URETHROGRAPHY IN URETHRAL STRICTURE *

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Loughnane (1941) urged the more widespread use of urethrography in the investigation of stricture and referred to it as "a valuable aid too seldom used". By its use one is enabled to recognize the type of stricture (*i.e.* whether annular or ribbon), the site, the number of strictures present, and the

presence or absence of false passages. In addition, it may reveal the presence of prostatic or vesical calculi and foreign bodies.

In the normal urethrogram (Fig. 1) the injection of 15 to 20 ml. of opaque fluid dilates and delineates the whole length of the anterior urethra (*i.e.*, to the junction of the bulbar and membranous urethra).

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FIG. 1.—Normal urethrogram. Opaque medium fills the whole length of the anterior urethra and is also seen in the bladder.

FIG. 2.—Case 1. A marked stricture of the anterior urethra (anteroposterior view). A false passage extends backwards and to the left, slightly anterior to the urethra. From the same point dye is also seen tracking anteriorly alongside the urethra for an equal distance.

The membranous and prostatic portions are not outlined if they are normal, except in some cases by a faint linear shadow. Opaque fluid is, however, seen in the bladder (Winsbury-White, 1948). Abnormalities which may be revealed include localized narrowing ("annular" stricture), generalized narrowing ("tunnel" stricture with extensive peri-urethral fibrosis), and branching shadows (fistulae, sinuses, or false passages). The accurate localization of these features may simplify subse-

quent instrumental dilatation considerably, as in Case 3 described below.

In addition to antero-posterior views, films are usually taken with the patient reclining in the half-right position; this minimizes the extent of bone to be penetrated and reveals the urethral curves better. The contrast medium used in the following cases was either iodized oil or diiodone viscous solution (VS) containing 50 per cent. diiodone with 6 per cent. polyvinyl alcohol. It has been claimed that Viskiosol Six possesses advantages over iodized oil in that it is water-soluble, that there is no danger of embolism if intravasation occurs, and that it is unlikely to give rise to foreign body reaction or to activate latent infection. Despite this, it is probably wise to defer the procedure if the urethra has recently been subject to surgical or other trauma, or is likely to be the site of an active inflammatory process.

In the following six cases an attempt has been made to correlate the clinical, instrumental, and radiological findings.

Case Reports

Case 1 (F9586), male, aged 79

History.—Difficulty in micturition for 27 years. Perineal (? peri-urethral) abscess 15 years ago. No previous history of venereal disease, but was "kicked by a horse" in the perineum at the age of 18.

Examination.—No urethral discharge; urine hazy; prostate normal on palpation; blood urea nitrogen 18 mg. per cent.; urine culture: *B. Coli*.

Urethrogram (Figs 2 and 3).—"A marked stricture of the anterior urethra extending over some 10 cm. on the film. A false passage extends backwards and to the left, slightly anterior to the urethra for some 3 or 4 cm. From this point also dye is seen tracking anteriorly alongside the urethra again for about 4 cm."

Instrumentation (pentothal, gas and oxygen).—Straight bougies 2/6 to 8/12, Lister's curved bougies 5/8 to 6/9 at first session. Urethra subsequently dilated to 10/13. There was a narrow tunnel stricture along the whole length of the anterior urethra.

Case 2 (F9919), male, aged 48

History.—Intermittent urethral discharge persisting for 3 months and not responding to treatment. No previous history of venereal disease.

Examination.—Scanty purulent urethral discharge;

FIG. 3.—Case 1. A marked stricture of the anterior urethra (lateral view). A false passage extends backwards and to the left, slightly anterior to the urethra. From the same point dye is also seen tracking anteriorly alongside the urethra for an equal distance.

urethral smear: pus cells + + +, epithelial cells +. Gram-negative bacilli; no gonococci; urine hazy with threads; palpable peri-meatal induration; slight enlargement and tenderness of right lobe of prostate.

Urethrogram (Fig. 4, overleaf).—"Calcification is present within the prostate. About $\frac{1}{2}$ in. distal to the urethral sphincter there is a ring stricture and from this level on the right side anteriorly arises a small fistula, which extends proximally and does not seem to re-connect with the urethra."

Instrumentation (morphine gr. $\frac{1}{4}$ hypodermically, 2 per cent. Xylocaine as local anaesthetic).—Straight bougies 4/8 to 6/10, Lister's curved bougies 4/7 to 7/10. A very tight anterior stricture involving the external

meatus and distal $1\frac{1}{2}$ in. of the penile urethra was encountered, with another stricture in the proximal bulbar urethra.

This patient's urethral discharge disappeared after dilatation of his stricture and treatment with sulphadiazine.

Case 3 (F5105), male, aged 76

History.—Gonorrhoea 28 years ago, followed by acute retention on two occasions, 16 and 4 years ago respectively. Previously diagnosed as having a stricture, but defaulted from regular treatment. Now complaining of continual dribbling of urine.

