some of the boundaries between the traditional areas of specialisation became inappropriate for developing and integrating modern surgery; this is reflected in the evolution of several regional surgical specialities, such as Head and Neck Surgery and the combination of plastic and orthopaedic training to create Hand Surgery. In the pelvis, cross-boundary sub-specialisation has developed between urology and gynaecology. Occasionally, this is expanded into the horizontal speciality pelvic surgery relating to reconstruction or oncology.

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1.2 The Range of Sub-Specialisation Within Urological Surgery

Urology offers a wide range of sub-specialist surgical interests. It is no longer possible for any urologist to achieve in-depth expertise in more than one or two of the specialist fields: paediatric, oncological, reconstructive, transplantation, BPH, endoscopic, robotic; stones, gynaeco-urology, genito-urethral reconstruction, gender surgery, neuro-urology, fertility and andrology and so on: no surgeon can be truly expert in more than one or two of these. Undoubtedly, the standard of patient care in these areas has improved dramatically because of this sub-specialisation.

Thus, reconstructive urology has evolved into a distinct and integrated sub-speciality – it is not just a series of operative procedures.

1.3 Reconstructive Surgery: The Added Dimension Involved in Functional Restoration

The primary consideration of some reconstructive procedures is the restoration of an anatomical structure or the cosmetic improvement of an appearance. However, because every part of the urinary tract has a specific intrinsic function that is individually developed to fulfil an integrated urodynamic role, the primary purpose of almost every reconstructive operation on it is either the preservation of a particular function or its functional restoration or reconstruction.

The problems involved in restoring function add a critical dimension to a reconstruction – often, this greatly increases its surgical complexity. Whilst the preservation of the function of a mechanism that is working normally may be relatively simple, the success of achieving the satisfactory behaviour of one that is impaired or dysfunctional is dependent upon the available extent of the residual functioning mechanism. Thus, by its very nature, the result of a functional reconstruction is much less reliable and predictable than a simple 'anatomical' reconstruction. Indeed, provided this 'works' satisfactorily, its structural features are relatively unimportant in the urinary tract because they are hidden away.

1.3.1 'Structural' Reconstructions That Simply Preserve the Normal Intrinsic Function

The closure of a 'simple' vesico-vaginal fistula (§12.39) and the anastomotic restoration of ureteric continuity (§5.57) are two examples of predominantly 'structural' functional reconstructions for resolving localised defects in an otherwise normally functioning urinary tract. Repairing a 'simple' vesico-vaginal fistula may be technically difficult occasionally, but the expectation of a successful closure should be almost 100% (§12.42). However, some apparently 'simple' fistulae are precipitated by an intrinsic vesico-urethral dysfunction that requires additional functional readjustment (§12.46); thus, the importance of an understanding of function.

1.3.2 'Functional' Reconstructions That Endeavour to Improve an Intrinsic Functional Deficiency

The expectation of a successful result is considerably lower in cases of a reconstructive procedure that endeavours to improve the functional efficiency of an intrinsic mechanism that is impaired or deficient. This is what most of this chapter – and indeed much of this book – is all about. For instance, the longer term success of most of the procedures that are currently used for the resolution of simple stress incontinence is only in the region of 80–85% (§9.17), but even a 10% failure rate leaves a vast number of patients with a significantly impaired quality of life.

1.3.3 Reconstructive Urological Surgery and Gynaeco-urology

Technically, reconstructive urological surgery involves the whole length of the male and the female urinary tract. Because the urological, gynaecological and colorectal systems converge in the relatively confined space of the pelvic cavity, any reconstruction should properly involve appropriately extended cross-boundary training (§1.9). As the function of the female lower urinary tract is so closely interrelated with the position of the genital tract, gynaeco-urological surgery involves appropriate repositioning of the vagina (§10.11) and its reconstruction (§10.28).

Some urological surgeons confine their involvement to the functional reconstruction of the urinary tract entirely to the part females do not have – the sub-sphincteric anterior urethra of the male and the penis (§1.8). This is a distinct sub-speciality requiring separate consideration in another volume.

1.4 Objective Urodynamic Evaluation – The Key to the Success of Functional Reconstruction of the Urinary Tract

As neither the normality nor abnormality of urinary tract function can be reliably identified by the examination of a patient's medical history, which records their symptoms

and detailed clinical examinations (§8.6 and 8.8), the success of a functional reconstruction is dependent upon accurate and objective preoperative urodynamic evaluation.

The appropriate extent of a urodynamic evaluation is determined by the complexity of the problem (§8.3). Detailed video-pressure-flow examination is sometimes required, but the objective verification of a clinical impression by relatively simple urodynamic procedures is often sufficient. The simplest objective measurement is the frequency volume chart (FVC) chart – occasionally, this is sufficient to remove the need for further urodynamic evaluation (§8.12).

