

Cannuflow® DryVu™ Fluid Shield Anti-fogging Device: A simple solution to help eliminate the need for costly procedure interruptions when scope fogging is caused by fluid collecting in the camera junction



Figure 1 – Escaping fluid collects in the camera junction causing condensation and fogging.



Summary

Scope fogging is a persistent and annoying problem in the OR especially during arthroscopic procedures (such as ACLs, shoulders, etc.) that require the scope to be tilted downward. The descending position of the scope causes irrigation fluid to run along the scope sheath and collect in the camera junction, triggering condensation. Fluid and blood can also adhere to the camera lens causing the lens to fog, obscuring a surgeon's view.¹ Gloved surgeons and technicians viewing the procedure through a monitor are often unaware of the amount of fluid that may be entering the camera coupling area until their view becomes obscured. The most common remedy for this difficulty is to periodically interrupt a procedure, uncouple the scope and camera, then wipe the lens clean. This uncoupling and cleaning process can take up to 60 seconds to perform and may need to be repeated several times during a procedure to re-establish a clear image. With operating room (OR) costs on the rise (currently estimated to be from \$1.00 to \$2.00 per second), such interruptions are not only frustrating but can prove very costly by extending OR time. To address this dilemma, Cannuflow, offers a simple and very effective solution for keeping lenses clear and 'fog free' without having to interrupt a procedure or add steps to an established surgical process, the DryVu™ Fluid Shield Anti-fogging Device.

BACKGROUND

Several solutions have been developed to rectify the problem of lens fogging during arthroscopic surgery. The least expensive of these options are anti-fogging agents. Products such as Dr. Fog™² offer sterile treatments that can be applied to a lens to reduce the potential for fogging. However, these agents add a step to surgical preparation, aren't always fully effective

(requiring that applications be repeated), can leave a build-up on a lens, and may set up the possibility of cross contamination when an opened bottle of the agent is reused.

Vented coupling systems, such as Arthrotek, Inc. couplers³, are aimed specifically at reducing fogging occurrences caused by the residual moisture that can

remain if optical equipment isn't allowed to dry sufficiently after sterilization. The large venting holes allow air to access the coupler area to reduce the potential for fogging that can result from moisture that is already on the camera lens. The large holes also open up the possibility of even greater amounts of fluid escaping the joint to flood into the coupler/scope interface. Suction mechanisms incorporated with these vented coupling systems assist in keeping escaping fluid from inundating the camera junction. However, these options are cumbersome, add a step to the OR prep time, increase equipment costs, and do not offer a remedy that effectively eliminates the problem.

The most effective answer to date is a dedicated (direct-coupling) scope/camera system such as the ones offered by Stryker and Linvatec Corporations⁴. Direct-coupling systems remove the possibility of fluid collecting in the camera junction and fogging of the lens by providing a sealed assembly between the scope and camera. Costly to purchase and maintain, the non-component nature of these products limit options for introducing new equipment. In addition, should any element of a direct-coupling system go down during a procedure, the whole system will need to be replaced before a surgery can resume.

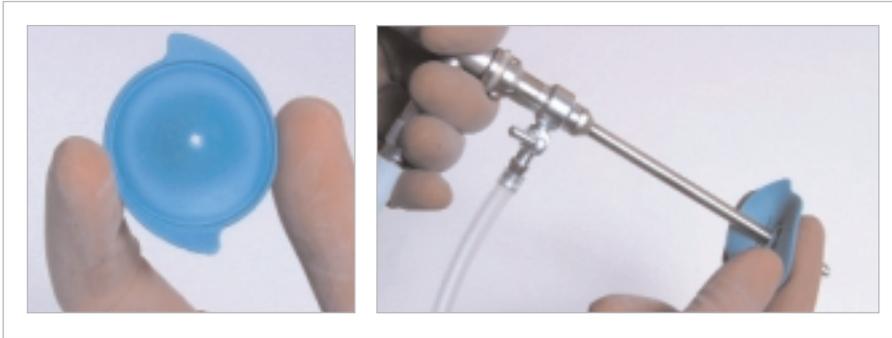


Figure 2 – The flexible design of Cannuflow DryVu slips easily over existing scope systems.



Figure 3 – The DryVu continually deflects fluid away for the camera interface.

OBSERVATIONS

The soft, flexible design of the DryVu Fluid Shield (see *Figure 2*) allows the device to slip easily and conveniently over the sheath of existing scope systems. It arrives sterile, takes only seconds to set in place, and, once positioned, requires no additional attention. A single-use device, there are no added costs for sterilization and maintenance.

Throughout a procedure the DryVu continually deflects fluid and debris away from the camera interface (see *Figure 3*). Even when the scope is held at a severe descending angle, fluid does not reach the coupling area. Consistent visibility is maintained without having to uncouple the scope and interrupt a procedure. The device can be turned in either direction and still work just as effectively. As an added bonus, the DryVu can be used during a procedure to redirect fluid into a collection drape for easier post-surgical OR clean up and room turn over.

CONCLUSION

Current scope defogging options increase OR cost either by extending surgery times due to added preparation steps and procedure interruptions or by requiring costly outlays in capital equipment. The DryVu Fluid Shield not only offers a truly effective, low-cost solution for eradicating the scope fogging caused by escaping fluid flowing in the camera junction during a procedure, its use helps to improve OR cost efficiency while at the same time paying for itself within the first few seconds of a procedure.

REFERENCES

- 1 Strobel, M., Eichhorn, J. and Schiebler, W. 1992. *Basic principles of knee arthroscopy*. Springer-Verlag Berlin Heidelberg, Germany.
- 2 Aspen Surgical Products, Inc. www.aspensurgical.com
- 3 http://www.arthrotek.com/pdf/Y-BMT-594R_053199.pdf
- 4 <http://www1.stryker.com/>;
<http://www.lintratec.com/products-arthroscopy.htm>



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