

Does the Use of a Parent's Cell Phone Reduce Anxiety of Cast Removal?

Serge Tzeuton, BS; Danielle A. Hogarth, BS; Nathan N. O'Hara, MHA; Joshua M. Abzug, MD
Department of Orthopaedics, University of Maryland School of Medicine, Baltimore, Maryland

INTRODCUTION

- Orthopaedic fractures are quite common amongst the pediatric population and application of a cast is frequently included in the treatment plan, therefore making cast removal inevitable.
- The vision and sound of the cast saw can be quite jarring for pediatric patients, making the cast removal process evoke fear and anxiety.
- Previous studies have evaluated the use of music as coping mechanisms to reduce the stress and anxiety experienced during the cast removal process.
- **Purpose:** To prospectively determine the effectiveness of visual stimulation in reducing anxiety in children during cast removal.

METHODS

- **Sample:** Patients between ages 12 months and 17 years of age presented in the clinic for cast removal.
- **Data:** Blood pressure and heart rate were recorded using an automated sphygmomanometer, and their faces score will be assessed by the researcher utilizing the faces pain scale to subjectively assess patient's facial expressions.
 - Their respective anxiety levels were recorded throughout the cast removal process.
- **Statistics:** Simple statistics were performed.

RESULTS

- 50 patients were randomly assigned to either the experimental group (n=21) or the control group (n=29) via REDCap survey.
- **Average Age:** 7.1 years (range: 1-16 years)
- **Sex:** 52% Male, 48% Female
- 33% of patients have had previous cast removal
- Heart rate in the experimental group was found to be less than the control group, however, this difference was not statistically significant (p=0.82).
- **Average FACES score:** Lower in the group with the device (3.1) compared to without the device (4.9)

CONCLUSIONS

- Using mobile devices as distractors would benefit in reducing anxiety during cast removal for the pediatric population.
- Mobile cell phones and personal electronic devices can be utilized as a low-cost distractor for the pediatric population during the cast removal process to mitigate anxiety levels and promote a less uncomfortable cast removal experience.

Table 1. Demographics

| Characteristic | | All (n=51) | Control (n=22) | Device (n=29) | P Value |
|------------------------------------|---|------------|----------------|---------------|---------|
| Age, years, mean (SD) | | 7.1 (4.0) | 7.8 (3.9) | 6.1 (4.1) | 0.13 |
| Sex, male, n (%) | | 27 (52.9) | 13 (44.8) | 14 (63.6) | 0.26 |
| Cast type | | | | | |
| Short Arm Cast | 0 | 14 (28.0) | 7 (24.1) | 7 (33.3) | 0.04 |
| Long Arm Cast | 2 | 16 (32.0) | 12 (41.4) | 4 (19.1) | |
| Short Leg Cast | 3 | 13 (26.0) | 9 (31.0) | 4 (19.1) | |
| Long Leg Cast | 4 | 7 (14.0) | 1 (3.5) | 6 (28.6) | |
| Previous Removal, yes, n (%) | | 17 (33.3) | 12 (41.4) | 5 (22.7) | 0.23 |
| Time Immobilized, weeks, mean (SD) | | 3.2 (1.3) | 3.4 (1.2) | 3.0 (1.5) | 0.30 |

Figure 1. Mean Blood Pressure (left) and Heart Rate (right) during cast removal. Red = Control Without Device; Blue = With Device

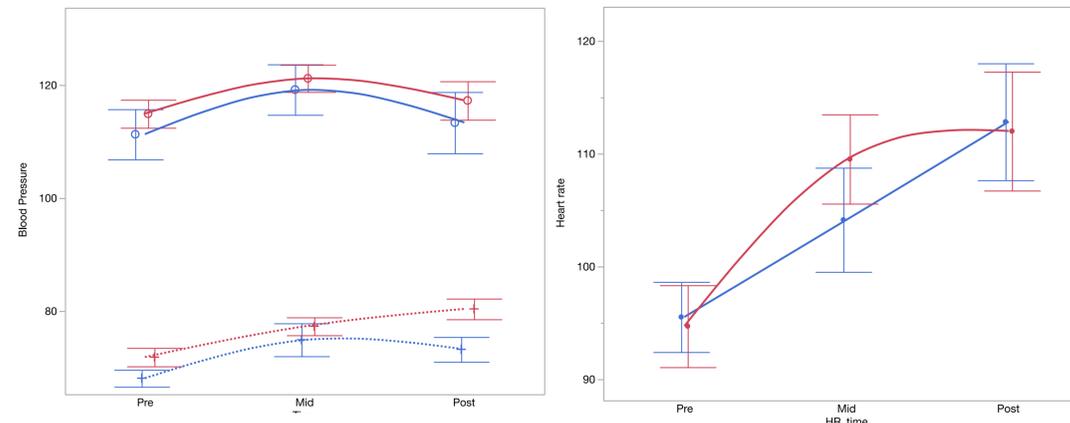


Table 2. Average assigned FACES pain scores during cast removal.

| | Control (n=22) | Device (n=29) | Mean Difference (95% CI) | P Value |
|------------|----------------|---------------|--------------------------|---------|
| Face Score | 4.9 (3.1) | 3.1 (3.3) | 1.8 (-0.9 – 3.6) | 0.06 |

