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## RSNA Press Release

### Radiologists Identify and Treat Teenage Self-Injury

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OAK BROOK, Ill. — Using ultrasound and a minimally-invasive procedure, radiologists can identify and treat patients who engage in a disturbing self-injury behavior known as self-embedding, according to a new study published in the online edition and October print issue of the journal *Radiology*.

"This is a new way for radiologists to impact public and mental health," said the study's senior author, William E. Shiels II, D.O., chairman of the Department of Radiology at Nationwide Children's Hospital in Columbus, Ohio, and president of The Children's Radiological Institute. "Radiologists can be in a position to interrupt a cycle of self-harm with effective, early diagnosis and referral for appropriate behavioral health and foreign body removal."

Self-injury, or self-harm, refers to a variety of behaviors in which a person intentionally inflicts harm to his or her body without suicidal intent. It is a disturbing trend among adolescents, particularly girls. Prevalence is unknown because many cases go unreported, but recent studies have reported that one in five high school students has practiced deliberate self-injury at least once. More common forms of self-injury include cutting of the skin, burning, bruising, hair pulling, breaking bones or swallowing toxic substances. In cases of self-embedding, objects are used to puncture the skin or are embedded into the wound after cutting.

Dr. Shiels and colleagues studied 21 episodes of self-embedding behavior in 11 teenagers, including nine girls and two boys, age 14 to 18. Objects had been present for time periods between 2 days and an unknown number of years. Using ultrasound and/or fluoroscopic guidance, interventional pediatric radiologists removed 68 of the 76 embedded foreign objects found in the patients. The embedded objects included metal, glass, wood, plastic, graphite, crayon and stone. The objects were embedded during injuries to the arms, ankles, feet, hands and neck. One 18-year-old patient with repetitive behavior had self-embedded 35

#### At A Glance

- Self-embedding behavior consists of puncturing the skin with objects or embedding objects into the wound after cutting.
- Minimally invasive image-guided removal of objects embedded in the skin is safe, precise and effective.
- Deliberate self-injury has been reported in one in five high school students.

objects over two years time, including staples, a comb tooth, a fork tine, a cotter pin and nail polish wands.

Ultrasound guidance allowed the researchers to detect the presence and location of wood, crayons and plastic objects, not detectable on x-ray examinations. Removal was performed through small incisions in the skin that left little or no scarring and was successful in all cases. There was one incident of fragmentation, but all fragments were removed.

"Early detection and removal of these foreign bodies are key steps for these teenagers to engage in effective therapy and interrupt their cycle of self-harm, so they can recover and grow as healthy and successful adults with good coping skills," Dr. Shiels said.

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"Self-embedding Behavior: Radiologic Management of Self-inserted Soft-Tissue Foreign Bodies."  
Collaborating on this paper with Dr. Shiels were Adam S. Young, B.S., James W. Murakami, M.D., Brian D. Coley, M.D., and Mark J. Hogan, M.D.

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