

Clinical Interview with Shekhar Biyani

Date: 27/05/2015 Time: 15:00-16:00 Present: P. Culmer

Shekhar Biyani is a consultant Urologist at St James's Teaching Hospital in Leeds. An hour was spent discussing the clinical needs in urinary incontinence (UI) primarily relating to in-dwelling catheters.

Background

In-dwelling catheters are widely used in healthcare settings to manage UI. Often they are inserted by a clinician as a temporary measure but equally prevalent is self-insertion for long term management of UI.

As a means of draining urine from the bladder they are used to treat conditions such as bladder outlet obstruction, chronic urine retention or as a fall back to intermittent catheterisation. They are also used as a means of monitoring urine output.

They are manufactured from a mix of silicone, polyvinyl chloride and latex and a balloon at the end of the catheter inflates after insertion to retain the device. On average they are in situ for 1-3 months.

Clinical Challenges

Issues with these devices include

- Trauma as a result of insertion –damage to the urethra through excessive force is a major risk.
- Catheter Associated Urinary Tract Infection (CAUTI) is common.
- Biofilms tend to build around the catheter.
- The device tends to promote urge because the bladder base is highly sensitive.
- Stone formation and encrustation can occur which degrades the performance of the device and can increase the risk of CAUTI.

Future potential

There are opportunities here to improve the materials and the coatings used in the manufacturing process and to look at ways to reduce the possibilities of biofilms and encrustation forming and so reduce the risk of CAUTI. A detection system for stone formation and encrustation is also an area for future development.

There is scope to improve insertion to a measured/controlled approach where forces can be regulated and obstructions avoided and there is also a need to develop a way to measure the turbidity of the urine.