Effectiveness of Various Cast Covers in the Pediatric Population

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Purpose: We explore the efficacy of different options as well as their cost across growing age cohorts encountered in a pediatric practice.

Methods: Short arm casts were applied to mannequin models representing the arms of pediatric patients ages 3, 6, and 12 years old. The mass of each cast was then measured in grams. Casts were then completely submerged in water for 1 minute and the difference in mass was calculated. This was repeated six times per cast cover group across for all three age groups. There was a control group without a cast cover and eight additional groups of various cast cover types. Effectiveness of a cast was subjectively determined based on amount of absorption compared to the starting mass, and this was compared among the various groups using a non-parametric statistical test.

Results: For the different cast cover types across all age groups, the Kruskall-Wallis test was used to analyze the entire dataset. A single plastic bag with duct tape was the most effective in reducing absorption (mean of 3.2 g absorption, 4.4 g SD). The results for the remaining cast covers were as follows. Many, but not all, of the eight groups had less absorption than the control with statistical significance at an alpha level of 0.05. These groups included the double plastic bag rubber band cover ($p=0.0112$), single plastic bag with duct tape cover ($p<0.0001$), DryPro ($p<0.0001$), Bloccs ($p<0.0001$), Walgreens ($p=0.0010$), and Freedom covers ($p<0.0001$). The plastic bag with duct tape cover additionally had significantly less absorption than the Press N Seal. ($p=0.0045$). The Curad group was found to not be statistically different from the control; in addition, the DryPro ($p=0.0049$), Bloccs ($p<0.0001$), Freedom

Table 1. Mean Absorption for Various Cast Covers Across All Pediatric Age Groups

Group	Mean Absorption (grams)
Control	138.6±25.6 g
Double Plastic Bag with Rubber Band	34.0±48.5 g
Single Plastic Bag with Duct Tape	3.2±4.4 g
Press N Seal	57.4±44.9 g
DryPro	9.2±9.1 g
Curad	108.0±57.0 g
Bloccs	7.1±5.3 g
Walgreens	22.5±28.7 g
Freedom	10.4±14.7 g

(p=0.0031), and plastic bag with duct tape (p<0.0001) covers had significantly less absorption than this cover. Finally, a cost analysis was performed and demonstrated that a single plastic bag with duct tape was found to be the most cost efficient in theory, but the Walgreens cast cover was least expensive in actual cost.

Conclusions: Our study indicated that a single plastic bag with duct tape was both one of the most effective cast covers at reducing absorption as well as one of the most cost effective across all age groups.

Significance: The use of a single plastic bag with duct tape was both one of the most effective cast covers at reducing absorption as well as one of the most cost-effective across all age groups.