

Bend and snap: New interventions for rib fractures

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Physicians at MUSC Health offer surgical stabilization of rib fractures for less severe fractures and breaks. It helps patients experience less pain during their recovery. Credit: Lauren Hooker, MUSC

When an arm snaps, a leg cracks or a wrist twists, physicians set the bone

to ensure it heals properly and with as little discomfort to the patient as possible. But the same cannot be said for most rib fractures.

Past practice and teaching call for little to no treatment, even if it takes months for the patient to breathe normally or just get back to work. The prevailing wisdom has been succinct. "Offer medicine for the pain and a ventilator if breathing is an issue," said Evert Eriksson, M.D., a trauma surgeon at the Medical University of South Carolina and coauthor of the paper. "But otherwise, the bones will form a callus over time that allows it to function as it needs to." And while that idea has morphed over the last decade to make multiple-fracture repair more common, patients with less severe fractures often still go untreated despite pain.

This extended discomfort is what led Denver Health Medical Center surgeon Fredric Pieracci, M.D., along with several other [trauma surgeons](#) to conduct a study with members of the Chest Wall Injury Society. Twelve centers from across the United States came together to evaluate the success of surgical stabilization of rib fractures (SSRF), which involves installing a plate to line up the two ends of the fracture and hold them in place throughout the healing process. They theorized that by stabilizing partially displaced and fractured ribs, patients' pain and [quality of life](#) would improve.

As recently published in the *Journal of Trauma and Acute Care Surgery*, patients who underwent SSRF for three or more rib fractures with partial dislocation reported less pain on the numeric pain scale and a better quality of life after their stabilization surgery.

"This research shows that patients who have partially displaced fractures as well as some pulmonary compromise also benefit from a procedure that is usually reserved for a more severely injured cohort," said Eriksson.

Technological limitations have played a role in keeping surgeons from performing this procedure in the past. It wasn't until recently that surgeons acquired the right equipment to keep surgical incisions small and the risk of complications in the pleural space low. By pulling the muscles aside, instead of cutting through them, surgeons are able to access the [chest wall](#) and ribs less invasively. Even the material of the stabilization plates has improved, becoming less rigid and moving more naturally with the patient as the chest expands and contracts with each breath, according to Eriksson.

While the level of narcotic use did not change significantly in patients who received SSRF, these patients consistently reported more comfort and less pain at each interview interval than those who had not undergone the operation. The fractured ribs took just as long to completely heal, but the patients' experiences during this process were far superior, and they reported feeling less [pain](#) and easier breathing throughout.

Patients also experienced fewer complications from their rib fractures. By opening the chest, addressing any additional injuries, guiding the bones back into position and removing any excess blood from the area, surgeons decreased the chances that study participants would have any additional bleeding or fluid accumulation in that space.

And the difference was statistically significant. Surgeons reported that in the group that underwent SSRF, there was a zero percent pleural space complication rate from their patients' injuries, while the group that did not undergo the procedure experienced a 10% complication rate.

Next, Eriksson wants to look at other bones that are not treated surgically. "I had a patient from this study come to me and say, 'My chest no longer hurts. You fixed that. But now it's my shoulder that's the problem.' By stabilizing the chest wall, physicians may improve

outcomes from clavicle or scapula [fractures](#) as well.

This collaborative multicenter effort presents an opportunity for surgeons to address a different population than is traditionally not considered for operational treatment. "It gives us an opportunity to help a new set of patients," said Eriksson. "And that is important."

More information: Fredric M. Pieracci et al, A Multicenter, Prospective, Controlled Clinical Trial of Surgical Stabilization of Rib Fractures in Patients with Severe, Non-flail Fracture Patterns, *Journal of Trauma and Acute Care Surgery* (2019). [DOI: 10.1097/TA.0000000000002559](#)

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