

Abstract 18-5810: Comparison of two digital single use flexible ureterorenoscopes (Boston Scientific LithoVue and Pusen PU3022A)- A prospective study

Jonathan KAM^{1,2}, Yuigi YUMINAGA¹, Kieran BEATTIE¹, Mohan ARIANAYAGAM¹, Bertram CANAGASINGHAM¹, Richard FERGUSON¹, Celi VAROL¹, Mohamed KHADRA^{1, 2}, Matthew WINTER¹, Raymond KO^{1, 2}

¹ Nepean Urology Research Group (NURG), Kingswood, NSW, Australia

² University of Sydney, Sydney, NSW, Australia

Abstract

Purpose:

To compare the performance and surgical outcomes of two single use digital flexible ureteroscopes (fURS) to a high-end reusable video fURS.

Materials and Methods:

Three different fURS were used in this study, 1) single use digital LithoVue (Boston Scientific, USA), 2) single use digital PU3022A, (Pusen, China) and 3) reusable digital URF-V2 (Olympus, Japan). Visibility and manoeuvrability was rated on a 5-point Likert scale by the operating surgeon

Results:

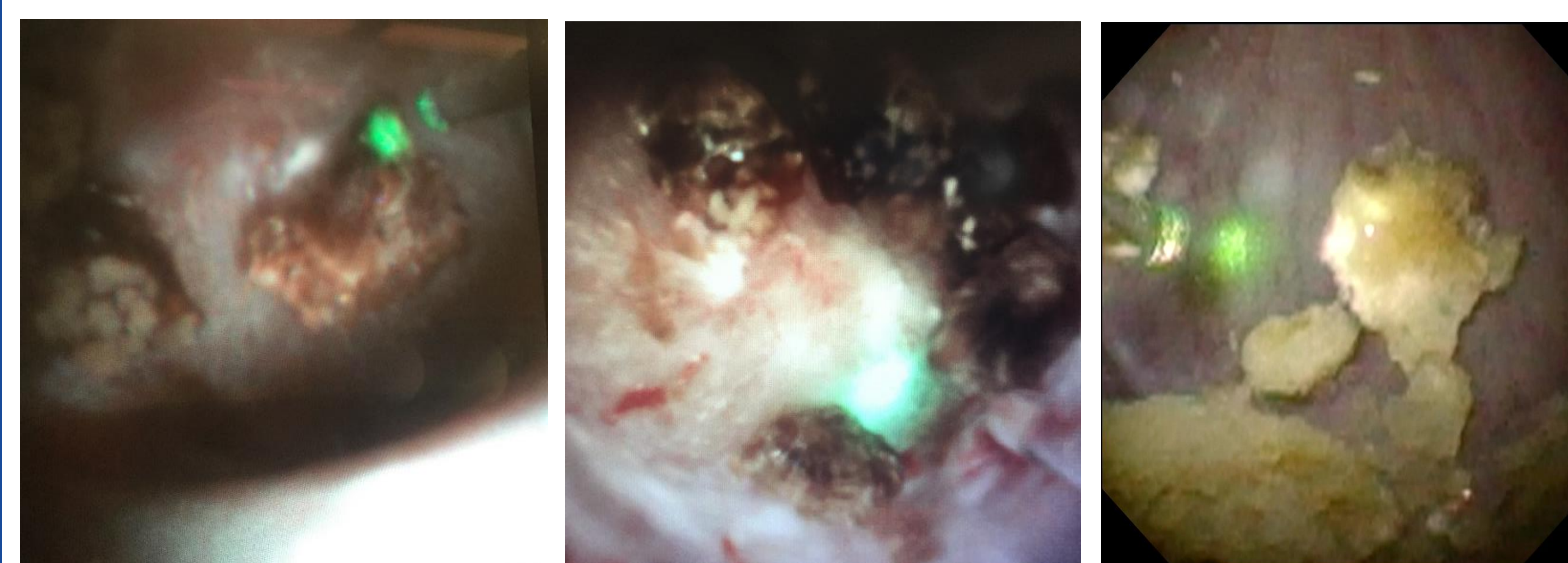
150 patients were included. The URF-V2 had higher visibility scores than both single use scopes and higher manoeuvrability scores when compared to the PU3022A. The LithoVue had higher visibility and manoeuvrability scores when compared to the PU3022A. No differences in operative time, stone clearance, scope failure or complication rates were observed

Conclusion:

Single use fURS performance is approaching that of reusable fURS with similar clinical outcomes

Introduction and Objectives

- There are currently no in vivo studies comparing the performance of the different types of single use fURS
- Aim: to compare the operative performance of 2 single use digital fURS to a modern reusable video fURS



LithoVue (Boston Scientific)

PU3022A (Pusen)

URF-V2 (Olympus)

Figure 1: Comparative images from LithoVue and Pusen PU3022A) in the same patient. Images were recorded from the LithoVue and Pusen monitor respectively. Note that both images have a bright central image with shadowing of the peripheral image. A comparative image from a separate patient recorded from the Olympus Endoscopy Tower Monitor from the Olympus URF-V2 is shown for comparison.

