

TECHNICAL SPOTLIGHT

Abstract: Evaluation of the Lubricant used in DEFENDO™ Sterile Single-use Valves on Image Quality

Introduction

Lubrication is routinely used in the manufacture of a variety of medical devices to reduce friction. Lubrication is particularly useful in instruments that require repeated action or movement. Reducing friction makes the devices more efficient and easier to use.

DEFENDO™ Sterile Single-Use Valves use a minimal amount of silicone-based lubricant to reduce friction between the valve and the endoscope port.

Medivators actively tests and validates the performance of our products. Because endoscopic procedures rely heavily on optical clarity for proper diagnosis¹, we conducted a series of simulated-use tests to evaluate the impact of our silicone-based lubricant on image quality. The results of the tests using the silicone-based lubricant were compared to the results of the same test using no lubricant.

The analysis of the test results demonstrate that the silicone-based lubricant used in DEFENDO Valves does not cause blurry endoscope images.

Purpose

Evaluate whether the use of a minimal amount silicone-based lubricant within the valve contributes to a blurry endoscope image.

Experimental Method

- DEFENDO Air/Water Valves were attached to the air/water channels of an OLYMPUS® colonoscope, which was then flushed with 250 ml of water, simulating use conditions.
- The colonoscope was then visually inspected under magnification for the presence of lubrication on the lens.
- The colonoscope was then attached to the OLYMPUS® 180 Video Processor, pictures were taken and an analysis of picture clarity was performed.
- The colonoscope then went through a normal reprocessing cycle in the ADVANTAGE PLUS™ Automated Endoscope Reprocessor (AER).

- A clean and disinfected colonoscope was used for each test run.
- This process was repeated three times.

Results

- The images from the three test runs (Figures 2-4) were compared to a negative control (Figure 1; an image from an endoscope with no lubricant on the lens) and to a positive control (Figure 5; an image from an endoscope with lubricant smeared on the lens).
- The three simulated-use tests demonstrated that the minimal amount of silicone-based lubricant used in DEFENDO Valves did not migrate to the lens or cause blurry images.

Figure 1: Negative Control (no lubricant on the lens)

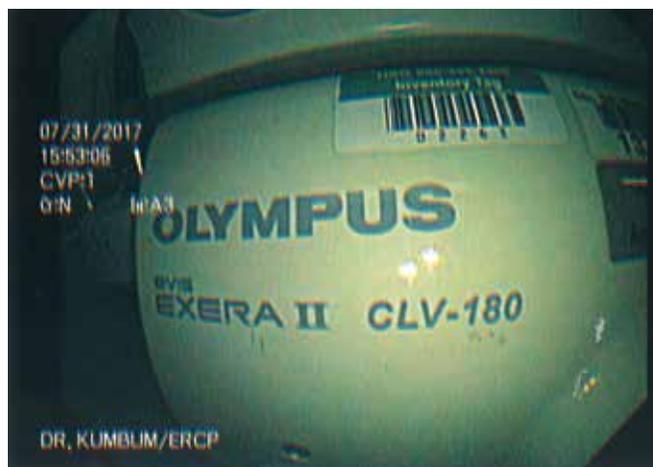


Figure 5: Positive Control (lubricant on the lens)



Figure 2: Test Run 1 Colonoscope Picture Quality



Figure 3: Test Run 2 Colonoscope Picture Quality

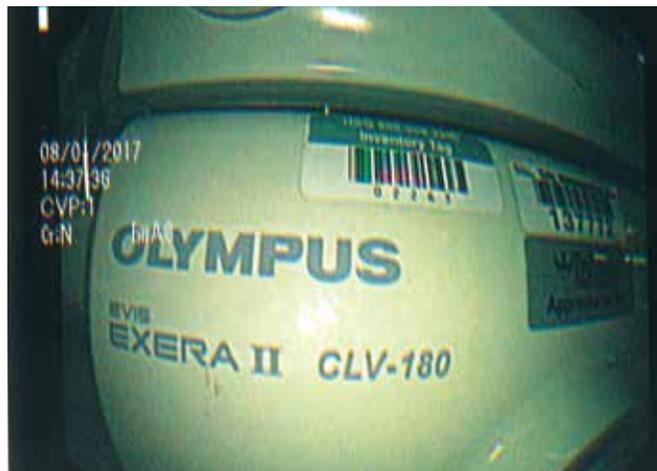


Figure 4: Test Run 3 Colonoscope Picture Quality



Conclusion

Medivators actively tests and validates the performance of our products. In this study, we conducted multiple simulated-use tests to confirm that the minimal amount of lubricant in our valves does not cause blurry images. Based on the test results, it is clear that the silicone-based lubricant used in DEFENDO™ Valves does not impact endoscope picture quality.

1. Sunny S, Cheng G, Daniel D, et al. Transparent antifouling material for improved operative field visibility in endoscopy. Proc Natl Acad Sci USA. 2016; 113(42):11676-11681.

This is an abstract. The full technical write-up is available upon request.

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