

Sternal Precautions After Pediatric Cardiac Surgery: A Survey of Current Practice

Hypothesis/Purpose: The practice of sternal precautions (SP) after pediatric cardiac surgery is variable among pediatric institutions. SP practice is more influenced by institutional preferences than evidenced-based information.

Rationale/Background: SP are implemented following cardiac surgery requiring thoracotomy or median sternotomies. Precautions are intended to reduce complications associated with wound dehiscence, infection and poor sternal healing. Research data and practice consensus is lacking in the pediatric population. A survey was conducted to further understand current SP practice among pediatric heart centers.

Design/Participants/Methods: A survey was administered using a web-based survey tool, SurveyMonkey.com. The survey, comprised of 10 questions, was distributed to members of PediHeart.com, attendees at the 3rd Annual Neurodevelopmental Symposium, and a collaborative website for directors of rehabilitation therapy departments at children's hospitals in the United States. Eligible participants included clinical specialists who care for children with cardiac disease.

Results/Conclusion: There were 58 responses, representing different groups of specialists: cardiovascular surgeons (8/58), pediatric cardiologists (34/58), physical therapists (10/58), and occupational therapists (6/58). The majority (96%) of respondents report their institution has restrictions on lifting under arms following sternotomy and thoracotomy. When asked about prone positioning, nearly half (56%) of respondents indicated prone position is prohibited after sternotomy and less commonly after thoracotomy (30%). The duration of SP was variable with majority of institutions adhering to SP between 2 to 8 weeks following surgery. Utilization of rehabilitation evaluation and treatment was high. Respondents reported referrals to physical therapy (100%), occupational therapy (88%) and speech therapy (56%). When asked to indicate key factors which influence the respondent's institutional practice, SP are determined by cardiovascular surgeon (77%) followed by institution culture (54%), and literature (12%). Education regarding SP within daily activities was introduced by cardiovascular surgeon (15%), cardiologist (15%), bedside nurse (55%), OT (27%), PT (24%), ST (5%) and advanced practice nurse (69%).

Discussion: SP practice is inconsistent among pediatric heart centers in the US and Canada. Currently, institutional culture and preferences, instead of evidenced-based research, play key roles in shaping SP practice. Protracted or excessive physical restriction may have negative impact on motor and sensory development of the infant following cardiac surgery. Further studies are needed to determine the optimal duration and level of SP. This study highlighted the important roles of nursing and occupational/physical therapists as primary educators for patients and family about SP, as well as providing early interventions to optimize neurodevelopmental outcome after cardiac surgery.

Impact Statement: This is the first survey to demonstrate the need for standardization of SP practice in children in the United States and Canada. Education and supports for families and availability of occupational and physical therapy are critical during and following period of SP to optimize developmental outcomes.