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Evaluation of the pressure leak test in increasing the lifespan of flexible ureteroscopes

F. Khan, S. Mukhtar, H. Marsh, F. Anjum, S. Madaan, I.K. Dickinson, S. Sriprasad

Darent Valley Hospital, Dartford, Kent, United Kingdom

Introduction: Flexible ureteroscopes are expensive and delicate instruments that are integral in the offering of a minimally invasive technique of diagnosis and treatment of urolithiasis. Published literature has identified the importance of early damage recognition in preventing frequent use of the scope that would lead to further damage and high repair and replacement costs. Our study was designed to examine the outcome of the pressure leak test on the condition of flexible ureteroscopes after every use and analysing the damage and costs of maintenance.

Patients and Methods: A prospective study was designed with two treatment groups. Group 1, ninety-five consecutive procedures (n=95) of flexible ureterorenoscopy and laser fragmentation of renal calculi were performed with ACMI DUR 8, (a scope with no in-built leak test facility). This was compared against group 2, where ninety-eight procedures of laser fragmentation of renal calculi (n=98) were performed using Storz Flex X2 Ureteroscopes (with an in-built leak test facility). All scopes in Group 2 were tested for pressure leak after every procedure and the outcome of the tests recorded.

Results: Both groups were comparable for grade of surgeon; stone location, size & number; access sheath usage and duration of lasering. In Group 1 there were 7 scope damages resulting in repairs/ replacement amounting to costs \$46264.40 (7.1 % damage). In Group 2, three scopes revealed a positive pressure leak test, implying damage with repair costs of \$9952.80 (3.1 % damage) (p<0.05). Significant cost savings and reduction in downtime were made in Group 2.

Conclusions: Pressure leak testing following flexible ureterorenoscopy helped to significantly control costs of maintenance and repair. Newer scopes should have a leak testing mechanism as it prevents further detrimental damage to the scope, build-up of repair costs are avoided and there is an increase in the longevity of these delicate instruments.

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