

Surgical and functional outcomes of dynamic hip screw in extra capsular fractures of femur treated with traditional bone setting

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Abstract

Background: Traditional bone setters (TBS) offer quicker and cheaper treatment and are believed to use faster healing methods. Fall and fractures of hip are common in elderly. Among them trochanteric fractures account for approximately half of the hip fractures in elderly; out of this, more than 50% fractures are unstable. If proper precautions are not taken fractures unite in malposition resulting in shortening, limp and restricted. We evaluated the surgical and functional outcomes of extra capsular femur fractures of femur treated with Dynamic Hip Screw (DHS) in patients who underwent treatment with traditional bone setting.

Methods: The present study was undertaken at a Tertiary care hospital, Andhra Pradesh between the years 1998-2001. All the 34 patients with sustained extra capsular femur fractures treated by traditional bone setters for 6-8 weeks were included. Patients underwent DHS for trochanteric and sub trochanteric fractures. Patients were followed at 6 weeks, 3 months and 6 months. On each visit Fracture union, complications, limb shortening were observed. Functional outcome was assessed by using Harris hip score at baseline and at 6 months.

Results: At the time of presentation to the hospital, all patients had pain and unable to walk. 70% (24) of the patients had shortening of limb, 90% of the patients had limitation for range of motion. In 98.67% of patients, fracture was found to be united at the 6th month follow up. Patients who had stable reduction before fixation also showed early radiological union. 10 patients developed 1 cm shortening, 4 patients had 2 cm shortening and 1 patient developed 3 cm shortening. At the end of six months there was an increase from 11.7% to 47.0% in excellent and from 29.4% to 47% in good scores on Harris hip score as compared to baseline. This was substantiated by a fall in fair and poor scores 47.0% to 5.8% and 11.7 % to 5.8% respectively. Two patients developed respiratory infection and two patients developed catheter related urinary tract infection. Two patients developed mal union.

Conclusion: This study showed DHS to be a versatile, stable, acceptable implant fixation in trochanteric and subtrochanteric fractures treated previously by Traditional Bone setters. However, the results would have been superior if they would have operated earlier.

Keywords: Traditional bone setters, Trochanteric fracture, Dynamic Hip Screw, Harris hip score

Introduction

Traditional bone setters (TBS) are one of the largest specialist groups practicing traditional medicine in parts of rural India. TBS offer quicker and cheaper treatment and are believed to use faster remedial methods. Fear of weighty plaster of paris bandage, pain, prolonged period of immobilization, amputation and high cost of modern treatment influence people to visit TBS. ⁽¹⁻³⁾ Fall and fractures of hip are common in elderly. Among trochanteric fractures account for approximately half of the hip fractures in elderly; out of this, more than 50% fractures are unstable ⁽⁴⁾ Intertrochanteric fractures unite readily due to broad fracture surfaces, adequate blood supply and they rarely lead to non-unions. If proper precautions are not taken fractures unite in malposition resulting in shortening, limp and restricted. ⁽⁵⁾

When such a patient arrives in the bandage room, traditional bonesetters ascertain the nature of injury without the help of X-ray. They feel the leg for dislocated joint or fracture. To immobilize the area of injury, they tie up short pieces of bamboo sticks with a bandage. Such a treatment may result in malunion with shortening of limb and limitation of hip movement as well as complications of prolonged immobilization like bed sores, deep vein thrombosis and respiratory infections ⁽⁶⁾ In clinical orthopaedic practice, many patients are seen presenting with complications after being treated by traditional bone setters (TBS). The goal of treatment of any extracapsular femur fracture in elderly is to restore mobility safely and efficiently while minimizing the risk of medical complications which ultimately depends on the strength of surgical construct. ⁽⁷⁾ The DHS has been shown to produce good results in both stable and unstable trochanteric fractures. ⁽⁸⁾ We have evaluated the surgical and functional outcomes of trochanteric fractures treated with DHS in

patients who underwent traditional bone setting.

