Online ISSN: 2581-3935
Print ISSN: 2589-7837
International Journal of Medical Science and Diagnosis Research (IJMSDR)
Available Online at www.ijmsdr.com
Volume 2, Issue 6; November-December: 2018; Page No. 276-280

OUTCOME OF THE PATIENTS UNDERGONE THE SURGICAL TREATMENT OF ANKLE FRACTURE

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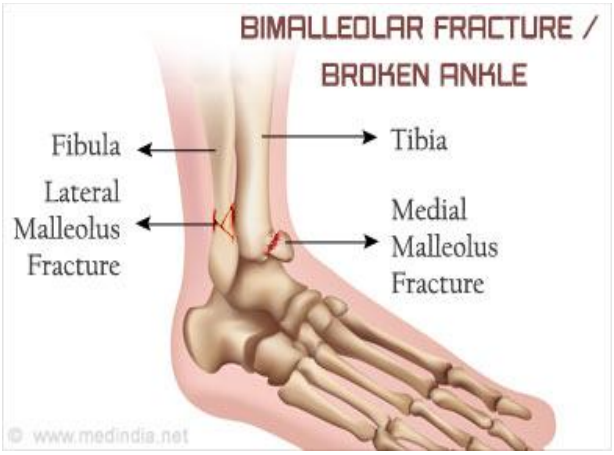
Conflicts of Interest: Nil

Abstract:
Ankle fractures are one of the commonest injuries and fractures of the lower leg. Bimalleolar fracture is a type of ankle fracture, in which the inner and outer bony prominences at the lower end of the leg breaks or cracks. The goals of treatment continue to be both fracture union and an ankle that moves and functions normally without pain. Operative treatment is indicated when congruity of the joint cannot be restored with closed methods. Hence based on above findings the present study was planned to assess functional outcome of surgery in ankle fractures.
The 20 patients admitted Department of Orthopaedic Patna medical college and hospital from Sept 2017 to June 2018 were included in the present study. The patients were undergone the surgical treatment of ankle fracture.
The present study concludes that surgical management of bimalleolar ankle fractures provides good functional outcome. Ankle injuries are common in young male after stumbling or vehicular accident. Conservative treatment in selected fractures is justified. Surgical treatment with stable fixation after understanding mechanism of injury gives good results in terms of early mobilization faster rehabilitation.
Keywords: Ankle fractures, Bimalleolar fractures, ankle injury, etc.

INTRODUCTION:

A bimalleolar fracture is a fracture of the ankle that involves the lateral malleolus and the medial malleolus. Studies have shown that bimalleolar fractures are more common in women, people over 60 years of age, and patients with existing comorbidities.

A broken ankle is also known as an ankle "fracture." This means that one or more of the bones that make up the ankle joint are broken. A fractured ankle can range from a simple break in one bone, which may not stop you from walking, to several fractures, which forces your ankle out of place and may require that you not put weight on it for a few months. Simply put, the more bones that are broken, the more unstable the ankle becomes. There may be ligaments damaged as well.



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The ligaments of the ankle hold the ankle bones and joint in position. Broken ankles affect people of all ages. During the past 30 to 40 years, doctors have noted an increase in the number and severity of broken ankles, due in part to an active, older population of "baby boomers."

Ankle fractures occur at a rate of 174 cases out of 100,000 persons in the world. They commonly occur due to falls, road accidents, and sporting events. Based on the kind of injury and the number of bones that are broken, ankle fractures are divided into 3 main categories as unimalleolar, bimalleolar, and trimalleolar fractures. Many kinds of classifications on fractures exist. Among these, the Danis-Weber classification is the widely used in the classification of lateral malleolar fractures.

X-rays: X-rays are the most common and widely available diagnostic imaging technique. X-rays can show if the bone is broken and whether there is displacement (the gap between broken bones). They can also show how many pieces of broken bone there are. X-rays may be taken of the leg, ankle, and foot to make sure nothing else is injured.

