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## **Does the Use of Bair Huggers Increase the Likelihood of Operating Room Fires?**

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**Introduction:** Fire safety in the operating room has long been a concern for medical personnel, with fiberoptic light sources commonly cited as an ignition mechanism. This study was undertaken to gauge the flammability of items commonly used in the OR when exposed to fiberoptic light sources at close range. Specifically, we attempted to determine if the presence of a Bair Hugger would accelerate the flammability of surgical drapes.

**Methods:** We exposed surgical drapes to a fiberoptic light source at close range. In the first trial, the drapes directly covered a patient gown, while in the second trial, a Bair Hugger was inserted between the drape and the patient gown. Each of five different materials composing the drape were tested. The results were categorized according to: 1) time to first smoke; and 2) damage resulting to the materials at one minute. The data was analyzed using the Mann-Whitney rank-sum test.

**Results:** Our results indicated that the presence of a Bair Hugger under a surgical drape significantly accelerated the time to first smoke. The sums of the rank values for two of the components of the drape indicated that there is less than a 0.8% chance that the Bair Hugger did not accelerate the time to first smoke. The sum of the rank values for a third component indicates that there is a less than 3.2% chance that the Bair Hugger did not accelerate the time to first smoke. Interestingly, the Bair Hugger appeared to protect the underlying patient gown from damage during all trials.

**Discussion:** The presence of a Bair Hugger under a surgical drape can significantly accelerate the time to first smoke, and potentially fire, when exposed to unprotected fiberoptic light sources. Paradoxically, the presence of the Bair Hugger prevented damage to the patient gown. We observed that the forced air through the Bair Hugger created two layers; while the superior layer often melted, the forced air prevented the inferior layer from coming into contact with the fiberoptic light source, thus protecting the underlying patient gown. In an actual surgical setting, it is likely that the Bair Hugger would therefore offer some protection to the patient's skin, directly below the surgical drape. More research needs to be undertaken to elicit the effects of common operating room materials on the ignition and propagation of fires.

### **References:**

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