DISCUSSION
DISCUSSION

The goal of treatment is restoration of the function of the part involved along with restoration of the anatomy as near normal as possible. The fractures of lower end radius are not exceptions to this fundamental goal. The standard method of close reduction and POP immobilization frequently leads to malunion. Earlier reports in literature have suggested that satisfactory functions can be obtained despite poor anatomical alignment of colles #. But other studies have shown that standard cast Tt of this injury associated with substantial rate of complications. The appears to be a distinct parallel between anatomical and functional results. With the increasing standard of living, health consciousness, awareness of once rights and litigations, the importance of restoration of anatomy and functions to near normal is the demand of the day. Various methods have been evolved by workers to overcome above problems.

The unstable fractures of distal end of radius remains challenging problem for orthopaedics surgeon due to increasing evidence of unsatisfactory result with conventional Plaster technique. The treatment have been reviewed from time to time but is still controversial particularly in cases of unstable fractures that are known for malunion.
There is usually no difficulty in obtaining initial reduction but redisplacement is common in plaster cast because of triangular zone of compression on dorsal and radial aspect leaves behind a cortical defect after reduction. The K-wires buttress the fragment in its place after reduction so redisplacement of bone does not occur. There is no problem in healling of fracture due to metaphyseal region.

Fernandez (1982) reported that a dorsal residual tilt of more than 25 degree became symptomatic. Taleisnik and Watson (1984) status that change in palmar tilt lead to radio carpal dysfunction. R. Fraham, O Saul (1989) emphasised that radial shortening as a primary cause of poor results because it changed the loads within wrist causing functional limitation.

The loss of palmar tilt causes the carpus to collapse dorsally leading to midcarpal instability. The loss of radial angle which lead to increase in scapholunate angle. The radial shortening or in combination with angulation, disrupts the congruence of distal radioulnar joint. This causes pain in the joint and interfere in pronation supination movements.

The result of conservative treatment are not satisfactory because of secondary displacement in plaster cast. Judet et al (1950) had 138 fair to poor results in 247 cases. Castling (1969) found 25% unsatisfactory result in a review of 430 cases treated by plaster cast. Aro (1991) has showed 31%
unsatisfactory result in 146 patient of colles fracture with plaster cast.

The Sarmiento (1980) and in (1990) showed a good correlation between anatomical and functional end result. The goal of treatment in colles fracture is the anatomical reduction and maintainance of reduction until the fracture heals. (Cole and Oblitz 1986). In stable fracture the reduction can be maintained by plaster cast.

But in unstable fracture the reduction is well maintained by percutaneous K-wire fixation. The percutaneous K-wire fixation technique is a simple, quick, least traumatic surgical procedure that effectively maintain the reduction. Plaster cast can be removed early thus rehabilitation can be started early leads to fewer complication with good result. No secondary operative procedure is needed and hospitalisation is also not required.

The present study include 20 cases of fracture of lower end radius. In all the cases close reduction and percutaneous K-wire fixation was done (Gary J. Clancey 1979 - 1983 ) The age of patient in this series varies from 21 to 60 years and majority of cases were in the age group of 4th and 5th decade. The mean age was 42.5 years the female- male ratio 3:2.

Maximum number of fractures were due to fall on outstretched hand. Lenkin's (1986) also reported fall from substantial height was a commonest cause of fracture of lower
end of radius. The 25% fracture of left sided and 75% of right side.

Out of all patients 65% of manual worker and 25% of shopkeeper. The associated injuries like spinal injury L1, vertebra post dislocation of elbow, clavicle fracture patella were treated accordingly.

After percutaneous pinning the plaster immobilisation was done for four weeks in (75%) cases and K-wire were removed in (80%) of cases at 6th weeks. The cases average follow up was 16 months.

The radiological study of preoperative, post operative and final X-Ray was carried out and compared with X-Ray of normal wrist. The radial length, radial angle and dorsal\Palmar tilt were measured.

In pre operative X-Rays all fractures were unstable type. The mean loss of radial length was more than 5 mm mean loss of radial angle was more than 12° and mean dorsal tilt was more than 20°.

In Post operative X-Ray the excellent reduction was achieved in 70% of cases.

The final radiological result was excellent in 80% cases, good in (15%) cases and fair in 5% cases.
The average length of follow up was 10 months within maximum 16 months and minimum of 4 months.

The clinical result were evaluated according to demerit point system of Gartland and Werley. The residual prominence of ulnar styloid process was in 15% of cases. And some pain without limitation of movement in 15% of cases .The palmar flexon and circumduction movement was restricted in 35% cases and 40% cases respectively. The pain in distal radio-ulnar joint in 55% cases and the grip strength was decreased in 35% of cases.

On correlating the radiological and clinical results, it was proved that an excellent anatomical reduction had an excellent clinical result and poor reduction lead in poor clinical outcome (Cooney et al. 1979).