Examination.—Chronic urinary retention with over-

FIG. 4.—Case 2. A ring stricture is present $\frac{1}{2}$ in. distal to the urethral sphincter. A small fistula extends proximally on the right side.

flow; right lobe of prostate enlarged, smooth, not tender; blood urea nitrogen, 13 mg. per cent.

Urethrogram (Fig. 5, opposite).—"A marked stricture in the bulbar portion of the urethra with apparently two false passages just immediately distal to the stricture and arising on the right side. The proximal false passage is fairly wide and is probably the point where the sound is held up. Only a trace of the opaque medium has passed into the bladder."

Instrumentation ("Dromoran" 2 mg. hypodermically, Pethidine 100 mg. hypodermically). Unsuccessful at first attempt because of what seemed to be a false passage on the right side in the bulbar urethra. Retention was relieved by suprapubic puncture of bladder (12 fluid oz. of almost clear urine withdrawn).

Two days later a suprapubic cystostomy was performed and, after 3 weeks of drainage and antibiotic

therapy (streptomycin and penicillin), it was found possible to pass Lister's curved urethral bougie (5/8) with the aid of rectal guidance.

Case 4 (G104), male, aged 59

History.—Difficulty in micturition for 1 year. Admitted with acute retention of urine. Previous history of two attacks of gonorrhoea some years previously.

Examination.—No urethral discharge; urine hazy; prostate normal in size; blood urea nitrogen, 16 mg. per cent.; urine culture: *Staphylococcus aureus*, enterococci.

Urethrogram (Fig. 6, p. 124).—"There is extravasation of contrast medium into the peri-urethral tissues in the bulbar part of the urethra, and there appears to be a false passage on the right side at this level."

FIG. 5.—Case 3. A marked stricture in the bulbar urethra. Two false passages arise on the right side immediately distal to the stricture.

Instrumentation (Pethidine 100 mg. hypodermically). Straight bougies 6/10 to 10/14, Lister's curved bougies 7/10 to 12/15. A stricture was encountered in the proximal bulbar urethra and there was further obstruction at the bladder neck.

This patient also had serological evidence of neurosyphilis.

Case 5 (F5405), male, aged 70

History.—Complaining of partial urinary retention and perineal swelling. Diagnosed 3 years previously as having an anterior urethral stricture, but defaulted from regular treatment by dilatation. Was also under treatment for neurosyphilis at the same time.

Examination.—Purulent urethral discharge; urethral film: pus cells + + +, epithelial cells +; urine hazy; urine culture: *B. coli*; prostate normal on palpation; blood urea nitrogen 17 mg. per cent. There was an

indurated peri-urethral infiltrate extending anteriorly along the perineum and down into the scrotum.

Urethrogram (Fig. 7, p. 125).—"There is narrowing of the anterior part of the bulbar urethra with diffusion of contrast medium into the peri-urethral tissues consistent with an old peri-urethral abscess associated with a stricture."

Instrumentation ("Dromoran" 2 mg. hypodermically).—Long straight bougies to 8/12, Lister's curved bougies to 10/13. A very tight tunnel stricture of the anterior urethra was encountered.

Case 6 (F7826), male, aged 53

History.—Acute retention of urine at the age of 25 in 1925. No previous history of venereal disease but was found at that time to have a urethral stricture (? traumatic or congenital). Attended regularly for dilatation from 1925 to 1939 and then defaulted.

FIG. 6.—Case 4. Diffusion of contrast medium into the peri-urethral tissues in the bulbar urethra. A false passage is present on the right side of the bulbar urethra.

Examination (February, 1955).—An indurated, tender swelling palpable in the perineum in the line of the urethra ; pressure over the swelling produced a purulent discharge from the external urethral meatus. Urine slightly hazy ; urine culture : *B. Coli*.

Urethrogram (Fig. 8, p. 126).—"A fairly large abscess cavity within the proximal bulbar urethra, lying posterior

to the urethra itself. Proximal to this there is a stricture and a further minute abscess cavity. There is extensive calcification in the prostate gland."

After treatment with streptomycin, chloramphenicol, and terramycin the abscess was drained under general anaesthesia. 20 ml. of pus was removed.

Instrumentation (Morphine gr. $\frac{3}{8}$ intramuscularly,

FIG. 7.—Case 5. Tunnel stricture of the anterior urethra. Diffusion of contrast medium into peri-urethral tissues at site of previous abscess.

Xylocaine 2 per cent. as local anaesthetic).—Straight bougies 6/10 to 10/14, Lister's curved bougies 1/4 to 10/13. A very tight stricture in the bulbar urethra was encountered.

Conclusion

These illustrative cases demonstrate that urethrography is a safe and painless procedure in urethral

stricture. It is of diagnostic value and provides information which is useful to the operator during instrumental dilatation of the stricture.

Summary

The value and technique of urethrography are briefly discussed. Its application is described in the

FIG. 8.—Case 6. Large abscess cavity in the bulbar urethra. Proximal to this there is a stricture and a further small abscess cavity. An extensive calcification is present in the prostate gland.

diagnosis and treatment of six cases of urethral stricture.

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