Appropriate objective urodynamic verification of the functional result of reconstruction is generally essential because the simple improvement of the symptoms can be seriously misleading (§9.33). In some cases, this surveillance needs to be continued in the long term (§9.106). Complex functional reconstructions are rarely 'fit and forget' procedures.

1.5 Surgical Understanding of Urinary Tract Function and Dysfunction

The reliability of a complex functional reconstruction depends upon the surgeon's understanding of the normal urodynamic function that needs to be preserved – and of the dysfunction that needs to be resolved.

A fundamental understanding of the functional mechanisms – how they can be restored and why some procedures work better than others – can only be achieved by personal experience, using video-urodynamics (§8.25) as the ultimate urodynamic monitor. For the evaluation of complex problems, there is no valid substitute for this (video = I see and non-video = I do not see).

Thus, for the appropriate evaluation of difficult problems, reconstructive urologists must conduct their own video-urodynamic evaluations.

1.6 The Emergence of Functional Reconstruction From Anatomically Based Urological Surgery

Key markers in the evolution of our understanding of bladder behaviour were Barrington's [1] pioneering neurophysiological animal studies using smoked drum recordings in the 1920s and Von Garrelts' [2] electronic measurements of pressures and flows in clinical practice during the 1950s (§14.3). With the development of video-urodynamics in the 1960s (§8.25), modern functionally based urinary tract reconstruction emerged after many years of anatomically based surgery. However, the progress of this was gradual because, throughout the 1970s and even into the early 1980s, discussion of the functional aspects of urological procedures at urological meetings was an uphill task: many good urological colleagues found 'urodynamics' distinctly disenchanting. Thus, objectively monitored functional reconstruction of the urinary tract is a relatively young surgical speciality – in many respects, it is little more than 50 years old [3]. Some of the historical aspects of the emergence of this are outlined in Chapter 14.

Appropriate 'functional' reconstructions are often successful in the long term, thus saving the considerable costs associated with long-term incontinence (personal and economic). However, these procedures are often lengthy and complex, so they are not always highly regarded in the context of modern hospital management assessment systems, focused on maximising theatre usage, minimising inpatient stay and short-term financial considerations rather than the long-term success for the patient (§1.17).

1.7 'Right Ways' and Less Good Ways – 'Right Reasoning' and Wrong Reasoning

Thankfully the 'dinosaur concept' that there are only two ways of doing things – 'my way and the wrong way' – is all but extinct. In practice, there are usually several 'reasonably right' ways of doing most things – but many more that are overtly less good. It is important to recognise that some operations work well in the hands of a few surgeons but less well in those of others; however, this does not necessarily mean that these operations are not 'good ones' (§15.9).

1.7.1 Right Reasoning and Wrong Reasoning

There is still a great deal that we do not know – and some treatments and operations may 'work' for reasons other than the accepted explanation for them.

If it is not clear how a successful procedure 'works' it is generally best to keep an 'open mind' on the reason for this – an erroneous explanation can close the mind, and continued success with it may convince one that the reasoning is right when it is not – thus compromising further thought relating to the improvement of treatment [3]. For instance, many stress incontinence operations were conceptually directed at the elevation or support of the 'bladder neck', but the critical 'stress continence' mechanism is generally the intrinsic sphincter mechanism of the mid-urethra. Not only is the bladder-neck mechanism often incompetent in women who are normally continent (§7.5), but it is also incompetent in many patients whose sphincteric continence has been effectively restored at mid-urethral level – achieved 'indirectly' by surgical suspensions conceptually focused on the bladder neck (§9.17) [4].

1.7.2 'Old' Operations and 'New' Operations

Many reconstructive and retrieval procedures have been changed considering advances that have stemmed from objective urodynamic evaluation and sub-specialisation in functional reconstruction (§8.1). We have included the operative details of several procedures, both 'new' and 'old', when these are not readily available elsewhere (such as §9.55; §9.104; §15.9), those that are to be found in standard texts are simply illustrated in outline for comparative discussion.

1.8 The Relative Complexities of Functional Reconstructions of the Upper and Lower Urinary Tract

The surgical complexity of the function and dysfunction of the lower urinary tract is considerably greater than that of the upper tract.

1.8.1 Reconstructive Restoration of the Upper Urinary Tract Function

The functional activity of the renal pelvis and the ureters is intrinsically automatic (§5.1); thus, the functional outcome of most upper tract reconstructions is relatively predictable. CT urography is commonly sufficient for the preoperative evaluation of the ureteric drainage and for the postoperative verification of the subsequent efficiency of this, in some situations this is combined with nuclear medicine static reneography.