On comparing the results with plaster chart that shows simple cast had 58% good to excellent result in 60 unstable fractures (Gartland and Werley 1951) 69% good to excellent in 146 unstable cases (Aero,1988) and 50% good to excellent in 115 unstable fractures with complications like weak grip in 50% and median nerve compression in 12.7% cases and finger stiffness in 30 % cases (Porter 1987 ). According to these author these poor results of plaster cast is due to secondary displacement of unstable fracture in plaster cast . The percutaneous K-wire fixation has 80% good to excellent results.
in our study. Better results with percutaneous K-wire fixation was also reported by Babst R. Rath B (1989) over simple plaster cast in a study of 56 colles fractures.

The results of thirty consecutive patients with a displaced colles fracture were treated with two Kirshnes wires. There were no serious complications. Two of the thirty patients a minor loss of reduction that did not compromise function (Gary J. Clancey 1979). The result of percutaneous K-wire fixation Kapandji method was 90% in 120 extra articular fractures (wellmen 1983). The Rudolph H. (1987) reported 84% good to excellent result by trans-styloid K-wire fixation (Stein method) in 404 cases. Peyroux (1987) showed 93% good to excellent result by Kapandji intrafocal pinning method in 159 extra articular fractures. Rayhack (1989) showed 100% good to excellent in 14 unstable fractures by transulnar pinning in patient with average age of 48 years. Hoffman (1994) reported 80% of good to excellent result in 100 was unstable fractures of an average age 59 year patients by transstyloid pinning. The Myoclinic (1993) reported 84.6% clinical good to excellent result in 23 unstable fractures by Kapandji technique.

The result of various studies differ because of the type of the fracture and age of patients. Mostly clinical result various from 70 to 90% with an average of 80% good to excellent result. In the present serves of 20 cases are displaced unstable fracture showed 80% good to excellent clinical end result. The functional cast bracing in 44 unstable fracture resulting 81% good to excellent result (Sarmiento 1975). In a study of 60
unstable cases Ledingham et al (1991) found no significant difference between plaster cast and functional cast bracing in clinical end result while complication rate was 20% in patients receiving a brace. The functional cast bracing did not prevent the collapse of fracture fragment (Stewart et al 1984).

The pin in plaster had 94% good to excellent result in 33 fractures of young adult of average aged of 18.81 years (Cole and Obtitz 1966). 97% radiological and 93% clinical good to excellent result were observed in 30% type II (reducible stable extra articular) fracture of average age group 40 years by Melone and Keith (1993). All the above studies were in stable fractures while we have selected reducible unstable fracture both extra and intra articular in the present revies that are prone for redisplacement and a liable to affect the clinical outcome. In a study Carozella(1988) had 52% complication rate and Chapman et al (1982) reported 50% complication rate with pin and plaster.

Cooney (1979) reported had 87% good to excellent result in 60 cases of unstable fractures in the average age of 63 years after applying external fixation. Seitz (1991) treated 51 fractures with external fixator had 92% good to excellent result. In this study he did not mentioned the type of fracture. Melone and Keith (1993) showed 93% radiological and 90% clinical good to excellent result in 30 extra articular stable fractures of average age group of 45 years with external fixator. The complication rate was 10% in his study. Wolle S.W. Yoo H.M.(1995) produced 95% good to excellent result in 7 unstable fracture by
arthroscope reduction and and external fixator. On comparing the external fixation result with over study of percutaneous K-wire fixation with 80% good to excellent result shows that external fixators are better to percutaneous pinning because fixator immobilize the distal fragment better by ligamentotaxis then the K-wire.

Addition of K-wire fixation with external fixator gave much better result. But complication like pin track infection, finger and wrist stiffness are more with external fixator (Webee and Szabo 1986). The percutaneous K-wire fixation fills the therapeutic gap between pure plaster and external fixator. The percutaneous pinning is least traumatic. Simple, safe technique as compared to external fixator.

Fixator is more combersome as compared to patient as percutaneous pinning.

Fernandez (1991) repoted 85% radiological and 77.5% clinical good to excellent result in 40 intra articular irreclucible colles fractures after open reduction with bone grafting Bahn j. And Faye N (1994) had 80% good to excellent result in displaced irreducible intra articular fracture treated by open reduction and internal fixation with palmar plate and K-wire open reduction and bone grafting mainly used in severely communitied fractures showed 96% good to excellent result in a series of 50 intra articular fracture (Stephen, Leibonic 1993). The open reduction and bone grafting is superior to percutaneous pinning but procedure had its technical limitation.
The bone cement is the best treatment for colles fractures. In a study by Steven, W, Scatts (1996) reported 98% good to excellent result in 5 extra articular fracture without significant complications.

The complication were observed in only (20)% cases as compares to 26% reported by Epinette (1982). The superficial pin track infection was in 5% cases and deep infection in 5% cases. The deep infection case came for removal of k-wire after 15 months with discharging sinus. The lesion healed after removal of K-wire and proper antibiotics. The seudeck osteodystrophy in 5% cases and shoulder stiffness in 5 % cases these patients did not follow the physiotherapy instructions.

The extensor pollicis longus tendon adhesion in 5 % cases and migration of k-wire in 5% cases.