

Get the Better of Humeral Shaft Non-Unions

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Received: March 17, 2022; **Published:** March 31, 2022

Fracture shaft of humerus constitute about 3% to 5% of all fractures. Non-operative and open reduction and internal fixation with fixation devices are the accepted methods of treatment in adult population. Though, immobilization of the fracture with cast and bracing provides outstanding results in most of isolated humeral shaft fractures, non-union is a recognized complication. Open reduction and internal fixation by intramedullary devices or plate fixation with dynamic compression plates (DCP) have also resulted in non-union. This can be attributed to improper surgical reduction techniques and wrong implant choice for the fractures.

Non-union of humeral shaft is not easy to treat because it goes against all attempts to heal. It is astonishing to know that the incidence of nonunion of humeral shaft is as high as 15%.

Various modalities of treatment of humeral non-unions are dynamic compression plates, angled blade plates and wave plates. These modalities usually invites an autograft or allograft. Locked IM nails and Ilizarov external ring fixator have also been used in the management of nonunion of humeral shaft. Recently, locking compression plates (LCP) are used in non-union with severe osteoporosis, nonunion with enlarged screw holes due to previous surgeries, non-unions with cortical thinning due to previous nails and gap non-unions. LCP combined with cancellous bony autografts can result in definitive healing of these humeral nonunion with excellent functional outcome.

Studies have revealed that locking plates were superior to unlocked plate and screw constructs in osteoporotic humeral shaft diaphyseal fracture models tested in vitro using cyclical torsional loading.

Normally, few screw holes are left alone in an LCP. But, studies recommend screw placement in all the holes in the plate thus making the construct very stiff. As most of the humeral shaft non-unions are bestowed upon with bone loss and cortical defects, the insertion of maximum possible screws will not endanger the plate.

One of the merits of using LCP is that, it can be used in younger patients who have higher functional demands. Therefore, LCP with is a standard treatment method for nonunion of humeral shaft fractures.

Volume 13 Issue 4 April 2022

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