



MP9-12: IN VIVO PORCINE EVALUATION OF THE MULTIPHZE™ DEVICE: A SELF-CONTAINED BLADDER IRRIGATION SYSTEM

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INTRODUCTION

Current standard bladder irrigation methods for clot evacuation are problematic due to the risk of blood and urine contamination of the patient, environment, and provider. Standard irrigation (Bard Irrigation Kit (BIK)) is also time consuming and inefficient. The Multiphze™ irrigation system (Multiphze LLC) is a novel self-contained system designed to eliminate spillage while improving the efficiency of clot evacuation (Figure 1).

METHODS

- Two female, juvenile Yorkshire pigs were anesthetized and catheterized with a 24 Fr 6 eye hematuria urinary catheter.
- 100 ml of blood was drawn via a femoral vein and mixed with 44.4 ml of Glow-Bright Concentrate.
- The mixture was instilled into the previously drained bladder using a BIK.
- After 5 minutes, 4 postgraduate urologists were randomized into two groups and performed four bladder irrigations with 3 L of sterile water utilizing either BIK or Multiphze™ irrigation system twice each.
- The time of each irrigation cycle was recorded at one-liter intervals.
- The clarity of drainage fluid was assessed using a spectrometer after each liter of irrigation.
- The total area of spillage on the procedural field was identified with a Wood's lamp, photographed, and subsequently quantified.

RESULTS

	Standard Irrigation [Range]	Multiphze™ [Range]	
Time to irrigate 1 L (min.)	7.59 [7.17-7.93]	4.33 [3.43-5.0]	$p < 0.001$
Time to irrigate 2 L (min.)	14.07 [12.6-15.3]	6.98 [6.37-7.93]	$p < 0.001$
Time to irrigate 3 L (min.)	20.05 [17.8-21.8]	9.32 [8.05-10.4]	$p < 0.001$
Fluid clarity at 1 L (%)	53.9 [32.5-74.1]	39.6 [3.53-64.7]	$p = 0.433$
Fluid clarity at 2 L (%)	72.6 [71.4-74.1]	72.3 [68.6-76.1]	$p = 0.884$
Fluid clarity at 3 L (%)	74 [73.3-74.5]	73.2 [71.0-75.3]	$p = 0.431$
Spillage area (cm ²)	208.95 [88.0-492.7]	0 [0-0]	$p = 0.036$

Table 1. Mean irrigation time, fluid clarity, and spillage area as documented by four postgraduate urologists.

- The mean clarity measurements at the end of 2 liters of irrigant for the Multiphze™ system and BIK trials were similar to the clarity obtained after 3 liters.
- The mean time to achieve fluid clarity after 2 liters of irrigant was 50% less for the Multiphze™ system compared to the BIK system (6.98 min. vs. 14.07 min.) ($p < 0.001$).
- Wood's lamp illumination revealed no spillage on the procedural field with the Multiphze™ system; with BIK the spillage was 208.95 cm² ($p = 0.036$).

METHODS



Figure 1. The Multiphze™ LLC enclosed irrigation system

CONCLUSIONS

In a porcine model, the Multiphze™ irrigation system, when compared to the standard Bard irrigation kit, halved the time to successfully clear a clot-filled bladder while eliminating any spillage of the irrigating fluid.

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