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The management of hypospadias: its relevance to surgical training in the principles and practice of plastic surgery*

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The practice of specialist medicine demands expertise not only in the therapeutic manoeuvres routine to the discipline but also in analysis of the clinical problems encompassed by the speciality. Training aims to educate in the widest sense, achieving the competence in both which, practised with compassion, is the hallmark of a clinician.

Following diagnosis, the need for medical intervention may be a difficult decision. If necessary, treatment should be carried out efficaciously: its intention, likely effects and possible complications should be clear. Surgery should be of meticulous design and be executed without undue risk to the patient. Follow-up may be brief or otherwise but should be sufficient to maintain the benefits of therapy and allow critical analysis of the treatment. The latter is essential not only to the well-being of the individual patient but also to that of those who follow, whether confined to the clinician's own practice or in the wider sphere which follows dissemination of experience by teaching and writing.

In practice the pursuit of such ideals is not easy, particularly in respect of those ailments for which treatment is complicated and not entirely satisfactory. Reappraisal of the philosophy of management of such conditions by successive generations is not only necessary to progress but also essential to the training of a new generation of specialists.

The anatomical defect of hypospadias is clearly defined and diagnosis is usually evident. While complete failure of ventral fusion of the prepuce is a constant feature, the degree of chordee and meatal retroposition are both variable, giving rise to a spectrum of severity of this condition. Not many patients have an absolute indication for surgery: all can pass urine and few will be incapable of procreation, though the exact degree of chordee or meatal retroposition which prevents the latter is not known. The physical and psychological disabilities of severe chordee and a perineal meatus are undeniable, but the benefits of surgery are less concrete in the milder degrees of the condition which are more commonly seen. Little is known of the socio-sexual problems in adolescence and early adulthood of either treated or untreated patients; that both are capable of stable relationships with the opposite sex and of fathering children is certain. For guidance the clinician has only his personal conception of these problems. The intention of surgery is to create a normal looking penis which functions normally. Unfortunately surgery is only capable of limited anatomical rearrangement and frequently falls short of the aesthetic and physiological objectives of the discerning surgeon. Under these circumstances, the possibility of complications and of multiple corrective procedures, with their attendant psychological trauma, are very real considerations. It is easily forgotten that surgery is optional for most of these patients.

Chordee is the first target of surgical correction. The diagnosis of chordee and an estimate of its severity are made by observation of natural erection and/or simulated erection under anaesthesia. Although widely used without reported complication, the injection of saline into the corpora cavernosa (Horton's test) is not universally acceptable. Some surgeons are concerned by the unphysiological and possibly harmful nature of the manoeuvre. Performed without control of the injection pressure, it bears an uncertain relationship to natural erection. It has been suggested that correction of chordee is always necessary to avoid restriction of growth in length of the penis. Others feel that correction of lesser degrees is unnecessary. Correction by a single releasing incision is practised by some: others advocate a radical excision of all fibrous tissue.

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Whether one is inadequate or the other unnecessary (and even self-defeating) remains to be proven. The incidence of recurrence is vague but sufficient for some to extend the urethra at a separate operation. Others advocate a single procedure. Until such time as an objective method of measuring the degree of chordee is available, these dichotomies of opinion will remain and an array of management alternatives will face the trainee.

An equally bewildering array of alternatives is available whereby the preputial skin may be rearranged to elongate the urethra. A plethora of techniques have been described—with a further four added to the British literature in the last three years—but few have been analysed objectively. While the trainee must attempt to rationalise his choice of operations, the information is not available to make his choice rational. Fortunately many operations have had the benefit of years of clinical practice and many are capable of more than modest success. By rejecting the temptation to invent the ultimate preputial rearrangement in favour of careful analysis of those techniques already available, the trainee of today may provide his successors with a more rational choice of treatment than faces him. To date, only short term failures of primary healing and meatal reposition have been analysed. While these problems must be eliminated for a procedure to be worthy of consideration, these are not the measure of a normal looking penis which functions normally. The tasks of twenty year follow-up, with physiological examination of the urethra and psychological assessment of young adults, are formidable but are, nevertheless, the true indicators of success and failure in this field. The unanswered questions of hypospadias are indicative of a need within the speciality: the place of research in the plastic surgical training programme remains poorly defined and its encouragement sporadic.

A recurring theme is the complication of fistula formation with the traditional explanation of surgical technique unmatched to poorly healing tissues and an unforgiving environment of urine. The success of circumcision in very varied hands, great and small, medical and otherwise, is testimony to the healing power of the penile skin. Spontaneous closure of urinary diversions at all levels of the tract in the face of normal urine flow lends support to the belief of various primitive peoples that urine is beneficial not detrimental to healing. While the tenets of good surgical design and execution undoubtedly apply in this field, recent changes towards finer sutures, smaller instruments and microsurgical training, coupled with a better understanding of the blood supply of the penile skin, have failed to eliminate fistula formation. The surgical law of fistulas would appear to prevail in the urethra as elsewhere, with an imperceptible difference between reconstruction of an adequate and an inadequate distal urethral conduit. The recent trend towards the use of smaller flaps to reconstruct the distal urethra relies heavily on careful design and surgical delicacy to preserve the more definite but more tenuous blood supply of the flaps. While likely to achieve more acceptable cosmetic results, these flaps would appear, at first glance, to be more likely to contravene the law of fistulas. At this time it is not known which method of urethral reconstruction is least prone to fistula formation.

While improvement of function is the primary aim of reconstructive surgery, the plastic surgeon, perhaps more than others, is expected to look to the aesthetic effect of his work. In this field, the result of surgery often leaves much to be desired: a spatulate glans and a patulous meatus lying proximal to the tip and allowing urine to spray in every direction but forwards, the glans sometimes surrounded by a collar of preputial dog-ears which refuse to lie down, despite cosmetic circumcision. As mentioned above, the use of smaller preputial flaps may in itself lead to improvement. The more ample remnant of foreskin which is left may be an untapped asset: instead of removing this by circumcision, it might be better employed to create an uncircumcised penis, so concealing any imperfections of glans and meatus.

Like much of plastic surgery, hypospadias may be considered to lie within the field of reconstructive surgery or alternatively within that of a regional surgical specialty, in this case paediatric urology. In contrast to a discipline which concentrates every available scientific advance upon the urinary tract, with some very remarkable results within the last decade, the minor changes of flap design which constitute the only recent advance in the reconstruction of hypospadias appear meagre. Plastic surgical commitment to the urinary tract is small. The width of the speciality can only be maintained by provision of the highest degree of surgical expertise coupled with active and productive research in this and other small corners of the regional specialist fields in which plastic surgery involves itself.

In 1937 McIndoe wrote "Perusal of the literature describing the truly astonishing number of operations proposed for the condition leaves one with

the impression that the operation of urethroplasty is far from solved . . . Very few of the proposed operations are free from objectionable features and few indeed fulfil the ideals." These problems, and others, remain to be solved. Their study is a training in analytical thought.

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