



QUESTION | THIS YEAR LANCE ARMSTRONG SUSTAINED A CLAVICLE FRACTURE AFTER A FALL. HE HAD SURGERY AND QUICKLY RESUMED TRAINING TO COME THIRD IN THE TOUR DE FRANCE.

A FEW OF MY OWN PATIENTS WITH CLAVICLE FRACTURES HAVE HAD SURGERY LATELY. WHEN I FIRST BEGAN PRACTICE, I DON'T REMEMBER ANYONE HAVING SURGERY ON THIS INJURY.

IS THERE A NEW TREND FAVOURING SURGERY ON CLAVICLE FRACTURES?

ANSWER | Fractures of the clavicle are a very common injury to the upper limb that have classically been treated in the past with non-operative management. When a fractured clavicle is in good position (non-displaced) it may be treated non-operatively. This involves supporting the shoulder in a sling for approximately 4 weeks and only performing elbow, wrist and hand exercises, and then gradually commencing shoulder range of motion exercises as then pain begins to settle down.

In previous years, the following were considered indications for fixing a fracture semi-urgently:

- If the skin had been breached adjacent to the fracture (i.e. the fracture was open or "compound").
- If there was neurological or vascular compromise.
- If the skin was "threatened" because of pressure from the bone fragments.
- If there was an associated fracture of the shoulder blade as well (glenoid neck- aka floating shoulder)

These are all uncommon situations, and traditionally most fractures were thus treated non-operatively. This method of treatment was based on good outcomes reported in a large series of patients series of patients in the 1960's. These reports were however, at best Level 4 evidence. Mal-union of the clavicle, where the clavicle heals in a shortened positioned was considered to be of no consequence.

Over the last 10 years, reports were growing in the literature which questioned these long-held beliefs. The incidence of non-union seemed to be much more common than previously reported, and the significance of mal-union, particularly when the clavicle heals in a position of more than 2cm of shortening was also of concern.



It is believed that when a clavicle heals in a very shortened position, its effect of strutting the shoulder joint out from the body is compromised. This results in the major upper limb muscles now having to work over a shorter length. Studies on muscle contraction tension demonstrate that when a muscle is at a shorter resting length, its twitch tension decreases. In an active individual this can then lead to periscapular fatigue related pain as these muscles have to work harder to maintain high upper limb function.

With these growing concerns, a group in Canada decided to perform a high quality study in an attempt to answer these questions. They designed a Level 1 study* which demonstrated numerous advantages to treating these fractures with an operation to fix the clavicle with a plate and screws. The main advantages of an operation reported in this study were:

- A lower risk of the bone not healing (non-union) properly. (15% sling versus 1.6% plate and screws)
- A lower risk of the bone healing in a shortened position which resulted in fatigue related symptoms in around the shoulder (15% sling versus 0% plate and screws)
- Improve function of the arm with an operation (DASH scores)
- A better body image

The results of this study confirmed what most shoulder surgeons had suspected. Having quality data such as this study available makes it much easier to discuss the options of management with a patient. As always, the advantages of an operation must be weighed against the risks of the operation to allow an informed choice on behalf of the patient.

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*Nonoperative Treatment Compared with Plate Fixation of Displaced Midshaft Clavicular Fractures: A Multicenter, Randomized Clinical Trial; Canadian Orthopaedic Trauma Society The Journal of Bone and Joint Surgery (American). 2007;89:1-10.

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