I have endeavoured in this article to formulate those principles which seem to me fundamental, and to demonstrate that in practice they can be effective.

Conclusions

The principles for the conduct of an epidemic of measles in a self-contained school community are discussed, and their application in practice is illustrated in four epidemics. These principles are:

1. That healthy susceptible individuals should be permitted to experience a normal attack of measles after exposure to infection.
2. That "delicate susceptibles" should be protected. "Delicate susceptibles" fall into two categories: (a) those for whom complete "protection" should be secured; (b) those for whom "attenuation" should be a sufficient safeguard from undue risks.
3. That environmental hygiene must be strictly practised in sick-rooms for all cases.

Experiences in the use of protective serum are described and emphasis is laid upon the inherent difficulties of posology. In practice the date of administration should be calculated from the rash of the infecting case. For *protection* a maximum dose should be given at the earliest opportunity after exposure and never later than the third day. For *attenuation* a maximum dose should be given on the sixth day.

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SUBVESICAL DIATHERMY PROSTATECTOMY

BY

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Perurethral resection of an obstructing prostate seems by now to have won an established place in genito-urinary surgery. Opinions vary as to the type of case in which it is best employed, though most surgeons are agreed in preferring prostatectomy when dealing with a prostate which is much enlarged. It should be remembered that when the enlargement is of a benign type the chief indication for advising such treatment is precisely the same as when prostatectomy by any other method is chosen—that is to say, the presence of residual urine. If this amounts only to an ounce or two it is unnecessary to employ either perurethral resection of the prostate or any other surgical treatment. But although the measure of the residual urine is by far the most important guide to treatment, obstruction may sometimes call for operation when the volume of it is not large; for if the act of micturition is unduly difficult and prolonged the patient may experience much inconvenience, particularly when nocturnal frequency is present. Attention should also be given to the cystoscopic appearances of the bladder wall, and

marked signs of stress, as evidenced by the presence of excessive trabeculation, or, more important still, sacculatation, are an indication for the relief of the obstruction.

The Usual Method of Resection

When early cases are treated very few cuts with the diathermy loop in the middle line and to right and left of it are all that is necessary, and the same applies when the prostate is of the small but highly obstructive type. It is when the prostate is moderately or much enlarged that the operation becomes more difficult and more formidable. The dangers which attend it are *haemorrhage* and *sepsis*. *Haemorrhage* is inevitable. It is slight when fibrous prostates are treated, and not usually abundant in cases of carcinoma, though in some of these it is severe. It is more profuse when cases of benign enlargement are operated upon. Much of the bleeding comes from the region of the internal meatus, where the diathermy loop cuts through the highly vascular trigonal mucosa, beneath which lie also some of the most important arteries supplying the prostate itself. It is from this same region that a very large amount of bleeding occurs in prostatectomy by enucleation. *Sepsis* is common and often serious. It occurs because necrosis is produced by cutting with the diathermy loop. In the ordinary method of resection not only is the surface of the residuum of the gland which surrounds the prostatic urethra thus necessarily affected, but a large portion of the trigone is also removed, sometimes almost up to the ureters, for it is only by sacrificing this that the diathermy loop can be engaged in the lateral lobes after the intravesical projection has been dealt with. This is because the loop only moves and cuts along the axis of the resectoscope sheath. If at the end of such a resection the bladder is opened it will be found that a cone of tissue has been resected from the prostate. The apex of this is in the region of the verumontanum, and its base corresponds to the trigone and the area immediately around the internal urinary meatus. An exploratory finger now passes along the posterior bladder wall, over the interureteric bar, and down into the prostatic region, which is found to be laid wide open because a large part of the bladder base has inevitably been cut away. This is, of course, quite different from the condition which exists when the operation of prostatectomy by enucleation is employed, whether by the suprapubic or the perineal route. In such cases the internal meatus, though expanded, is still comparatively small; beneath the neck of the bladder there is a recess, the prostatic fossa, between it and the triangular ligament, from which the prostate has been removed. It is easy to feel and to see that the trigone itself has been left almost intact.

