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Commentary

Commentary: Thoracoscopic-Assisted Rib Plating: Where We Are and What We Have Learned

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See Article page 120.

Rib fractures are common but serious injuries that result in 10% of all trauma patients being hospitalized for pulmonary complications. Surgical stabilization of rib fractures (SSRF) has progressed tremendously over the last 2 decades. The advances include more precise preoperative localization of rib fractures using ultrasonography or 3-dimensional computed tomography reconstruction technology, and more secure rib fixation using specially designed plating systems. SSRF has recently been frequently performed at large-volume trauma centers with the intention of reducing pain, restoring lung function, and allowing an early return to work [1].

As surgeons are obtaining more experience with SSRF, the technique is also diversifying. Minimally invasive approaches have been reported, such as extrathoracic SSRF or intrathoracic SSRF, using video-assisted thoracoscopic surgery. The benefits of thoracoscopic SSRF are theoretically clear: (1) minimal tissue trauma to overlying muscles and nerves, (2) improved identification of rib fractures with direct visualization, (3) exploration and correction of intrathoracic organ injury, and (4) elimination of the palpable bone plate (particularly in the completely thoracoscopic SSRF technique) [2]. Despite these theoretical advantages, thoracoscopic SSRF has not yet been routinely used due to a lack of experience and suitable instruments. Currently, it is only attempted by leading SSRF groups, such as those in the United States and China [2-4], and no data are available to compare the efficacy of thoracoscopic SSRF to either conventional thoracotomy or conservative management.

As the first report of thoracoscopic SSRF in a Korean trauma population, this retrospective study is meaningful from this perspective [5]. The authors performed thoracoscopic SSRF in 27 patients over 3 years. Given that more than half of the patients had an Injury Severity Score of 15 or above, the positive outcomes without pulmonary and surgical complications are noteworthy. The successful completion of all operations without conversion to open thoracotomy increased the potential of the practical utilization of thoracoscopic-assisted rib plating. Nonetheless, there are a few points that need to be considered. First, thoracoscopic SSRF was performed in carefully selected patients in this study. Most patients had 3 or fewer plates implanted, and the proportion of patients with flail chest, for whom the efficacy of SSRF has been proven in previous studies, was not high. In addition, this approach was preferred in patients with posterolateral fractures, especially those located in the subscapular region, owing to anatomical restrictions in other locations. Second, the authors described the difficulties associated with the surgical instruments. It is crucial to properly align the titanium plate on the rib surface and apply a perpendicular screw to reduce the risk of hardware failure after surgery. A more advanced device for rib plating is necessary to achieve secure rib fixation using a minimally invasive approach. Unfortunately, commercially available rib plating systems for minimally

invasive techniques are insufficient and limited in Korea. Consequently, as mentioned in the text, the authors created various instruments for traction, reduction, and drilling. Despite the authors' presentation of surgical images, it is difficult to understand precisely how to perform the procedure. The publication of a supplemental document with a detailed explanation of the surgical devices or a video presentation of thoracoscopic SSRF would be helpful to enable the reproduction of this approach in clinical practice. To conclude, standardizing the indications for thoracoscopic SSRF and communicating surgical tips, particularly regarding surgical equipment, would be beneficial to expand the use of this evolving technique.

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