Methods

- Prospective, single centre, comparative study from January 2016 to November 2017
- Patient's underwent retrograde fURS using either:
 1. single use LithoVue (Boston Scientific, USA)
 2. single use PU3022A (Pusen, China)
 3. re-useable digital URF-V2 (Olympus, Japan)

Each surgeon was asked to rate on a 5-point Likert scale (1-Bad, 2-Poor, 3-Fair, 4-Good, 5-Very Good) the visibility and manoeuvrability of the fURS for each case.

- Data was analyzed using IBM SPSS Statistics for Windows, version 24.0 (IBM Corp., Armonk, N.Y., USA).

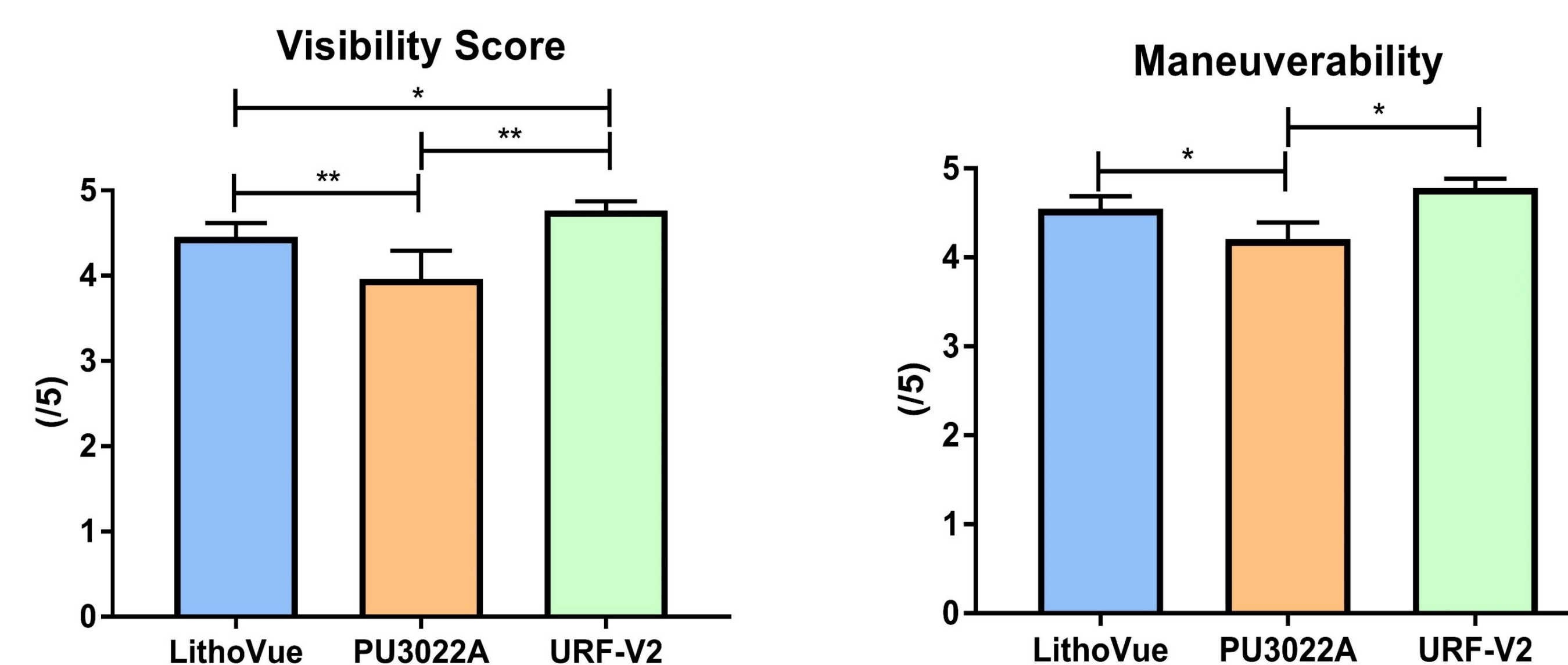


Figure 2: Comparison of visibility and manoeuvrability scores between the 3 flexible ureteroscope groups. * $p < 0.05$, ** $p < 0.01$

Results

- 150 patients were included in this study.
 - LithoVue- 55 cases
 - PU3022A - 31 cases
 - URF-V2 - 64 cases
- There were no differences in the patient demographics, stone number, location or stone burden between the three groups
- Significant differences in visibility scores, $p < 0.001$ (Figure 2)
- Significant differences in manoeuvrability scores, $p < 0.001$ (Figure 2)
- No differences in surgical operating time, time in the operating theatre, radiation dose or rate of residual stone following the procedure
- **Fourteen fURS (9%) failed** during the operations, with no difference in the failure rate between the three groups.
- No difference in the complication rate between the three groups

Conclusions

- The performance of single use digital fURS are approaching that of reusable high-end digital fURS
- As the cost for these single use scopes continues to decrease and performance improves, they offer a feasible alternative to reusable fURS especially in complex stone cases where the risk of scope damage is high.