Stress test: Depending on the type of ankle fracture, the doctor may put pressure on the ankle and take a special x-ray, called a stress test. This x-ray is done to see if certain ankle fractures require surgery.

Computed tomography (CT) scan: This type of scan can create a cross-section image of the ankle and is sometimes done to further evaluate the ankle injury. It is especially useful when the fracture extends into the ankle joint.

Magnetic resonance imaging (MRI) scan: These tests provide high resolution images of both bones and soft tissues, like ligaments. For some ankle fractures, an MRI scan may be done to evaluate the ankle ligaments [1].

The purpose of surgery in ankle fractures is to reconstruct the normal shape of the bones of the ankle, minimize ligament damage, and accelerate the recovery of the ankle. The initial reduction performed on the bones during displacement is observed in an X-ray. If the bones have set in the correct position, surgery is deferred. However, if the bones are not set properly, surgery is required in such cases. Surgery can only be performed if there is no swelling in the soft tissue surrounding the injury. During surgery, swelling creates pressure while closing the wound. This, in turn, results in infections arising in the wound. Patients with osteoporosis, peripheral artery occlusive disease and diabetes, have to be carefully assessed for the extent of soft tissue damage and the level of damage to the bones due to a possibility of delayed healing. Patients are invariably provided a cast or a walker to minimize postoperative complications [2].

Ankle fractures are one of the commonest injuries and fractures of the lower leg. Bimalleolar fracture is a type of ankle fracture, in which the inner and outer bony prominences at the lower end of the leg breaks or cracks. The goals of treatment continue to be both fracture union and an ankle that moves and functions normally without pain. Operative treatment is indicated when congruity of the joint cannot be restored with closed methods. Hence based on above findings the present study was planned to assess functional outcome of surgery in ankle fractures.

Methodology:

The 20 patients admitted Department of Orthopaedic, Patna medical college and hospital From Sept 2017 to June 2018 were included in the present study. The patients were undergone the surgical treatment of ankle fracture. The inclusion criteria includes the patients having any malleolar fracture of ankle joint, Patients of any sex & in age groups of 20 yrs & above, Patients who are fit for surgery and Patients having malleolar fractures of ankle joint for which closed method is indicated. The patients excluded from the present study were with open ankle fracture, fracture and open epiphyses, previous fracture of either ankle, patient is unfit for surgery and or anesthesia.

All the patients were informed consents. The aim and the objective of the present study were

conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.

The lateral malleolus was approached through a postero lateral incision. Reduction of the fracture was now done by reversing the force that caused the fracture. A medial longitudinal incision of 8cm was put over the medial malleolus between its anterior and posterior borders with the lower end curving anteriorly at the tip of medial malleolus. Post-operative immobilisation was done with below knee slab until suture removal and converting it into below knee cast for 4 weeks.

On cast removal after 4 weeks, active & passive ranges of motion exercises of the ankle are started. Partial weight bearing was started after cast removal for the next two weeks and full weight bearing after 8 weeks. All the patients were evaluated and scores were given. Regular follow was done at 4 weeks, 12 weeks and 24 weeks. Functional and radiological results were analyzed using the ankle scoring system of Baird and Jackson. The seven categories in the scoring system were given alphabetical grades each being assigned a point score.

Results & Discussion:

The data from the 20 patients were collected and presented as below. Recent advances have resulted in an evolution in the management strategies of ankle fractures; improved analysis of biomechanics, improvement in fixation techniques and analysis of result of recent studies contributed toward a better surgical outcome. The goal of treatment in these patients is to provide fracture union with a painless full motion of the ankle and with an anatomical restoration of the injured ankle.

