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Dynamic Condylar Screw Fixation for Intertrochanteric Femur Fractures

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ABSTRACT
Background: Intertrochanteric femur fractures management is still a challenging job for orthopaedicians throughout the globe. So, this prospective study was done to study outcomes of intertrochanteric fractures managed surgically by Dynamic Condylar Screw (DCS). **Methodology**: 25 patients having Intertrochanteric femur fractures were managed by internal fixation using DCS as per standard AO technique. **Results**: Average time of union was 15.3 weeks, with a mean Harris Hip score of 89.3. Complications seen were non union, mal-union, screw cut out and limb length discrepancy. **Conclusion**: Results were comparable with other studies in the world. DCS is a very versatile implant which allows anatomical and rigid fixation. DCS provides additional fixation in proximal fragment, thereby improving fixation and controlling rotation of proximal fragment.
Key words: Intertrochanteric femur fractures, Dynamic Condylar Screw (DCS).

I. INTRODUCTION

Intertrochanteric femur fractures are of intense interest worldwide. These fractures are located in between lesser and greater trochanter which represents one of transition from neck to the shaft of femur. These fractures are more common in elderly patients because of osteoporosis and generally results from trivial trauma.[1] Before 1930s, intertrochanteric fractures were managed non operatively, but conservative methods are now replaced by operative procedures, until unless there is any contraindication for surgery. Operative treatment in form of stable reduction and rigid fixation is the treatment of choice.[2] If, these fractures are not treated properly, they may cause a considerable change in quality of life, leading to increase in mortality or morbidity.

Intertrochanteric fractures can be managed surgically, using various types of implants. These implants can be broadly classified into intramedullary (eg: Gamma nail, Proximal Femoral nails etc.) and extramedullary devices (Jewett nail, Dynamic hip screw, Dynamic condylar screw etc.).[3,4] To achieve better outcomes of surgical management of intertrochanteric femur fractures, many implants have been evolved.

This study is being carried out to evaluate the clinical and radiological outcomes of management of Intertrochanteric femur fractures by Dynamic condylar screw.

II. MATERIAL AND METHODS

This prospective study was conducted in Department of Orthopaedics, Maharaja Agrasen Medical College, Agroha (Hisar). A total of 25 patients having Intertrochanteric femur fractures admitted between December 2013 to December 2015, were managed using Dynamic condylar screw. The patients include 15 males and 10 females ranging in age between 25 years to 80 years (average 55.2 years). According to Evan's classification of intertrochanteric fractures, 4 had type 3, 7 had type 4 and 14 had type 5 fracture pattern. Patients having pathological or open fractures were excluded from the present study. 18 patients sustained the fracture due to slip and fall and 7 due to road traffic accident . All the patients were operated under spinal anesthesia in supine position on a fracture table. Dissection was done using standard lateral approach for thigh, after fracture reduction and fixation was done using Dynamic condylar screw plate device as per standard protocol under C-Arm guidance.

Intravenous antibiotics were given till 3rd post operative day. Non weight bearing ambulation with help of walker and physiotherapy started from 1st post operative day. Patient was discharged after suture removal. Patient allowed to bear partial weight bearing on operated limb after 6 weeks, increased gradually in graded manner on sequential follow ups and full weight bearing allowed only after clinical and radiological evidence of union. Regular follow ups of all patients were done at 6,12,18,24, 30 weeks and 1 year post-operatively.

III. RESULTS

Union was achieved in 23 cases, with average time of union is 15.3 weeks (range of 12 to 24 weeks). Non-union was seen in one case, patient was chronic smoker that might be a contributing

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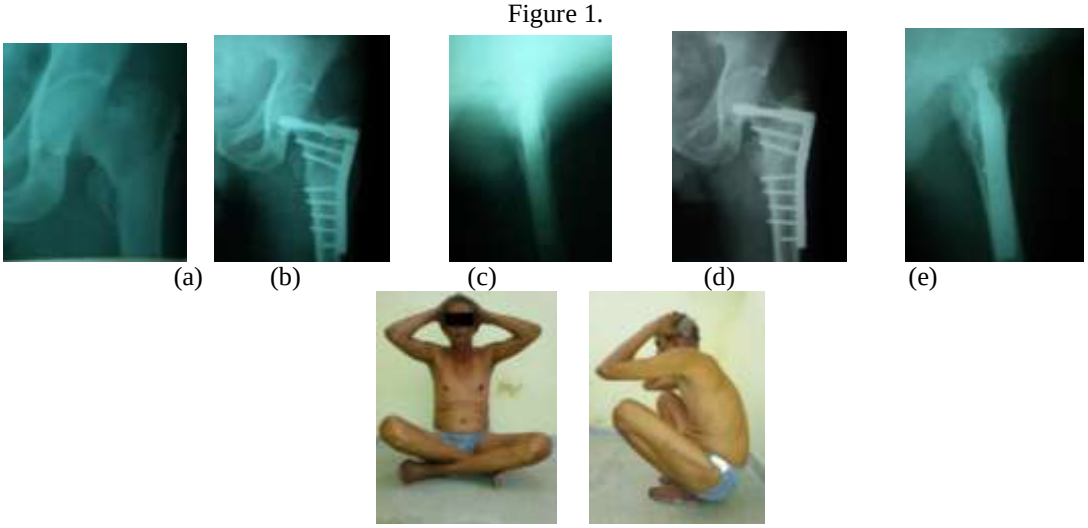
factor for non union. Mal-union was seen in one patient due to early weight bearing before complete fracture healing, leading to collapse at fracture site. Limb length discrepancy was seen in three patients (two patients having shortening of 2cm and one with shortening of 1 cm). Screw cut out was seen in one patient in one patient which may be because of unstable fracture pattern and loss of reduction. None of the patient had any infection .

