

# New Technology for the Surgical Treatment of Clavicle Fractures

Severe fractures of the clavicle (collar bone) can be tricky to treat. Advances in digital X-rays, surgical tools, and techniques have made it possible to now treat this problem surgically. Years ago patients would have been put in a sling and the body had to heal itself as best as possible. Deformity and loss of function were often the result with conservative care.

Now, the use of a flexible intramedullary (IM) device has changed all that. Even collar bones that are broken into many pieces can be threaded back together with this implant. In this report, one surgeon who is using this technique tells how it's done.

The patient's position is described. Usually patients are draped or covered with only a small area of skin over the area to be operated on showing. But in this procedure, a larger area remains visible to give the surgeon the room needed to make the necessary incisions and thread a guide wire through from one end of the clavicle to the other.

The surgeon must be careful to avoid hitting nerves and blood vessels in the area. At the same time, he or she must find all of the fragmented pieces of bone to include in the reduction. The term "reduction" refers to the act of surgically bringing the pieces of bone back together and lining them all up again.

Open reduction and internal fixation (ORIF) is the full name of the procedure. The label tells us the surgeon makes incisions to open up the area and then uses hardware (such as this flexible wire) to hold everything together until it heals. A special type of 4-D or real-time X-ray called fluoroscopy is used to help the surgeon see as the guide wire moves through the bone.

Once the guide wire is in place, a special surgical tool called a reamer opens up the space needed inside the bone to accommodate the size of the intramedullary device. Again, the surgeon must be careful to avoid hitting strategic soft tissues. The fluoroscopy is a big help in this process.

The flexible implant is locked in place where it now gives rigid support for the healing bone. One screw placed at the lateral end (nearest the shoulder) is put in place to keep the clavicle from twisting, turning, or rotating. One last fluoroscopic exam is done to make sure everything is in place properly. If not, the surgeon pulls the implant out and starts over or makes whatever adjustments are needed to get a good reduction.

The patient can't just go out and start swinging a golf club or tennis racket. Immobilization in a sling is required for three weeks. The physical therapist shows the patient how to dangle the arm in order to move the shoulder joint without disrupting the healing clavicle. No one is allowed to lift the arm overhead after this surgery for at least three weeks (and sometimes as long as six weeks per the surgeon's discretion).

The decision to allow active motion and progress to overhead or functional activities depends on seeing healing bone on X-rays. Intramedullary (IM) fixation has the added benefit for healing of saving blood flow to the bone. This small detail can determine how quickly the bone heals.

The timeline for getting back to work and/or play varies depending on what occupation and activities the patient is engaged in before the injury. Most patients can expect a postoperative period of 10 to 12 weeks before working with arms overhead for example. Sports activities may have to wait longer -- maybe as much as five or six months until the fracture site is completely healed on X-rays.

The author concludes by saying that there are plenty of studies now showing a trend in the care of clavicular fractures from sling immobilization to reconstructive surgery. Bad breaks in the middle of the bone with multiple bone fragmen

respond well to open reduction and fixation (ORIF).

Surgical techniques have advanced with the use of a special device called an intramedullary (IM) implant. This safe and effective approach spares the soft tissues of damage, prevents deformities, and even avoids unsightly incision lines and scars. As the younger generation is fond of saying, "What's not to like?"

Reference: Stephen B. Gunther, MD. Rigid Internal Fixation of Displaced Midshaft Clavicle Fracture. In *Orthopedics Today*. January 2011. Vol. 31. No. 1. Pp. 6-9.