1.8.2 Reconstructive Restoration of the Female Lower Urinary Tract Function

The surgical complexities of the various inter-related vesico-urethro-vaginal dysfunctions and their resolution are such that four chapters – 7–, 8, 9 and 11 – are primarily devoted to these, together with much of Chapters 12 and 13. However, Chapters 2–6 are 'uni-gender' – they relate to the principles, procedures and techniques of reconstructive surgery common to the reconstruction of the urinary tract of both males and females.

1.8.3 Reconstructive Restoration of the Male Lower Urinary Tract Function

Male vesico-sphincteric dysfunction and prostatic abnormalities are the focus of different surgical interests, and their consideration requires a separate volume. The primary function of the 'additional length' of the sub-sphincteric bulbo-penile urethra of the male that females do not have is procreative – the conversion of the sustained emission from the seminal vesicles into intermittent forceful ejaculation. Some colleagues confine their involvement in urinary tract reconstruction to the urethra exclusively.

The principles of urodynamic evaluation of the lower tract of males and females are the same. However, the relative importance of the individual investigative procedures is often significantly different, so they are somewhat difficult to discuss together in a uni-gender context. For instance, uroflowmetry is essential for evaluating and monitoring the high resistance elevated-pressure outlet obstruction of males. However, its value in assessing females' low-pressure 'relative outlet obstruction' is often minimal and confined mainly to screening detection of the minor sub-clinical degrees of this (§7.55; §8.16).

1.9 Sub-specialist Training and Functional Reconstruction of the Female Lower Urinary Tract – Gynaeco-urology and Uro-gynaecology

1.9.1 Uro-gynaecology

Uro-gynaecologists are predominately female genital tract surgeons who have acquired an additional training in the urodynamic aspects of the associated urinary incontinence problems.

1.9.2 Female Urology (What This Book Is All About)

Urologists who subspecialise in female urology are urinary tract surgeons with a particular experience in female urodynamic evaluation and functional reconstruction of the female lower urinary tract – they should also have a personal experience with relevant gynaecological surgical procedures (§1.10).

1.9.3 Pelvic Surgery

Complex pan-pelvic problems – such as those resulting from irradiation, external injuries and extensive tumour resections – are best resolved by pelvic surgeons working in in multidisciplinary fashion including those with urological, colo-rectal and gynaecological expertise (§12.90) and in some cases plastic surgeons for harvesting muscular interpositional flaps or reconstruct the external genitalia (§1.3; 10.38). Such properly co-ordinated 'committee surgery' can be reliably successful when like-minded surgeons with complementary specialist training form an effective team in a referral centre (§1.17).

1.10 The 'Right' Surgeon for the 'Right' Job

The technical complexity of lower urinary tract procedures, which aim to restore function, varies greatly – from the simple adjustment of the urethral closure pressure by the passage of appropriately sized recalibrating dilators for the restoration of efficient voiding to avoid self-catheterisation (§1.14; §7.61), to complex reconstructive sphincteroplasty (§9.89).

Whether a woman initially consults a urologist or a gynaecologist about her incontinence is often a matter of chance – both see a very similar case mix of such patients. Whilst they consider this from the vantage point of different surgical training, with only a marginal overlap, there is general agreement on the principles of its treatment. The practical options are outlined in Chapters 7 and 9.

1.10.1 Who Are the 'Right' Surgeons to Treat Stress Incontinence?

Neither a gynaecologist nor a urologist is 'better qualified' to treat stress incontinence by virtue of their general training in either of these disciplines alone because, generally, both are somewhat limited in this respect. Discerning patients naturally prefer to consult a surgeon who has developed a particular interest in the potentially complicated urodynamic aspects of their speciality that relate to urine leakage and its resolution.

1.10.2 Who Are the 'Right' Surgeons for the Repair of Vaginal Fistulae?

Similar considerations apply to the repair of urinary vaginal fistulae. Some vesico-vaginal fistulae are best repaired vaginally, others by an abdominal approach (§12.51); however, additional surgical training and experience are required for the resolution of those that are more complex. Naturally, urological surgeons repair both vesico-vaginal and uretero-vaginal fistulae but reconstruction of the sphincteric deficiencies that are inherent in urethro-vaginal fistulae (§12.77) are best resolved by those who have an additional specialist experience of urethral reconstruction. The resolution of some complex pelvic fistulae – particularly those that result from severe irradiation – are best resolved by more extensively trained pelvic surgeons conversant with the use of tissue interposition, ureteric reimplantation and bladder reconstruction (§12.81).

