

Brown-Buerger cystoscope

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It is no exaggeration to say that urologists were the pioneers in using the endoscope. In 1805, Philipp Bozzini made his first attempt to visualise the living body through a hollow tube he created, called 'Lichtleiter' (Light Conductor). In 1853, Antoine Désormeaux developed an instrument to examine the urethra and bladder, which he called an endoscope.¹

The most common cystoscope used today is the Brown-Buerger cystoscope, invented by Frederic Brown in 1899, which utilises two different lens systems to visualise the whole bladder. Leo Buerger expanded on Brown's idea in 1907 by passing different instruments through the same outer sheath for endoscopic procedures (Fig 1).

For the Brown-Buerger cystoscopy to be effective, it requires the following components:

- a metal sheath with a curved beak to manipulate the curve of the bulbous and membranous urethra in the male (Fig 2);
- different lens systems to visualise the whole bladder (Fig 3);
- a channel to introduce fluid to distend the bladder for visualisation;
- channels for introducing instruments for endoscopic procedures; and
- light sources to illuminate the inside of the bladder and the whole length of the urethra.

It is of interest to trace the development of the light source in cystoscopy. The light source of



FIG 1. This Brown-Buerger cystoscope set manufactured by American Cystoscope Makers Inc in the 1950s. It was originally owned by Dr Henry Li and was later donated to the Medical Museum by Dr Donald Li



FIG 2. Two sheaths: one concave and one convex. Each sheath has a small bulb at the distal end, and at the top end a light post connects with the light source. Stopcocks are for controlling the flow of fluid for irrigating the bladder



FIG 3. Two lenses, both with black eyepieces. The lenses have different angles. One lens has a 0° angle to visualise the entire length of the urethra into the bladder. The other lens has a 30° angle for examination of the bladder, conducting operations within the bladder and catheterising the ureters

the first generation is a reflected candlelight that my ancient urologist colleagues must have fantastic eyesight. The second-generation light source was a small electric bulb at the tip of the curved beak of the sheath connected by a fine wire to a portable battery pack. I was brought up with this second-generation light source; regrettably the bulbs fused easily, necessitating the replacement of many bulbs during a single examination. The advent of fibre optics marked the arrival of the third-generation light source, which was a 'god send'. Urologists now are blessed with a good illumination for as long as it takes to do the examination and necessary

procedures.

What are the drawbacks of the Brown-Buerger cystoscopy? Being a rigid instrument, the procedure could be uncomfortable particularly when performed under local anaesthesia. The absence of a retrograde lens in the cystoscope also limits the urologist's ability to examine the bladder neck opening. The invention of a flexible cystoscopy has eliminated all these drawbacks and made bladder and urethra examination complete.

The Brown-Buerger cystoscopy, despite its drawbacks, remains one of the most used cystoscopes.

Reference

1. Samplaski MK, Jones JS. Two centuries of cystoscopy: the development of imaging, instrumentation and synergistic technologies. *BJU Int* 2009;103:154-8.