Materials and methods

This study was conducted in Sri Venkateswara medical college Tirupathi, during the period 1998-2001. All the 34 patients who sustained extra capsular femur fractures treated by traditional bone setters for 6-8 weeks were included. Patients with compound fractures, pathological fractures, disorders of bone metabolism other than osteoporosis (i.e., Paget's disease, renal osteodystrophy or osteomalacia), pediatric age group, Intertrochanteric fractures with reverse obliquity patterns, those with subtrochanteric extension, those with medically unfit for surgery and patient who are not willing for surgical intervention were excluded from the study. Institutional ethical committee permitted the study and informed consent form was obtained from the patients.

After evaluation patients were then taken up for surgery. All Patients underwent DHS for trochanteric and sub trochanteric fractures. A lateral approach was used to expose the femur in all cases. The locking plate was fixed to the shaft with locking screws of appropriate length. All patients received one dose of 2nd generation cephalosporin intraoperatively and 3 days course postoperatively. Ankle and calf exercises were started on postoperative day one, two and three respectively. At 6 weeks, patients were instructed to use a single crutch and bear successive weight on the affected limb. At 3 months, patients were allowed walk with a cane on the affected side and started stair case climbing.

Patients were followed at 6 weeks, 3 months and 6 months. On each visit Fracture union, complications, limb shortening were observed. Functional outcome was assessed by using Harris hip score. ⁽⁹⁾ At baseline and at 6 months. The accepted definition of union was the development of a well-established trabecular pattern across the

fracture site within 6 months following the date of injury. Harris Hip Score Poor = <70, Fair = 70 – 79, Good = 80-89 and Excellent = 90 -100. Successful result is defined as a post operative increase in Harris Hip Score of > 20 points + radiographically stable implant + no additional femoral reconstruction.

Statistical analysis

The data was entered into excel spread sheet -7 and analyzed with Graph pad Prism Version -5. Data was described as actual numbers and percentages. A two tailed p value less than 0.05 was considered statistically significant.

Results

At the time of presentation to the hospital, all patients had pain and unable to walk. 70% (24) of the patients had shortening of limb, 90% of the patients had limitation for range of motion. In 98.67% of patients, fracture was found to be united at the 6th month follow up. Patients who had stable reduction before fixation also showed early radiological union. 10 patients developed 1 cm shortening, 4 patients had 2 cm shortening and 1 patient developed 3 cm shortening. At the end of six months there was an increase from 11.7% to 47.0% in excellent and from 29.4% to 47% in good scores on Harris hip score as compared to baseline. This was substantiated by a fall in fair and poor scores 47.0% to 5.8% and 11.7 % to 5.8% respectively. Two patients developed respiratory infection and two patients developed catheter related urinary tract infection. Two patients developed mal union. Demographic characteristics and Functional outcomes were shown in tables-1 & 2.

Discussion

All the patients participated in our study were treated by local TBS probably due to illiteracy and socioeconomic reasons. Many scholars have found that similar reasons for opting. ⁽¹⁰⁻¹³⁾

Table 1 : Demographic and clinical characteristics of patients undergoing DHS

Characteristic	Number (N=34)	(%)
Sex		
Male	20	58.8
Female	14	41.2
Age group		
41–50	4	11.7
51–60	14	41.2
61–70	20	58.8
Extra capsular fractures		
Subtrochanteric	8	23.6
Inter trochanteric	26	76.4
Reduction (AP view)		
Neutral	22	64.7
Valgus	10	29.4
Varus	2	5.8
Reduction (lateral view)		
Neutral	20	58.8
Anterior	12	35.2
Posterior	2	5.8

Table 2 : Functional outcome of patients who underwent DHS

Grading of Harris hip score	Baseline	6 months
Excellent	4 (11.7%)	16 (47.0%)
Good	10 (29.4%)	14 (47%)
Fair	16 (47.0%)	2 (5.8%)
Poor	4 (11.7%)	2 (5.8%)

Traditional bone setting method includes application of herbs, wrapping of the affected part in bamboo sticks and cloths which usually fail to achieve anatomical reduction leading to mal-union/non-union among the elderly. ⁽¹⁴⁾ In our study we noticed similar complications resulting from treatment of fractures by TBS of varying magnitude.

