

**Title:** Podium Presentation Abstracts  
**Publication:** BJU International  
**Publisher:** John Wiley and Sons  
**Date:** Feb 16, 2014

## **What effect do different 200µm laser fibres have on deflection and irrigation flow rates during flexible ureterorenoscopy?**

*Nicholas J Rukin<sup>1</sup>, Kevin Williams<sup>1</sup>, Anna Wright<sup>1</sup>*

<sup>1</sup>Royal Wolverhampton Hospital, Wolverhampton, United Kingdom

### **Introduction**

Flexible ureterorenoscopy is the first line treatment option for many intra-renal stones. Limitations include accessibility and vision, particularly with laser fragmentation. We determine the loss of deflection and flow properties of four leading 200µm laser fibres (Boston Scientific Flexiva™ 200 and Flexiva™ Trac Tip 200, Lumenis SlimLine™ EZ200 and Optical Integrity ScopeSafe™) to determine if any fibre offers an overall advantage for flexible ureterorenoscopy.

### **Patients & Methods**

We performed a laboratory based bench test to determine deflection properties of the four laser fibres using both Flex XC™ and Flex X2™ flexible ureterorenoscopes (Karl Storz, Germany). The length of the laser protrusion (1cm) and height of the saline irrigation fluid (1 metre) were constant. Mean upward/downward deflection angles and flow rates (mL/min) were calculated and compared with control groups (Flex XC™ and Flex X2™ with no fibres). Flow tests were run multiple times and means derived, while deflection angles were repeated to insure accuracy. Statistical analysis was performed using Oneway ANOVA (nonparametric) testing.

### **Results**

Flow and deflection properties for each laser fibre are summarised in Table 1. The Optical Integrity ScopeSafe™ fibre has the least loss of deflection when compared to the other three laser fibres, losing only 4 - 9% of upward and 5 - 6% downward deflection. Mean flow rates for both scopes were significantly greater with the Optical Integrity ScopeSafe™ fibre at 21-23 mL/min ( $p < 0.0001$ ) compared to all the other fibres. This means an approximately 16% greater flow rate, with the Optical Integrity ScopeSafe™ fibre, than the next best fibre.

### **Conclusions**

Despite all laser fibres been marketed as 200µm, the deflection and flow properties show marked variations. The Optical Integrity ScopeSafe™ 200µm laser fibre offers the best overall performance with significantly improved flow rates and the least loss of scope deflection compared to the other fibres. This might be explained due to the fact that the Optical Integrity fibre is reported to have the smallest size laser core of the four fibres.