



TO STUDY THE OUTCOMES FOLLOWING COMBINED MANAGEMENT OF FRACTURE DISTAL END OF FEMUR WITH IPSILATERAL PATELLA FRACTURE: A PROSPECTIVE AND DESCRIPTIVE STUDY.

Dr. Anurag Dhaker

Professor, Department Of Orthopedics, SMS Medical College, Jaipur

Dr. Mahendra Jourwal*

Junior Resident, Department Of Orthopedics, SMS Medical College, Jaipur*Corresponding Author

ABSTRACT

AIM: To study the Outcomes following combined management of fracture distal end of femur with ipsilateral Patella fracture.

METHODS: A hospital based Prospective, Interventional and Descriptive study was done at Department of Orthopedics, SMS Jaipur to compare the functional outcome (range of motion) and fracture healing following different modes of treatment done for Supracondylar femur fracture with Ipsilateral Patella fracture. A total of 35 patients fulfilling the inclusion criteria were included in the study after taking the written informed consent. Preoperative evaluation and X-Ray were done. They were then taken for surgical fixation. Femur fracture was fixed with Locking Compression Plate and Patella Fracture was fixed with K-Wire Tension Band Wiring (TBW), Encirclage, Patellectomy or managed conservatively Postoperatively, Wound inspection was done on 2nd, 5th and 8th day. Sutures were removed on 15th day and patients were followed On 2nd, 6th, 10th week and 3rd month. Range of motion, amount of radiological union and amount of for weight bearing were recorded at every visit. Patient's functional results were evaluated using Friedman and Wyman scoring system. At the end of 3 months, the observations were compared and statistically analysed.

RESULTS: After 3 months of follow up, Average age of presentation was 39.88 ± 14.50 years. 82% patients were males. Locking compression plate was used for fixation of supracondylar femur fracture. K-wire TBW was found to be most satisfactory method for reducing fractures of patella & helped in acquiring greater range of motion ($p < 0.001$). Operating fracture patella along with distal femoral fractures helped in achieving greater range of movement (ROM) as compared to adopting conservative methods ($P < 0.001$).

CONCLUSION: Combined operative management for fractures of distal femur & patella have better restoration of ROM.

KEYWORDS : Supracondylar femur fracture, Friedman and Wyman scoring system, Range of motion.

INTRODUCTION

Distal femur fracture is a complex fracture and treating it has always been challenging for orthopaedic Surgeons whether non-surgical or surgical methods are used for its treatment.⁽¹⁾

The fractures of distal femur with fracture patella are difficult to treat and operative treatment is usually recommended for favorable outcome.⁽²⁻⁵⁾ These are associated with high energy trauma (in youngsters) and osteoporotic bones (in elderly) and are frequently comminuted and intra-articular.⁽⁶⁾ Approx. 30% of patients with distal femur fractures are poly-traumatized. 40% had soft tissue injuries, 10% had ligamentous lesions, 8% had meniscal lesions, 10% had dissected cartilage fragments and 15% had patella fractures. Distal femoral fractures may be classified as: open or closed; supracondylar, condylar or intercondylar; spiral, oblique or transverse fractures, articular or extra-articular fractures.^(7,8)

The goal in treating supracondylar femur fractures is restoration of a stable limb for function, pain-free ambulation and restoration of good range of motion. Currently, key techniques include Intramedullary femoral nailing - antegrade/ retrograde approach, plating- angled blade plate, buttress plate, condylar screw system, external fixation, Dynamic compression plate, Locking compression plate and Less Invasive Stabilisation System (LISS).⁽⁹⁾

Patella fractures account for approximately 1% of all skeletal injuries. fracture of patella can occur as Itpatella located subcutaneously that makes it prone to injury. These fractures become problematic if the extensor mechanism of the knee is nonfunctional, articular congruity is lost, or stiffness of the knee joint ensues. To avoid these problems, the surgeon must achieve anatomic restoration of the joint and must allow early motion. Hence operative intervention is recommended to allow stable fixation, early motion, and improve rate of bony union. Currently, several fixation methods for patella fractures are in use, including tension band wiring, circlage wiring, and screw fixation.^(10,11)

patients with supracondylar femur fractures with Patella fractures are multiple trauma victims with other skeletal, abdominal, head and chest injuries. So, the initial concern is stabilizing general

condition and preservation of life & subsequent treatment of extremity injuries. Hence the aim of this study was to evaluate functional outcome in supracondylar fractures with patella.⁽¹¹⁾

MATERIAL AND METHODS

This Prospective, Interventional and Descriptive study was conducted at Department of Orthopaedics, SMS Jaipur between September 2017 and March 2018.

STUDY DESIGN : A total of 35 patients of both sexes and age 18-70 years having closed supracondylar femur fracture with ipsilateral patellar fracture were included in this study after fulfilling the inclusion criteria.

