

■ ABSORPTION AND TRANSFER CHARACTERISTICS OF CERVICAL COLLAR PADDING

Overview

Patients with moist skin are four times more likely to suffer skin breakdown than those who are kept dry.¹ Cervical collars with replaceable padding, such as the Aspen and Miami-J, utilize open cell foam for comfort, and to control perspiration or other fluids at the skin surface. The padding in these two collars differs in the type of foam used² and lining material adhered to the foam. Since the lining material comes into direct contact with the skin, fluid absorption and transfer characteristics of the pads may significantly impact patient care. This report evaluates the effectiveness of both Aspen and Miami-J pads in keeping moisture away from a patient's skin. The results indicate that Aspen Collar Pads absorb more readily, and move fluid away from the skin contact surface much more effectively.

Materials & Methods

The pads tested were obtained from currently available Aspen® and Miami-J® Collars. Two small pools of fluid (~.23 cc) were placed on a glass surface. The cotton side of the Aspen pad, and the smooth nylon side (referred to by the manufacturer as "Sorbatex™"³) of the Miami-J pad were placed flat, without pressure, over the fluid (FIGURE 1).

After 8 seconds the pads were lifted off of the surface, and turned over so the wetted "skin contact" surface faced up. The fluid remaining on the surface was then observed (FIGURE 2).

A sheet of tissue paper was placed over both pads for 30 seconds (FIGURE 3).

Moisture on the skin contact surface was absorbed by the tissue (FIGURE 4) and the wetted area was measured. The test was repeated 3 times and then averaged.

Results

The Aspen pad appeared to be more effective in absorption. Significantly more fluid was observed on the glass surface under the Miami-J pad (FIGURE 2). The area of the tissue that became wet when placed over the Aspen pad measured 24 (± .5) sq. mm., while the wetted area of the tissue placed over the Miami-J pad measured 860 (±.5) sq. mm. When comparing the wetted areas, the Aspen pad transferred more fluid away from the surface. The Miami J pad produced a moist skin contact surface area that was 35 times larger than that produced by the Aspen pad.



FIGURE 1



FIGURE 2

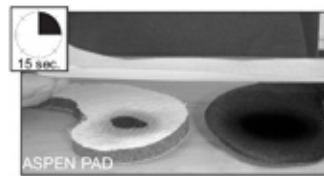


FIGURE 3

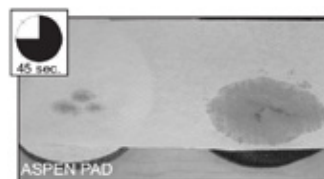


FIGURE 4

Discussion

Differences in materials used in cervical collar padding may result in significant differences in the ability of the pads to keep patients dry. Synthetic materials have been shown to offer advantages in cooling (i.e.-athletic apparel) by dispersing perspiration for increased evaporation when there is substantial airflow.⁴ When assessing evaporation in cervical collar padding, however, there is no significant airflow, so evaporative cooling is not an important factor. The results of this evaluation show that the Aspen pads readily absorb and move fluid away from the patient's skin surface. Miami-J pads proved to be less effective in absorbing fluid and substantially worse in transferring moisture away from the skin contact surface.



Conclusions

Aspen Collar Pads, absorbed moisture and transferred it away from the contact surface more effectively than the synthetic-lined padding used in the Miami-J® Collar. By minimizing the moist contact area and by transferring fluid away from the skin contact surface, Aspen® Collar Pads keep patients comfortable and may reduce the likelihood of collar related skin breakdown.

Acknowledgment

Experiments were performed and data was collected by Orange County Materials Test Laboratories, Anaheim, California.

References

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