The repair of 'simple' vesico-vaginal fistulae involves little more than the relatively simple structural reconstruction of a 'water-tight' bladder wall: for these, the acceptable failure rate is near zero (§12.39). However, some 'simple' fistulae are associated with an underlying bladder dysfunction that requires a definitive functional variation (§12.45; §12.48).

1.10.3 Who Are the 'Right' Surgeons to Treat 'Complex' Lower Urinary Tract Disorders?

Whilst many of the procedures required for restoring urinary tract function are relatively simple general urological or uro-gynaecological operations, the complexity of some of these problems should not be underestimated.

The surgical training of a urologist subspecialising in female urology and a uro-gynaecologist are different – each must be aware of their own strengths and limitations – and have a practical appreciation of the skills of the other. True cross-boundary surgical training is most valuable, but it is both time consuming and difficult to obtain; indeed, in some countries, there is always pressure to further foreshorten the length of training programmes. A simple, practical solution that has emerged in some centres are joint clinics by uro-gynaecologists and urologists for appropriately selected patients (§9.66). These are widely used and have proved very successful – they avert the extrapolation of inexperienced surgical endeavours that are a source of complications and generate inappropriate inter-speciality distrust.

1.10.4 The Needs of the Future

There is clearly a need to broaden and improve the training of surgeons who undertake the functional reconstruction of the female lower urinary tract – we hope this volume will contribute to both urological and gynaecological understanding of the extent of this subject. It was, in fact, an awareness of such shortcomings in this respect that originally stimulated our creation of the urodynamic 'cine clinic' in the radiology department at the Middlesex Hospital in the early 1960s [5] (§14.3).

1.11 The TITBAPIT – 'Take It to Bits and Put It Together' Principle of Reconstructive Surgery

Many surgeons feel uncomfortable if they cannot determine the procedure they will use before they start an operation. However, the success of complex reconstructive surgery is often dependent upon the surgeon's ability to adopt or adapt or even, on occasion, improvise procedures according to unpredictable findings during the operation. Indeed, predetermining the procedure is unwise or impossible in many of these cases.

To emphasise the importance of this principle, we sometimes describe a procedure as a 'TITBAPIT' ('take it to bits and put it together') operation (§12.52) when teaching our trainees.

1.12 Tissue Healing – The Critical Factor in All Surgical Reconstructions

There is much truth and appropriate humility in the apocryphal statement of Ambrose Paré 'I did the operations, but God healed the wounds'. This was particularly apt in times past when sepsis was the primary cause of disastrous postoperative complications.

1.12.1 Prophylactic Antibiotics

The local tissue resistance to infection is relatively low immediately after a reconstruction, particularly when this is extensive – routine broad-spectrum prophylactic antibiotic cover that is continued for an appropriate period is strongly advocated. If this is postponed until the organism and its sensitivities have been identified, the infection can dissolve the suture lines – this is generally disastrous after a complex reconstruction.

1.12.2 Tissue Interposition

A major factor in the uncomplicated healing of reconstructive procedures primarily depends upon the surgical technique's quality – the atraumatic handling of living tissues, the preservation of their blood supply and their gentle and effective co-aptation (§2.49). However, the most significant individual milestone in reconstructive urinary tract surgery was the principle of interposing a flap of well-vascularised tissue between less-than-satisfactory suture-line closures to support their healing and minimise the incidence of fistulation.

An early example of this principle was the Martius labial fat flap to support vaginal closures of vesico-vaginal fistulae (§9.102). However, by far the most important development was the interposition of a mobilised flap of omentum (§4.1) – properly used, the unique healing potential of this highly specialised tissue can virtually ensure the closure of a complex fistula (§12.41; §12.83) and the uncomplicated healing of many other major reconstructions in the pelvis. Furthermore, the persisting suppleness of the omentum has a special urodynamic value when used as a wrap to preserve the normal functional movements of a urinary tract reconstruction – (§5.56; §13.87). Omental transposition is equally valuable for the support of complex reconstructive chest-wall and intra-thoracic reconstructions [6] and others further afield (§4.34).

1.13 Achieving the Maximum Potential of Functional Reconstruction – Often 'Nothing Ventured Is Nothing Gained' – And the Principle of Facilitating a Retrieval Procedure

The art of functional reconstructive surgery is more a matter of overcoming difficult problems than simply avoiding them – often, 'nothing ventured is nothing gained'. To meet difficult situations, a reconstructive urological surgeon needs to think strategically and have in reserve several procedure options that are likely to be successful.

Failure to 'raise the sights' of functional reconstructive endeavours high enough naturally deprives some patients of the chance to benefit from them. A common example of this is failure to undertake the resolution of complex post-irradiation fistula problems or to refer them for this (§12.83).

