

Splints placed improperly in 93 percent of suspected pediatric fractures

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More than 90 percent of potential pediatric fractures are splinted improperly in emergency rooms and urgent care centers, which can lead to swelling and skin injuries, according to a study by researchers at the University of Maryland School of Medicine. The findings are being presented at the American Academy of Pediatrics (AAP) National Conference & Exhibition in San Diego.

The study looked at 275 cases involving children and teenagers up to the age of 18 who were initially treated in community hospital emergency rooms and urgent care facilities in Maryland, then later evaluated by University of Maryland pediatric orthopaedic specialists.

"Splints are effective for immobilization of fractured extremities in children and adolescents when placed appropriately," says the presenting and senior author, Joshua M. Abzug, M.D., assistant professor of orthopaedics at the University of Maryland School of Medicine. "Unfortunately, many practitioners in emergency departments and urgent care settings incorrectly applied splints, potentially causing injury."

Dr. Abzug, who is also director of pediatric orthopaedics at the University of Maryland Medical Center, says improper splinting can result in excessive swelling, blisters and other skin complications, and poor immobilization of the fracture.

"As a result of our findings, we believe that healthcare professionals may need more extensive education and training on proper splinting

techniques," says Dr. Abzug. He plans a follow-up study working with healthcare providers in emergency departments and urgent care centers on the correct way to apply splints.

Dr. Abzug co-authored the study with Brandon Schwartz, M.P.H., and Aaron Johnson, M.D., M.S., from the University of Maryland School of Medicine.

A splint is made up of at least one strip of rigid material placed on the extremity, which is then wrapped with a soft padding followed by an elastic bandage to hold it in place. Splints are used by emergency departments and [urgent care centers](#) as a way to temporarily stabilize a possible fracture and decrease pain. After being splinted, patients are referred to an orthopaedic surgeon, who removes the splint for further evaluation.

The researchers found that the most common reason for improper placement of a splint was putting an elastic bandage directly on the skin, which occurred in 77 percent of the cases. In 59 percent of the cases, the joints were not immobilized correctly, and in 52 percent, the splint was not the appropriate length. Skin and soft-tissue complications were observed in 40 percent of the patients.

Broken bones are very common in children and adolescents, with nearly half of all boys and a quarter of all girls experiencing a fracture at some point before the age of 16. The patients in the study had a range of fractures affecting all extremities, including fingers, arms, ankles and knees.

"This research points out a significant problem in caring for pediatric fractures in emergency and urgent care settings," says E. Albert Reece, M.D., Ph.D., M.B.A., vice president for medical affairs at the University of Maryland and the John Z. and Akiko K. Bowers Distinguished

Professor and Dean of the University of Maryland School of Medicine. "Our mission is to educate doctors and healthcare providers, and we look forward to working with them to correct this problem."

The researchers used a standardized questionnaire to get information, including the patient's demographics, type of splint, facility type, practitioner type and time from splint application to orthopaedic evaluation. The authors evaluated the splint and took photos before removing it, and observed any soft tissue complications that may have occurred. Two members of the pediatric orthopaedic team evaluated the splint for functional position, appropriate length and presence of an elastic bandage on the skin.

Dr. Abzug began his research after noticing that patients were coming to his office with improperly placed splints. "I observed a lot of cases where a splint was placed incorrectly, so instead of just making note of it, I wanted to be more rigorous in coming up with a way to possibly fix the problem," he explains, adding that healthcare providers may not have learned the correct way to apply splints.

"The real intent of this study is to avoid any major complications that could occur from an improperly placed splint," Dr. Abzug says. He says that parents who have a child with a splint should not ignore any concerns or pain the child is experiencing.

"If there is any question, get in to see an orthopaedist as quickly as possible. Any child complaining of pain away from the point of the fracture or experiencing swelling may have an improperly placed splint," he says. He notes that a splint can be on anywhere from a very short period of time to a couple of weeks.

As part of a follow-up study, Dr. Abzug is creating educational signs that he hopes will be placed around the emergency departments at

community hospitals and in urgent care facilities. The signs would include photos of a correctly placed splint and instructions on how to apply a splint using all up-to-date guidelines.

"Everything we do, no matter how minor it may seem, needs to be done correctly," Dr. Abzug says.

More information: The study will be presented at 9:37 a.m. PDT Saturday, Oct. 11 in Marina Ballroom Salon G at the San Diego Marriott Marquis.

To view the abstract "Inappropriate Splint Application for Pediatric Fractures in the Emergency Department and Urgent Care Environment," visit aap.confex.com/aap/2014/webpro...nary/Paper27212.html.

Provided by University of Maryland

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