



A Novel Device Maintaining Clear Optics During Surgery

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Background

Laparoscopic surgery is plagued by disruption of the visual field due to fogging and contamination of the lens with blood or fluids. This periodic disruption leads to removal of the laparoscope for cleaning. This has two detrimental effects. Loss of visualization compromises the safety of the patient. Also, removal of the scope can exacerbate fogging as the scope cools in the cooler temperatures of the operating room. Multiple methods exist that attempt to prevent or alleviate compromised optics during laparoscopic surgery including anti-fog solutions and the use of warm water. Often these are ineffective.

Objective

To determine, utilizing a commercially available device that prevents fogging and allows for intra-abdominal cleansing of the lens, whether this reduces scope removals and improves visualization during laparoscopic surgery.

Device Description

Floshield is a commercially available device that uses a plastic overtube that fits over most conventional laparoscopes. It directs the flow of CO₂ over the lens of the laparoscope. This creates a vortex preventing fogging and directing debris away from the lens. It also has a cleaning solution (Flo-X) that can be pumped over the lens to remove any debris without removing the laparoscope.



Preliminary Results

An observer recorded during each procedure every time the laparoscope was removed for cleaning. The total number of cases was 30. These cases involved foregut, bariatric, and colorectal procedures. Average operative time was 110 minutes. There were 3 scope removals for an average of .005 scope removals per hour. There were 1.5 Flo-X washes per hour. When compared with not using the device, it was found that the average bariatric or colorectal case averaged 6 removals per hour.

Conclusion

Floshield reduces the need for laparoscope removal due to fogging or contamination. In the future, we will perform a randomized trial in which an independent, blinded observer will score the optics on a recorded video to determine whether this device improves visualization when compared with control.