

Current role of single-use flexible ureteroscopes in the management of upper tract stone disease

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The prevalence of urolithiasis is rising and alongside the rates of intervention is also steadily increasing [1]. Ureteroscopy [URS] seems to be the favored option along with minimally invasive percutaneous techniques for stones in the upper urinary tract [2]. Recent evidence also shows that URS is more cost effective than shock wave lithotripsy (SWL) [3]. As technique and technology becomes more advanced with improved laser efficacy, it is now possible to perform URS for large stones and in also complex patients [4].

With the advent of single-use ureteroscopes, there has been a revolution in the field of endourology with more than 5 disposable scopes available in the market now; however, clinical data is widely available for only two scopes [5, 6]. While the scope parameters and outcomes are comparable, the cost of disposable scopes is generally still perceived to be higher than the reusable scopes. Additionally, most studies currently reported are either funded or supported by the scope manufacturer or in some instances the authors are paid consultants for them, suggesting

an element of bias and that the studies may not be entirely independent.

With continuous improvements in the vision, maneuverability, deflection and weight of disposable scopes, they may be able to exceed in these parameters when compared to the reusable scopes. However, currently their cost seems to vary between \$700 to \$1500 which is certainly substantial, and this may not be sustainable in a lot of countries [7]. Debate is still ongoing on what the real cost of URS is when using reusable scopes, and this seems to vary from \$120 to \$957 [8, 9]. Recent studies also reflect the economic implications based on the case volume per center and show that disposable URS may be more suitable for low-volume centers, but is a more expensive option in high-volume centers [10, 11]. Although it seems that for treatment of multiple, large stones in the lower kidney pole of recurrent stone formers, and those with a steep infundibulopelvic angle (IPA $\leq 50^\circ$), disposable URS may have a role in all set-ups [11]. The real question arises on the role of disposable ureteroscopes and whether they should be used

for all patients. The cost comparison with reusable scopes is also based upon the local breakages of these scopes, case-volume, laser and consumable costs and the purchase price of both reusable and disposable scopes [8, 12]. While it may not be cost effective to use for all patients, it is possibly going to benefit in clinical cases where there is a risk of scope breakages or a hazard of scope contamination with high-infectious cases. We therefore think that the current role of disposable ureteroscopes should be more suited for lower pole stones greater than 1 cm, large renal stones (>2 cm), cases of urinary diversion or abnormal renal anatomy and patients with previous stone related uro-sepsis or multi-resistant pre-operative urinary culture. In all other scenarios, perhaps a reusable scope would be clinically equivalent and likely to be more cost-effective. Similarly, in low volume

centers or where flexible ureteroscopies are not commonly performed, rather than invest on a reusable scope it might be better to have disposable scopes on the rack which are replaced when they are used. It also allows a fresh new scope to be used for every patient and this might prove to be an advantage in the long-term as reusable scopes can sometimes suffer with suboptimal views and performances. While the future of endourology looks promising and disposable technology has a definite place, perhaps it might not be suitable or affordable in all healthcare systems and for all patients. Whether this replaces reusable technology is yet to be seen, but certainly it gives more choice to patients and surgeons alike.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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