1.13.1 The Principle of Facilitating a 'Retreat' Procedure

Having decided to undertake a somewhat ambitious functional reconstructive procedure to resolve a complex problem, the question in the mind of the surgeon should be, 'What shall we do if the result is not satisfactory?'. It is sometimes possible to arrange things during an operation in such a way that surgical revision to another option is facilitated if this becomes necessary: an extrapolation of the traditional 'fallback' principle of military endeavours – a definitive 'Plan-B' that is not just a simple repetition of 'Plan-A' (§9.72). Practical examples of such a pre-planned retrieval procedure are the 'EPIC' extra-peritoneal ileal conduit diversion of urine that greatly facilitates a subsequent undiversion (§13.16) and the 'three-option' uretero-sigmoidostomy that significantly simplifies the revision of this to separate the urinary and faecal streams in the event of need – using the only remaining anal sphincter mechanism to control one or the other (§13.131). Of course, careful preoperative patient counselling as to the possible eventualities is paramount.

1.14 Good Practice, Humility and Patient Referral

Good medical practice should be based on the principle that as soon as it is apparent that a patient is not getting better in response to one's treatment, then one should ask oneself whether another opinion on the problem could help [7]. A readiness to share problems with peers and refer patients

to appropriate specialists should be regarded as a strength of clinical practice rather than a weakness.

This principle is equally relevant to surgical practice – or even more so. Any operative procedure that fails – however well-intentioned and well-performed – is not only a major disappointment and inconvenience for the patient but is likely to complicate a subsequent 'retrievoplasty'. Thus, an appropriate degree of humility is fundamental to good surgical practice – surgeons must be advised that 'having an occasional go' at a potentially complex reconstructive procedure cannot be in the best interest of trusting patients.

Thus, before undertaking a complex operation, especially a retrieval procedure, surgeons should ask themselves two questions: 'Do I have the appropriate training and experience to ensure the best possible result?' and 'If my family or I had this patient's problem would I choose myself to do the operation?'

1.15 Tertiary Referral Centres of Special Experience

An integrated specialist referral centre is staffed by like-minded specialist surgeons and physicians with complementary specialist experience who combine to form a team that provides the best available care for patients with complex or relatively unusual conditions. These are appropriately referred to as 'specialist centres' – they should not be promoted as 'centres of excellence' because this is a potentially provocative and personally denigratory term since it implies that those who do not work in them are not as 'excellent' as those who do – and this is often questionable!

The need for and importance of specialist hospitals that provide tertiary referral facilities became apparent more than 100 years ago when general physicians and general surgeons began to develop specialist interests that required special facilities. In London, the forerunners of such referral centres were the specialist hospitals – Moorfields for ophthalmology, Queen's Square for Neurology, Great Ormond Street for children, the Royal Brompton Cardio-Thoracic Hospital and others. Many specialist hospitals were created elsewhere, such as the Cancer Hospital in Glasgow, the Christie Hospital in Manchester and the Children's Hospital in Edinburgh. In North America, the Mayo and Lahey were pioneers of this principle.

Sub-specialist urology in the UK was pioneered at the London University Institute of Urology St Peter's, St Paul's and St Philip's hospitals. In the 1960s, this small group was staffed by 10–12 consultant urological surgeons, some of whom were themselves in charge of the general urological departments of other London Teaching Hospitals. However, at the '3 Ps', each surgeon specialised in a particular area, working with nephrological physicians, specialising radiologists and pathologists. The development of a national urological service of international quality is clearly dependent upon establishing an appropriate number of such tertiary referral centres in every country. *These specialist centres are vital to the training of the sub-specialising surgeons of the future.*

1.16 The Practicalities and the Logistics of Specialisation in Functional Urological Surgery

To achieve real in-depth expertise in reconstruction – and to do this as well as it can be done – broadly trained urological surgeons must relinquish their interest in other aspects that they are both well trained to do and often enjoy. Specialisation in the functional reconstruction of the urinary tract involves a one-to-one surgeon/patient relationship that is often ongoing – demanding undivided surgical attention.

1.16.1 The Time Factor

Reconstructive surgery is a time-consuming speciality. Some of the operations take many hours, sometimes the whole of both a morning and an afternoon operating session. Complex reconstructive procedures should never be hurried. Furthermore, a great deal of a reconstructive surgeon's time is involved in personal attention to the preoperative urodynamic evaluation (§8.31), careful and often extensive preoperative counselling of patients, often undertaken with the help of specialist nursing colleagues (§1.19), and their postoperative urodynamic follow-up which is sometimes mandatory in the long term (§9.106).