In our study, all the patients with trochanteric fractures underwent DHS technique which showed an improvement in the functional activity. Deka RP et al. also showed good functional outcome with dynamic hip screw (DHS).⁽¹⁵⁾

Conclusion

This study showed DHS to be a versatile, stable, acceptable implant fixation in trochanteric and subtrochanteric fractures treated previously by Traditional Bone setters. However, early surgery on these patients would have improved the quality of life and prevented the complications of delayed surgery such as shortening of limb and limitation of movements.

Conflict of interest: NONE

References

- 1) Shanker. Traditional bone setting. Planning Commission Report on Health Systems. [Last accessed on 2007 July 16. Available from: http://planningcommission.nic.in/reports/sereport/ser/seeds/seed_helth.pdf.
- 2) Thanni LO. Factors influencing patronage of traditional bone setters. *West Afr J Med* 2000; 19:220-4.
- 3) Ogunlusi JD, Okem IC, Oginni LM. Why patients patronize traditional bone setters. *Internet J Orthop Surg* 2007;4
- 4) Sudhir S Babhulkar, Management Of Trochanteric Fractures, *Indian journal of orthopedics*, October 2006, volume 40: number 4: p.210-218
- 5) Kyle RF, Gustilo RB, Premer RF. Analysis of six hundred and twenty-two intertrochanteric hip fractures. *J Bone Joint Surg Am* 1979;61:216-21.
- 6) Pajarinen et al. Pertrochanteric femoral fractures treated with a dynamic hip screw or a proximal femoral nail. A randomised study comparing post-

- operative rehabilitation. *J Bone Joint Surg Br.* 2005; 87 (1): 76-81.
- 7) Y Z Xu, D C Geng, HQ Mao, XS Zhu, H L Yang, A Comparison Of The Proximal Femoral Antirotation Device And Dynamic Hip Screw In The Treatment Of Unstable Pertrochanteric Fractures. *The journal of international medical research*, (2010); 38; 1266-1275
- 8) Venkatesh Gupta, Veera Shekar Valiseti; Comparative study between dynamic hip screw vs proximal femoral nailing in inter-trochanteric fractures of the femur in adults; *International Journal of Orthopaedics Sciences* 2015; 1(1): 07-11
- 9) Harris WH. Traumatic arthritis of the hip after dislocation and acetabular fractures: treatment by mold arthroplasty. An end-result study using a new method of result evaluation. *J Bone Joint Surg Am.* 1969 Jun;51(4):737-55
- 10) Aries MJ, Joosten H, Wegdam HH, Van der Geest S. Fracture treatment by bonesetters in central Ghana: Patients explain their choices and experiences. *Trop Med Int Health* 2007; 12:564-74.
- 11) Smith AJ. Best of the old and the new. *Br Med J* 1974;2:367- 70.
- 12) Weston PM. Care of the injured in the third world - What can we learn. *Injury* 1987;18:297-303.
- 13) Udosen AM. Traditional bone setting in Africa: Counting the cost. *Internet J Altern Med* 2009; 7(1)
- 14) Kuubiere B. Callistus¹, Abass Alhassan^{1*} and Mustapha Issahaku, Fracture complications after treatment by traditional bone setters in Northern Ghana; *Advances in Applied Science Research*, 2013, 4(6):207-211.
- 15) Deka RP, Shetty S, Shetty M, Mohapatra A, Poulouse PJ, Krishna V. Functional Outcome of Dynamic Hip Screw in Elderly People: A Clinical Study. *Int J Sci Stud* 2015; 2(11):142-146.