

## Clavicle Fracture: Your Best Day or Your Worst Nightmare?

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In our life there are some issues or games which at first looks so easy and fun that you can do it very easily and quickly, but as time goes by it seems very difficult and difficult to manage. I feel ski is one the sports game which I first started when I was 9 years old with easy handling. But after 40 years I still feel that without proper lesson and input in training, I think it is still one of the most difficult sports I feel. I think I have somewhat same feeling for clavicle fracture. Clavicle fracture can be easily managed without doing anything, not even the figure of 8, which we seem to apply in all the conservative patients, is needed to have good result. On the other hand, it is one of the most common fractures that has nonunion or malunion complications with relatively many legal issues between patient and surgeons or physicians. Moreover it is one of the most common fractures in upper extremity.

In this quarterly issue, we have several original papers looking at the surgical techniques and clinical outcome of clavicle fractures. This shows how much interest and diversity in treating clavicle fractures. I agree on the opinion that clavicle malunion (moderate to severe) is not good for your scapular movement and overall shoulder biomechanics, thus causing secondary shoulder lesions such as rotator cuff tears or severe muscle spasm. In such cases, it is favored to perform anatomic reduction. However, the paper by Kim et al.,<sup>1)</sup> should be read with caution, that there might be other issues that need to be considered. Besides the limitations authors mentioned, it seems that the paper give the impression that demineralized bone matrix (DBM) might have resulted a positive effect on healing. However, with the sample size and without control they cannot state they achieved good result due to the DBM. Their comparison is

not proper since the other group had no gap. It only shows that some defect filled with DBM can result good result.

Also I warn all the readers that the author meaning unsuccessful reduction is not actually unsuccessful but rather some gap remaining. I feel that the figures which they show and state that it is unsuccessful reduction actually have end to end anatomic reduction with some contact but some large gap. They also have rigid fixation purchasing more than 6 cortex on one side. I think this solid technique caused good result rather than just DBM graft alone. However, I feel their effort to reduce the small fragments by all means is slight lacking in their cases shown. I advise all surgeons that once you open clavicle fracture it needs to be reduced as anatomically as possible since the bone has minimal soft tissue and you cannot expect callus formation once you open. In most cases, the fragments can be purchased with small screws and K-wires before plate fixation. The most appropriate screws for fragment fixation is cortical 2.0, 2.7, 3.5, and 4.0 mm (cannulated) screws. I recommend the 2.0 cortical screw become very handy with small fragments. In conclusion, once you are thinking of opening the fracture, one has to reduce anatomical as possible, in doing so you need reduce like reducing the puzzle game. Otherwise, nailing or conservative treatment might have better union rate or lower complication.

### Reference

1. Kim JY, Choi JS, Chung SW. Comparison between accurate anatomical reduction and unsuccessful reduction with a remaining gap after open reduction and plate fixation of midshaft clavicle fracture. *Clin Shoulder Elbow*. 2016;19(1):2-7.

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