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A SIMPLE METHOD OF SUPRAPUBIC CATHETERIZATION:

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Paracentesis vesicæ by a trocar and cannula is a method of relief of retention of urine well-known in the days of John Hunter. In 1806, John Bell wrote of this operation in his "Principles of Surgery," Volume II as follows:

> "This is a desperate operation, which is yet our sole resource, in our last stage of misery.
>
> This operation is less frequently resorted to in saving the lives of young and imprudent people, it is more commonly resorted to as a means of prolonging the life of the aged and infirm.
>
> Usually a man, far advanced in years, with the prostate gland diseased, who has had repeated attacks of obstruction. The bougie gives no relief, the catheter, even with any degree of force or rudeness, cannot be driven into the bladder."

He described six methods of paracentesis vesicæ: suprapubic, posterior perineal, anterior perineal, per perineal urethrostomy, per rectum and per urethra "forcing the catheter." The suprapubic method, he regarded as the most obvious and easiest — even the most ignorant tyro cannot miss the bladder here. But the experienced surgeon avoided it because as the bladder emptied, the trocar lay in a very oblique position; it never drained well and extravasation of urine always occurred, the tissues soon mortified and the patient died on the third or fourth day.

Though it is easy to be wise one-and-a-half centuries later yet it seems obvious that the operation was left too late to be of use; it was indeed a desperate resort in "the last stage of misery." The passage of a flexible catheter down the cannula to improve drainage was not thought of and it was apparently not known by Bell and his colleagues that a flexible catheter had been invented by Avicenna nearly a thousand years ago.

Present-day results of suprapublic bladder drainage are far better because of the invention of rubber tubing. De Pezzer's or Malecot's suprapubic catheters can be introduced into the bladder via the cannula, thus prolonging the period of drainage indefinitely. This well-established and widely used method was first suggested by Morson in modern times. Owing to the large size of the trocar and of the catheter, leakage of urine and resulting sepsis were inevitable, leading to their use being now condemned and to the advocacy of a formal suprapubic cystostomy to introduce the catheter with less likelihood of undesirable complications supervening.

When retropubic prostatectomy and other forms of prostatectomies with primary bladder closure were devised, and as these operations gained in popularity, it became important to have some form of temporary bladder drainage for the acutely retained patient from enlargement of the prostatic gland, and that this is to be effected without the introduction of sepsis so as not to preclude a subsequent prostatectomy with primary bladder closure. Riches (1943) devised a very clever and elegant instrument for the introduction of a small rubber catheter into the bladder by suprapubic puncture to effect drainage in the interim period between retention and prostatectomy. We have used his technique in the Professorial Surgical Unit, General Hospital, Singapore, for some two years and found some drawbacks: the rubber catheter being small in size and thin-walled perished rapidly in our climatic conditions; the catheter though small is still for larger than that necessary for adequate drainage, thus increasing the likelihood of pain or discomfort during its introduction and sepsis subsequently; the technique itself is not simple and inexperience had on several occasions led to the catheter slipping out of the bladder when the latter contracted in size on emptying.

Lane (1952) invented an instrument for the introduction of a small Malecot's catheter by suprapubic puncture and Swinney (1957) devised a method of introducing a Foley's catheter by the same route. The use of an

improved type of urethral cather made of poly-vinyl-chloride, (P.V.C.) tubing among paraplegic patients was reported by Ross *et al* in 1957. In the following year Gibbon reported its use in a wide variety of non-paraplegic cases with equal success. The Gibbon catheter is now widely used in all cases requiring bladder drainage by an indwelling urethral catheter. Owing to the inert nature of P.V.C. and other plastic tubings such as polythene, irritation and sepsis are minimal even after prolonged contact with living tissues.

The following method of suprapubic catheterization is so simple and easy to carry out even in the most unfavourable conditions that the author is surprised that it has not been more widely used. At first it was thought that the technique was novel though it is likely that it has been used by various doctors in various places but has yet been unreported. I am grateful to Gibbon (1962) who informed me that it had been previously reported and a further search of the literature showed that Davis had described essentially the same method in 1953.