The Modified Technique

It has seemed to me that such methods of perurethral prostatectomy should be avoided, and that an endeavour should be made to make the anatomical result resemble as closely as possible that of prostatectomy by enucleation. To achieve this it must be practicable to resect the gland from around the prostatic urethra and from beneath the trigone without cutting or in any way damaging this structure, except to a very limited extent in the neighbourhood of the posterior mid-line, where this occurs in the process of removing the intravesical projection itself. With this in view I suggested to Mr. Schranz of the Genito-Urinary Company that an inclined plane should be built into the end of the beak of the McCarthy resectoscope, which would push forward the supports of the loop as this

is wound out of the sheath into the cutting position. (See Fig.) This has been successfully achieved in the model which he has produced for me, and as a result the whole extent of the loop projects in front of the sheath when it is in the extreme forward position. For this reason, and because it is firmly supported, the loop, when activated by the diathermy current, can be buried into the prostate much more deeply than is possible in the older type of instrument. At the conclusion of the cut it is automatically withdrawn into the confines of the sheath. The resection is begun in the middle line posteriorly; first the loop may be placed over the intravesical projection in the usual manner until it is hidden from view; one such cut being usually sufficient. After this the loop is not again allowed to enter the bladder cavity, but from now on is placed always under vision in position against the prostate within the urethra at a level immediately below the internal meatus. At the

able when this new type of diathermy loop is employed is that the pieces resected are often too large to wash out through the resectoscope, and it becomes necessary to recover them at the conclusion of the operation by aspiration, using the bulb of a Bigelow's evacuator attached to the sheath of the resectoscope by a short metal adaptor, or by grab forceps. Since larger pieces are cut away by these loops than by those of the original type it is possible to work through a smaller sheath, and one of 26 Charrière scale will be found very efficient. The risk of damage to the urethra is thereby lessened.

The New Model Resectoscope

The new model of McCarthy resectoscope made by the Genito-Urinary Company is in several other respects a great improvement upon the previous models, from which it has been evolved. The sheath, like the recent American pattern, is metal outside with the exception of the

moment when the current is turned on the loop is first embedded in the tissues at this level by pressing the beak of the sheath firmly in the required direction, and then the cut is made from there downwards. In other respects the procedure is that usually practised—namely, as much resection as is desired is carried out on one lateral lobe before treatment of the other side is begun. These cuts, beginning always within the prostatic urethra, resect chiefly the lateral lobes, but must be continued well round to include the front of the gland on both sides. Even with the aid of these new loops, and the advantage which they give, it will be found that sooner or later a stage is reached when further cutting into the lateral lobes is mechanically impossible.

At the end of a perurethral resection conducted in this manner, if the instrument is withdrawn so that the objective of the telescope lies at the level of the verumontanum, one finds oneself looking into a recess which has been excavated beneath the bladder, and at the top of this is a small opening into the bladder; in other words, the result is very similar to that which is produced after a prostate has been enucleated. The opening into the bladder can easily be enlarged if it is desired, but I feel sure that the less of the trigone that is resected the better from the point of view of immediate haemorrhage and subsequent sepsis. Because the aperture which leads from the prostatic fossa into the bladder is small, some care is necessary in passing the catheter, which is to be left in position, as the point of it tends to be held up in the prostatic bed.

If this technique, which may be called *subvesical* diathermy prostatectomy or prostatic resection, is employed it will be found that haemorrhage is less than with the older method, and that it is more easily controlled. Sepsis is also much diminished, owing, I believe, to the fact that the trigone is left almost entirely intact instead of being mutilated. One complication which is unavoid-

bakelite beak, and this part of the instrument is now made shorter than in the original models—a modification which is essential if resection is to be carried out beneath the trigone, for which same purpose, as has been explained, the projecting loops have been specially designed. The projecting loop has the further advantage that it is more easily seen than are those of the older patterns, being nearer to the centre of the telescopic field when in the extreme forward position from which the cut is begun. These loops, the manner in which they are supported, and the new system of flushing are the only components for which I can claim originality. The tap will be found satisfactory, as it gives simplified control and allows of a larger current of water. Particular care should be taken not to over-distend the bladder, and therefore the top water-level in the irrigator should not be more than eighteen inches above the patient's abdomen.

A course of lectures and clinical instruction for medical practitioners on problems connected with retarded and difficult children has been arranged by the University Extension and Tutorial Classes Council, in co-operation with the Central Association for Mental Welfare, and will be held from Monday, November 7, to Saturday, November 12. It is open to those practitioners who have already attended the course on mental deficiency and allied conditions, or who have specialized experience approved for the purpose of the course. The lectures will be delivered at the University of London, Senate House, Bloomsbury (entrance from Russell Square), unless otherwise stated on the students' time-tables, and will be given from 10 a.m. to 12.30 p.m. each day. Detailed time-tables will be sent by October 31 to each person proposing to attend the course, and forms of application should be filled in and returned not later than October 7. The University will grant certificates of attendance to those who attend regularly, taking both theoretical and practical work. Registration fee, 10s. 6d., fee for the course £3 3s. All communications should be addressed to Miss Evelyn Fox, c/o University Extension Department, University of London, W.C.1.