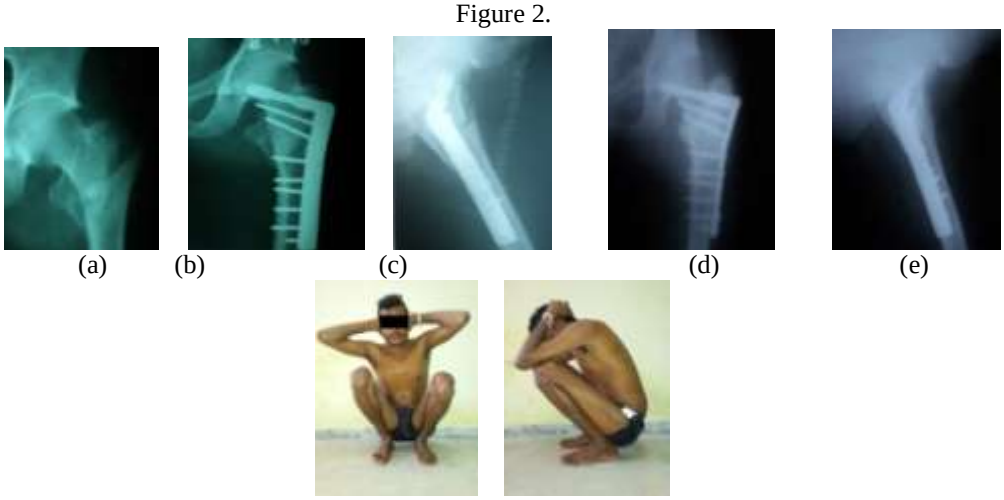
Figure 1.



(a) (b) (c) (d) (e)

(f) (g)

Figure 2.

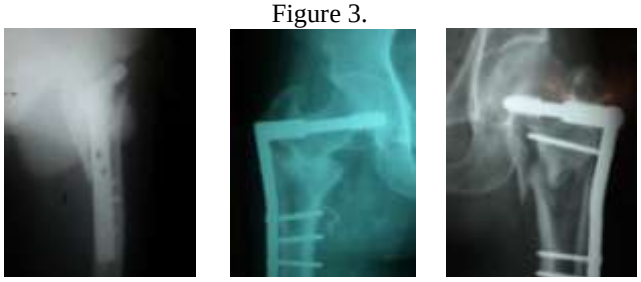


(a) (b) (c) (d) (e)

(f) (g)

[Figure1&2: (a) pre-operative x-ray, (b)&(c) post-operative x-rays, (d)&(e) union x-rays, (f)&(g) final functional outcomes]

Figure 3.



(a) (b) (c)

[Figure 3: complications (a) screw cut out (b) varus collapse, (c) non-union]

The functional evaluation of results was done in 23 patients having union at fracture site (two patients were excluded, as one had non union and other had implant failure due to screw cut out) using Harris Hip score. The average Harris Hip score was 89.3, with 13 patients having excellent grade, 8 having good grade, 1 having fair and 1 having poor grade.

IV. DISCUSSION

Outcome of surgical treatment of intertrochanteric femur fractures is influenced by many factors like age of patient, degree of osteoporosis, communition and type of implant used for fixation and rigidity of fixation achieved.[2] Although, many types of implants are available for fixation of these fractures, but some cases of complications and failures associated with them are reported in literature. So, studies are still going on to find one with further better outcomes in management of intertrochanteric fractures.

The average time of radiological union in present study was 15.3 weeks, with a range from 12 weeks to 24 weeks, which is on lower side to that reported in literature in some series (22.59 and 16 weeks in a study by Sahin et al[5] and Bukhari et al[6] respectively). This might be probably because of better reduction and rigid fixation. Non union was seen in 4% cases in the present study as compared to 2.7%, 7.14% and 5.26% in studies done by Sahin et al[5], Elis et al[7] and Sadowski et al[8] respectively. Screw cut out was seen in 4% cases in the present study as compared to 2.7% and 26.32% in studies done by Sahin et al[5] and Sadowski et al[8] respectively. Mal-union in form of varus collapse was seen in 4% cases in the present study as compared to 21.42% in a study done by Elis et al[7]. Average Harris Hip score is 89.3 in the present study which is comparable to study done by Bukhari[6] et al with an average Harris Hip score of 88.

The reasons for the excellent results in present study is rigid fixation in almost anatomical reduction and with minimal soft tissue insult and early aggressive physiotherapy.

V. CONCLUSION

DCS is a versatile implant. It provides additional fixation[5,9] in proximal fragment thus achieving better rotational stability of proximal fragment. It provides rigid fixation and lateral support, thus prevents medialization of distal fragment and loss of reduction. Thus, DCS is a successful implant in trochanteric fractures, having breach of lateral wall where DHS has high failure rates[3,6]. It has a slow learning curve, but when technique is mastered, it gives good results. Although, many studies are still going on to design the best implant for surgical management of intertrochanteric femur fractures.

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