



## Editorial



# Commentary on “Characteristics and Risk Factors of Rod Fracture Following Adult Spinal Deformity Surgery: A Systematic Review and Meta-Analysis”

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See the article “Characteristics and Risk Factors of Rod Fracture Following Adult Spinal Deformity Surgery: A Systematic Review and Meta-Analysis” via <https://doi.org/10.14245/ns.2040832.416>.



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Rod fracture is not an uncommon postoperative complication after spinal deformity surgery.<sup>1</sup> The authors performed a well-established systemic review to analyze rod fracture characteristics and risk factors in this paper.<sup>2</sup> Thus, it is meaningful, up-to-date research for summarizing features of rod fracture, which I believe will be very helpful for readerships.

As I read this article and the results, I could learn a few critical things about rod fracture. First, their results showed a 12% rod fracture out of 209 enrolled patients after a mean of 23.2 months after index surgery. Rod fracture is a relatively late complication, and surgeons should pay attention to this complication.<sup>1</sup> Adult spinal deformity correction is a complicated surgery, and postoperative patient care should be time-dependent. The early postoperative period within the first year after surgery is vulnerable for patients. There are many tasks to care for within the first year; time takes for solid fusion, high risk of early proximal junctional failure, rehabilitation, and complaining of surgical burdens. Surgeons may be less intensive in treating after 1–2 years later. However, 12% of risk complications is not too minimal to lose attention. Between 1–2 years after surgery, patients are much mobilized and adapted to their new lifestyle. Repetitive motion with daily activity causes stress fracture of rod in case of high-stress concentration like pedicle subtraction osteotomy (PSO). Interestingly, only PSO was a significant surgical risk factor. Fusion level, rod diameter, rod material, change of sagittal parameters were not effective between groups with and without rod fracture. Although rod diameter and material did not show statistical significance in their meta-analysis, authors reviewed the importance of multiple rod construct in preventing the complication.<sup>3</sup> As the authors' insightful discussion of the radiologic risk factor, a significant amount of force applied to the rod to correct deformity increases the risk of rod fracture. This study implies some intraoperative recommendations to prevent rod fracture. First, it is necessary to avoid sharp angular rod bends. Repetitive rod bending can crack the rod cortex, causing susceptibility to stress fracture. Second, multiple rods construct in corrective surgery with PSO is an effective option other than strong or thick rods.

The authors showed demographic risk factors such as advanced age, higher body mass index (BMI), and prior spinal surgery, of which only BMI is adjustable with a weighted mean difference of BMI of 1.98. Therefore, weight control to reduce BMI before and after surgery

is necessary to decrease the risk of rod fracture, especially for patients whose radiological and demographic factors are susceptible.

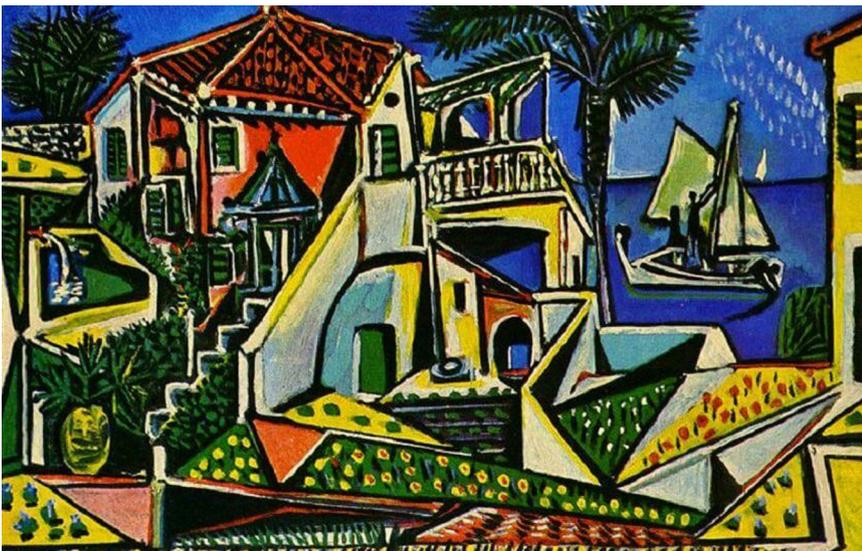
Adult spinal deformity is a complicated disease category that is difficult to describe in one word.<sup>4,5</sup> Each patient has different individual deformities and baseline demographic and radiological variables. Various surgical endeavors are required for each patient, and additional postoperative care is needed depending on the period.<sup>5,6</sup> Thanks to the authors' extensive review of previous research, we can watch for this famous late complication's nature and learn more about prevention and adult spinal deformity patient care.

## CONFLICT OF INTEREST

The author has nothing to disclose.

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Title: Mediterranean landscape  
 Artist: Pablo Picasso  
 Year: 1953  
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