1.16.2 The Importance of a 'Protected' Working Environment

To specialise exclusively in reconstruction and thus use their extended sub-specialist training effectively, reconstructive urological surgeons need to work in a 'protected environment' – in association with colleagues who are involved in the sub-specialist care of patients in other urological fields, cancer, stones, emergencies and so on.

Reconstructive procedures have a relatively low priority in a busy urological service unit, particularly in the era of national targets in the care of cancer patients and resource limitations. Many urologists who were originally inclined to sub-specialise in this have found themselves unable to

do so because, in practice, a urological department needs to have at least five urological consultants to enable the work of a specialising reconstructive surgeon to be effectively 'ring fenced' and protected from routine urological priority service duties. In current practice, relatively little reconstructive surgery gets done in urological units that do not support an exclusively specialising reconstructive colleague and such work is usually in undertaken in regional tertiary centres.

1.17 The Specialising Reconstructive Urological Team – Video-Urodynamic Evaluation Anaesthesiological Expertise and Appropriate Instrumentation

The essential facility required to resolve complex dysfunctional urinary tract problems is the availability of sophisticated video-urodynamic equipment and the specialist support staff necessary for preoperative and postoperative evaluation (§8.25).

In the operating room itself, the expertise of anaesthesiological colleagues is a particularly important relationship – especially for major and prolonged pelvic surgical procedures (§2.34). 'Tension' is alien to reconstructive surgery – the ambience during these operations should be relaxed but sharp.

Relatively few instruments are required for reconstructive urology (§15.2) – however, the design of these is critical and often personal to the surgeon. Some personal preferences are discussed in Chapter 2 – some are not available in every hospital but are easily obtainable and relatively inexpensive (§2.97). The sensation of using appropriately designed surgical instruments is that of a simple extension of one's fingers – one just seems to watch them do the work without struggling to manipulate them.

Sutures with needles of appropriate dimensions can be critical for some reconstructive procedures (§2.25). Some of these are unavailable in all hospitals, so we carry a small selection when we operate on a visiting basis.

Appropriate self-retaining retractors avoid the need to 'misuse' surgical assistants as static retractors (§3.16). Assisting at surgery enables trainees to see, feel and learn, but when not teaching, many plastic and reconstructive surgeons prefer to operate solo with their surgical assistants. Reconstructive surgeons rarely allow an assistant 'to open and to close' their operations because these are generally critical and integral parts of the procedure that they prefer to do themselves – the quality of a scar may or may not reflect the quality of the surgery beneath it (§12.74).

Provided appropriate video-urodynamic facilities and understanding are locally available (§8.25), reconstructive urology is one of the few surgical specialities in which it is possible for a visiting surgeon to contribute critical sub-specialist help for a colleague in the operating room – combining this with postgraduate teaching and training. Because the healing of a urinary tract reconstruction is generally protected by simple catheter drainage (§2.55; §5.5) and its functional progress can be simply monitored by appropriate catheter management (§9.106), the early postoperative course of these operations is generally relatively straightforward and uncomplicated.

1.18 The Pitfall of 'Unrealistic Patient Expectations' – And the Importance of Meaningful Patient Communication

The results of surgical reconstructions that endeavour to restore function are much less reliable and less predictable than those simply designed to restore anatomical structure (§1.3). It is most important that patients should have some basic understanding of this fact.

In reconstructive urology, a low level of patient satisfaction is commonly the result of allowing patients to have unrealistically high hopes and expectations of the functional results of their surgery (§9.17). This sometimes reflects a lack of urodynamic insight on the part of the surgeon – or their failure to communicate it – but it is sometimes due to the reluctance, or even the refusal, of the patient to accept the reality of the relatively unpredictable nature of functional procedures, despite very careful explanation.

The results of routine surgical procedures for stress incontinence, for instance, are by no means as good as we would like them to be – in reality, an 80% success rate in the longer terms means a 20% failure rate although, hope-fully, there is some intervening incidence of 'betterment'. To minimise patients' disappointment when their stress incontinence procedure fails to restore acceptable continence, it is important that they understand the limitations of the functional reconstruction offered in an endeavour to help them. There is an added 'psychological dimension' to the difficulty of retrieval incontinence surgery when inadequately forewarned patients are not only wet but indignant about the failure (as they see it) of their surgery – and demoralised by their 'unexpected' predicament.

The higher the quoted success rate of an operation, the greater the patient's assumption that their result will be satisfactory – thus, before embarking on it, they need to accept that they may be one of the failures and to consider what

this will involve. Patient communication is the essence of good practice – every surgeon needs to develop their own way of conveying this: an example of our own preferred approach is outlined in §9.70.