Table 1: Type of Fracture & Results

Lauge & Hansen Type	PA (Pronation Adduction)	SER (Supination External Rotation)	PER (Pronation External Rotation)	SA (Supination Adduction)	Total
Excellent	3	5	1	1	10
Fair	0	3	0	1	4
Good	2	1	0	0	3
Poor	0	2	0	1	3
Total	5	11	1	3	20

Table 2: Scoring according to the subjective, objective and radiological criteria by Baird and Jackson

Category	Grade A	Grade B	Total
Pain	12	8	20
Stability	19	1	20
Walking	18	2	20
Running	3	17	20
Work	15	5	20
Motion	16	4	20
Radiograph	17	3	20

Of all the intra-articular fractures, the most common joint involved is the ankle joint. Methods to restore function and to prevent arthritis are either closed treatment, which includes manipulative reduction and immobilization in plaster cast or open reduction with internal fixation. Closed method of treatment is often inadequate in restoring the anatomy and biomechanics of ankle joint. Conversely, open reduction with internal fixation is an excellent method for restoration of normal anatomy of joint. Several studies indicated that, internal fixation of displaced malleolar fractures of ankle provides better results.

The most common intra-articular fracture of a weight-bearing joint occurs in the ankle. Two methods of restoring function and preventing arthritis have been used: closed treatment, including manipulative reduction and immobilization in a plaster cast, and open reduction and internal fixation. Burwell and Charnley [3] showed that anatomical reduction and satisfactory fixation led to a rapid return of function. The treatment of ankle fractures involves both a risk-benefit and a cost-benefit analysis. The primary risk associated with closed treatment is inadequate restoration of the biomechanics of the ankle, which can lead to a poor outcome. Conversely, while open reduction and internal fixation is an excellent method for the restoration of the normal anatomy of the joint, it is accompanied by the costs and risks of an operation. Current opinion has increasingly favored primary operative intervention [4] for a displaced or unstable fracture of the ankle, with the greatest emphasis on anatomical reduction and rigid fixation of the lateral malleolus, and fractures of the medial malleolus and those of the posterior malleolus have also been fixed whenever indicated.

Right ankle was more commonly affected, in accordance with Roberts RS [5], Beris et al [6] . In our study, Lauge-Hansen classification system was used for operative evaluation. The most common type of injury was Supination-external rotation 15(37.5%), followed by Pronation-external rotation injury (30%), in accordance with by Roberts RS [5], Beris et al [6], Baird and Jackson [7].

Most authors have stated that anatomical reduction of the displaced medial malleolus ensures correction of talar displacement and is of paramount importance in treating unstable fractures [8] However, more recent studies have indicated that the talus is more accurately repositioned in the mortise by anatomical reduction of the lateral malleolus [9] While a number of methods (cerclage wires, single or multiple lag screws, an intramedullary Rush rod, or a single malleolar screw) are available, the lateral plate, as advocated by the AO Group, has become widely accepted for the treatment of the fibular fracture Of the two fractures of the posterior malleolus with residual displacement, one had articular involvement of less than 25 per cent. McDaniel and Wilson [10] showed that closed reduction of fractures involving less than 25 per cent of the posterior tibial surface led to a good or excellent result in eighteen of twenty-eight patients, even in the presence of residual displacement of more than two millimeters. If the fragment comprises more than 25 per cent of the surface, according to estimates of the fracture size made from plain radiographs, a good or excellent result can be expected in operated cases. In many fractured ankles, the syndesmosis is stable after reduction and internal fixation of the fibular fracture and any associated medial malleolar fracture. Yablon17 et al. stated that anatomical reduction of the fibula is the key factor in achieving a good outcome of treatment of ankle fractures that have accompanying syndesmotic disruption.

Conclusion:

The present study concludes that surgical management of bimalleolar ankle fractures provides good functional outcome. Ankle injuries are common in young male after stumbling or vehicular accident. Conservative treatment in selected fractures is justified. Surgical treatment with stable fixation after understanding mechanism of injury gives good

results in terms of early mobilization faster rehabilitation.

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