Technique:

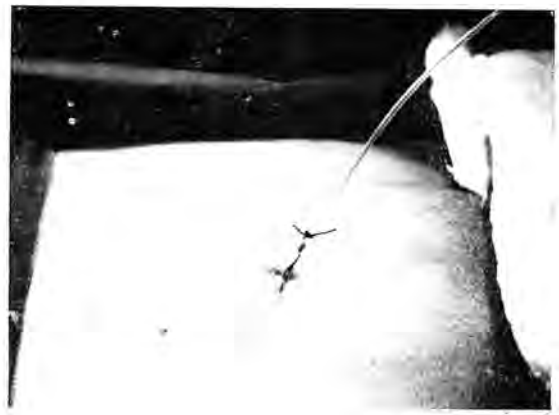
The procedure is carried out under aseptic conditions in the operating theatre. The patient is prepared as for a formal suprapubic cystostomy operation. After cleaning the skin, towels are applied leaving a small strip of midline subumbilical skin. A wheal is raised in the midline, 5 centimetres above the pubis symphysis with 1% lignocaine hydrochloride (Xylocaine). Through it the abdominal wall is infiltrated with the anæsthetic down to and including the bladder wall. The needle is then plunged into the bladder cavity and some urine is aspirated: first to confirm that the correct viscus had been entered and second to allow an assessment of the nature of the urine.

If the urine is clear, a small trocar and cannula, (about 6 Charrière, 2 millimetres in external diameter) of the type used for tapping hydrocœles is pushed into the bladder in one quick, firm movement. The trocar is withdrawn and a 3-foot length of P.V.C. or polythene tube of a suitable external diameter (a 6 Charrière cannula will take tubing of 1.7 millimetres external diameter) is immediately threaded into the bladder via the cannula. About 15 to 25 centimetres of tubing are pushed in, the length depending upon the obesity of the patient and the site of suprapubic puncture. (Figure 1). The cannula is then withdrawn and the "catheter" secured by either a stitch or a long piece of adhesive plaster or Scotch tape. (Figure 2). The other end is connected to a suitable container to establish "closed aseptic drainage."

The polythene tube has previously been prepared — one end being rounded off by lightly flaming it and moulding it with the fingers; several side holes are made near the tip by a heated metal probe of suitable size as described by Gibbon (1958). It is advisable to try the tubing for size by threading it through the cannula to be used before commencing the operation, otherwise, when the bladder empties the cannula will no longer be

Fig. 1

Fig. 2



within the lumen of the viscus and catheterization will be unsuccessful. It is also important to choose a tubing with a slightly loose fit, for after boiling it expands slightly and softens, making intubation difficult or impossible. It is also necessary to see that a fair length of tubing lies within the bladder to prevent it from slipping out accidentally as the bladder empties and contracts down.

If the urine is turbid, a larger trocar and cannula, e.g., 7 or 8 Charrière, allowing the insertion of large bore tubing is used in anticipation and prevention of blockage of the catheter by debris. A small nick of the skin with a knife will allow easier introduction of the larger trocar.

The whole procedure even in the hands of the most inexperienced takes no more than 5 minutes. The patient should feel no discomfort. Trauma, exposure and handling of tissues is reduced to the minimum and if strict asepsis has been observed, no sepsis can supervene in a case with uninfected urine.

This technique has been used in substitute for Riches' suprapubic catheterization for the emergency and temporary relief of acute retention while the patient waits for prostatectomy. It will also afford temporary relief of other causes of urinary retention.

No complications have been noted so far. Those pertaining to the administration of local anæsthesia and to suprapubic puncture will apply, but these are rare and not serious. Indeed, in view of the simplicity of the whole procedure no major complications are expected to occur. 20 cases of urinary retention have been managed by this way with satisfactory results. A microscopic hæmaturia to the extent of 20 — 50 red blood cells per high power field is usually present as with an indwelling Gibbon catheter but the urine remains clear on naked eye examination. In one case, macroscopic hæmaturia occurred but ceased spontaneously after a few hours; it is not clear as to the cause of this — it is possible that the hæmorrhage was due to the prostatic pathology as this is a known complication of indwelling per urethral drainage of the bladder for prostatomegaly. Cystoscopy with the catheter in situ has been performed in several cases and no leakage has been noted on filling up the bladder; the site of entry was uninflammed. At the definitive operation no extravasation has been noted and indeed the site of puncture of the bladder could not be identified. (The tube is removed before the skin incision is made).

A review of the various special trocars, cannulæ and catheters that have been devised has convinced the author that the instruments and catheters used should match the technique in simplicity, safety and reliability.

This technique owing to its very simplicity — the few and simple pieces of apparatus and equipment required — should have wide and ready application, especially so in the more undeveloped countries of the world.

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