Many patients find that a 'thumb nail' diagram of the proposed procedure by the surgeon is easier to understand than spoken or written words (§15.12). The preservation of such diagrams in the patient's records can be valuable evidence of the adequacy of the 'consent/request communication' if the patient needs to be reminded of this – or if it is challenged medico-legally.

1.18.1 Meaningful Patient Communication

An example of the need for simple, accurate and logical patient communication relates to a 'lithological physician's anti-calculogenic treatment of a stone-forming patient'. An instruction 'to increase the fluid intake' is often somewhat vague, and sometimes a specific daily volume is prescribed without relating this to variations of the insensible fluid loss due to changes in the environmental temperature and humidity. The clearest instruction to such patients is a simple explanation of 'dcolourimetric self-monitoring' – routine observation of the colour of their urine. Thus: '*Stone crystals form in concentrated urine – because concentrated urine is yellow, it is dangerous for you to pass yellow urine at any time during the day or the night – if you do, then you have not drunk enough during the previous 3–4 hours*' [8]. Thus informed, patients can clearly see that, in addition to the variations of the intake that their environment requires to achieve this during the day, they need to drink 500 ml or so before they go to bed to overcome the normal diurnal diminution of the nocturnal renal output – and another 500 ml (more in hot weather) when they wake to void this during the night.

1.19 Should Patients 'Consent' to a Procedure – Or Should They 'Request' It?

It is questionable whether the concept of obtaining the 'consent' of a patient to an operation is an appropriate attitude to surgical treatment. After surgeons have carefully and fully explained the procedure that they can offer in an endeavour to help them – and the patient has expressed their wish for this – it does not seem right to ask them to sign their *consent* to *allow* it to be done *to* them (§9.70); it seems more appropriate that they should *request* the surgeon to do it *for* them. From the patient's point of view, there is more than a subtle distinction in this 'rational terminological reality'.

Naturally, the emphasis must be upon the explanation to the patient of the procedure on offer; the hoped-for result; the potential risks; the complications; and the alternative options – the question is how this communication be recorded. In the socialised healthcare system in the UK and some other countries, there is a mandatory requirement for patients to sign their agreement that the proposed procedure has been explained to them. However, there would appear to be a considerable advantage for all concerned – and no reasonable objection – if 'consent to operation' forms were replaced by 'request for operation' forms. The need to obtain formal 'consent' to an autopsy is an entirely different matter.

1.20 Glossary, Eponyms and Acronyms – The Value of Words

1.20.1 'The Importance of Effective Communication in Medicine'

In science and medicine, words are intended to convey meaning as accurately as possible – unlike 'jargon', which is widely used in management, politics and the media to obfuscate an issue intentionally. Innovative procedures and concepts may require the introduction of new and appropriate words or descriptions, but accurate terminology should not degenerate into a semantic exercise.

Words initially used to define a specific situation often must be changed to clarify the meaning. Thus, 'hydrodynamics' naturally became 'urodynamics'. Paul Hodgkinson initially used the term 'dyssynergia' to emphasise the significance of uninhibited detrusor contractions in the surgical management of stress incontinence [9], but the word was inappropriate for this (§8.21). Frank Hinman more meaningfully described this dysfunctional detrusor behaviour as a 'non-neurogenic neurogenic bladder' [10] until the conveniently short terms 'unstable' and 'overactive' were generally adopted (but these two are not precisely synonymous) (§14.8).

The concept of dyssynergic dysfunction of the bladder-neck sphincter was initially described as 'dyskinetic' [5], but shortly after that, we changed this to dyssynergic because this better described the dysfunction of the normal synergistic (symbiotically moving together) detrusor/sphincteric behaviour [11, 12] (§7.34).

However, there are many examples in medicine of words that were used to describe a particular pathology, dysfunction or operation subsequently being used somewhat differently – thus distorting their original meaning. The literature is littered with instances of endeavours to retrieve or redefine the original meaning of words, but, in practice,

once the 'ball has gone loose', it is generally irretrievable – a new term is necessary to redefine the particular.

1.20.2 Eponyms

Eponyms do not accurately identify a procedure. Few surgeons seem to have read the original descriptions of the Burch [13] or Marshal Marchetti and Kranz (MMK) [14] operative procedures – this is reflected in the many variations of the operations that masquerade under these titles (§9.52; §9.49).

1.20.3 Acronyms

Acronyms are the most widely used descriptions in medicine – they accumulate daily to the point at which the same acronym is used in different contexts to mean other things. The advantage of an acronym is that it can condense an accurately descriptive title; when appropriate, this can be progressively changed or augmented with the development of a procedure.

The traditional IVP was not just a 'renal pyelogram' it was an intravenous urogram (IVU) (§8.18) – and incidentally, the contrast used for this is colourless – it is not a 'dye'. The urodynamic upgrade of the IVU to include a uroflow record of the voiding – the intravenous urodynamogram (IVUD) [15] – was soon superseded by the evolution of ultrasound in combination with uroflowmetry to create the currently routine ultrasound cystodynamogram (USCD) [16]. This procedure is now routinely used by almost every urologist – but many less accurately descriptive terms are used for it.

An acronym can avoid misinterpretations resulting from the over-shortening of the title of a procedure. Thus, the original 'Psoas hitch' description of the operation was technically correct but incomplete [17] (§5.39). It was widely misconstrued as 'dragging the bladder up under tension'; consequently, it was misconceived as susceptible to distraction of the ureteric implantation (which is, in fact, most unusual). In all subsequent publications, we used the acronym BEPH (bladder elongation psoas hitch) to describe the procedure more accurately. If this had been used initially, the popularity of the Boari procedure might have waned somewhat earlier (§5.41).

There is nothing original about ECDULGA. This acronym was introduced to encapsulate the 'endoscopic cysto-distension under light general anaesthesia' procedure that is valuable for the identification and the exclusion of interstitial cystitis [18] – thus not only simplifying reference to it but also ensuring that the important component elements are clearly defined (§7.65). Time determines whether the suggestion of an acronym of an extended description, such as the 'PIBU' pedicled island-bladder ureteroplasty (§5.66) or the 'EPIC' extra-peritoneal ileal conduit procedures (§13.16) will be accepted or supplanted.

This discussion of some of the terminological exactitudes and inexactitudes used in reconstructive urology is lighthearted, but these are important to meaningful and clear communication. They also relate to several other expressions we have used in this book because they 'seem to mean what we mean them to mean'.

1.21 'Guidance Lines' – The Use and the Abuse of 'Guidelines' and 'Evidence-based Medicine' – The 'Best Obtainable Practice' or the 'Best Affordable Practice'?

'Guidelines' are pervasive – and they mean a lot of different things to a lot of different people.

When writing 'guidelines', it is important to state their particular purpose clearly and for whom they are intended, in addition to the declaration of the issuing authority and the quality of their database. It is fundamental to recognise that it is impossible to legislate for good clinical practice – unthinkingly following guidelines without appropriate 'clinical thinking and interpretation' can result in substandard practice and potential disasters. Nevertheless, evidence-based guidelines are essential to the effective management of clinical conditions. Unfortunately, in many areas of reconstructive urology there is insufficient evidence to support the formulation of such guidelines. The most up-to-date and comprehensive evidence-based guidelines are those provided annually by the European Association of Urology, freely available online.

1.21.1 What Is the Purpose of 'Guidelines' and Would Some Be Better Called 'Guidance Lines'?

One of the appropriate uses of 'guidelines' is to help those who are relatively inexperienced with the interim management of patients for whom they are temporarily responsible – until an experienced colleague or a specialist can see them: another of its values is to update clinicians who are not, themselves, directly involved in the updating process. On the other hand, many of the functional reconstructive procedures that are undertaken in specialist referral centres are individually tailored and are way beyond the scope of simple 'guidelines', which are only appropriate for the analysis of relatively large numbers of 'stereotyped treatments' of comparatively 'stereotyped conditions'.

'Guidelines' are open to misuse and abuse – they are not protocols, so they should not be regarded as 'rigid railroads' of practice. Inappropriately imposed, they can compromise

the treatment of patients by experienced specialists who may know as much, or perhaps more, about the subject than those who wrote them. In particular, 'guidelines' should not be used as managerial or medico-legal edicts to direct or to restrict the treatment of patients by specialising clinical surgeons – neither should they be used to impose 'nice' financially affordable constraints upon prescriptions or clinical practice under the thinly veiled guise of 'best practice' or 'evidence-based' procedures.

1.21.2 Evidence-based Medicine and 'Best Practice'

In the supposedly 'pure' world of 'evidence-based medicine', it is considered unjustifiable to use any treatment unless its effectiveness is supported by positive statistical evidence based on controlled clinical trials. In scientific principle, this may be reasonable in some respects – however, in clinical practice, an appropriate degree of humility is required to recognise the fact that there is a great deal that we do not know – and that many treatments work for reasons other than the accepted explanation for them (§1.7). Like 'guidelines', 'evidence-based medicine' can also be misused to impose financially affordable constraints.

There is no such thing as 'best practice' – just 'better practice for the time being'. There is a nice distinction between the 'best affordable practice' and the 'best obtainable practice' – they should be clearly differentiated.