INCLUSION CRITERIA:

Age 18-70 years
Closed supracondylar femur fracture and ipsilateral patellar fracture
Willing to participate in the study

EXCLUSION CRITERIA : Patient with pathological fracture, patient with popliteal vessel injury

Patient having medical contraindication to surgery
Patients of both sexes and age group 18-70 years with supracondylar femur fracture and ipsilateral patellar fracture were included in this study. A written informed consent was taken from each patient. Age, gender, occupation, mode of injury and any significant past medical history were recorded of each patient. Clinical Examination of injury was done and associated systemic injuries were recorded. Each of them underwent preoperative evaluation that included - the routine investigations and X-Ray thigh with Knee joint (AP and Lateral view) They were then considered for surgical fixation. Distal femur fracture was fixed with Locking Compression Plate and patellar fracture was fixed with either K-wire Tension Band Wire, Encirclage, Patellectomy or Managed conservatively Wound was inspected On 2nd, 5th and 8th day and sutures were removed on 15th day. Patients were followed in OPD on 2nd week, 6th week, 10th week and 3rd month and during each visit Range of Motion (ROM) at knee joint and X-Ray thigh with knee joint (AP and lateral views) were done and noted. All patients were mobilized within 48-72 hours of surgery and time

radiological union and weight bearing were recorded of each patient. Patient's functional results were evaluated using Friedman and Wyman scoring system. Data was collected, put in Microsoft Excel Sheet and results were analysed.

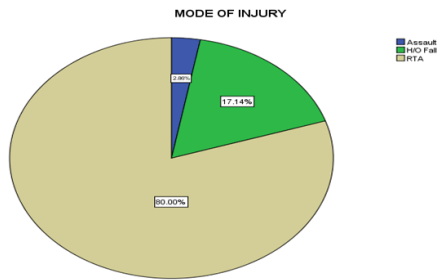
RESULTS

Age wise distribution

AGE	NO. OF PATIENTS	PERCENTAGE
<30 YRS	5	14.3
30-39 YRS	11	31.4
40-49 YRS	11	31.4
50-59 YRS	6	17.1
>60 YRS	2	5.8
TOTAL	35	100

Average age of presentation = 39.885 ± 14.5 yrs

Gender wise distribution	Frequency	Percent
female	6	17.1
Male	29	82.9
Total	35	100.0



ASSOCIATED INJURIES

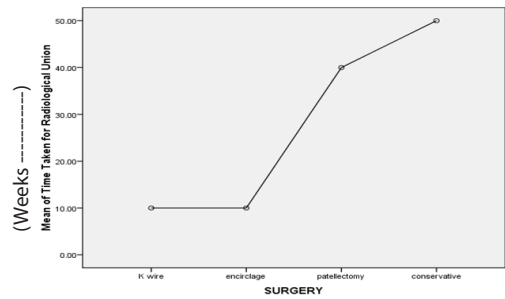
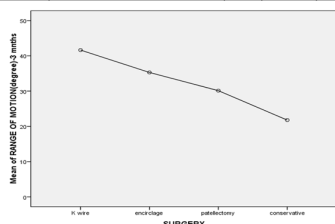
Associated Injuries Percent	Frequency	Percent
No	10	28.6
Yes	25	71.4
Total	35	100.0

Associated injuries included Head injury, Tibial fracture , metatarsal injury, calcaneum injury, rib fracture, orbital fracture, facial bones fracture, dental fractures etc.

RANGE OF MOTION

T TEST : Group Statistic:Surgical methods include – K Wire TBW , Encirclage, Patellectomy

	SURGERY	N	Mean	Std. Deviation	P value
RANGE OF MOTION(degree)-2nd wk	Surgical Methods	26	4.46	2.177	.012
	Conservative	9	2.22	2.167	
RANGE OF MOTION(degree)-6wk	Surgical Methods	26	14.73	3.986	0.001
	Conservative	9	7.78	4.494	
RANGE OF MOTION(degree)-10 wk	Surgical Methods	26	24.58	4.675	0.001
	Conservative	9	14.67	2.739	
RANGE OF MOTION(degree)-3 mnths	Surgical Methods	26	36.38	7.272	0.001
	Conservative	9	21.78	2.438	



DISCUSSION

Most of the patients in this study were males (82.8%). 80% had Road traffic accident, 17% had history of fall and 3% had assault history. Mean age of presentation was 39.885 ± 14.50 years. 71.4% patients had associated injuries Like Head injury, Tibial fracture , metatarsal injury, calcaneum injury, rib fracture, orbital fracture, facial bones fracture, dental fractures etc.

In all the patients, supracondylar femur fracture was fixed with Locking Compression plate while Patellar fracture was fixed either with K Wire Tension Band Wiring (31.4%) , Encirclage (22.8%) , Patellectomy (22.8%) or Conservative treatment (25.7%). Wound was healthy at every visit.

Tension band wiring proved to be satisfactory method For reducing fractures of patella & helped in acquiring greater range of motion. Operating fracture patella along with distal femoral fractures help in achieving greater range of movement as compared to adopting conservative methods (P<0.001 which is highly significant). Hence it is recommended that distal femur fractures with fractures of patella should be managed operatively.

It was also observed that time required for radiological union and weight bearing was early for surgical treatment as compared to the conservative treatment.

REFERENCES

- Shah S, Bhalodia R, Kalaria P et al. Study of distal femoral fractures ISSN: 2229-3809 (Online) Journal DOI:10.7439.
- J. B. Giles, J. C. DeLee, J. D. Heckman, and J. E. Keever, "Supracondylar-intercondylar fractures of the femur treated with a supracondylar plate and lag screw," Journal of Bone and Joint Surgery A, vol. 64, no. 6, pp. 864–870, 1982.
- C. S. Neer 2nd., S. A. Grantham, and M. L. Shelton, "Supracondylar fracture of the adult femur. A study of one hundred and ten cases," Journal of Bone and Joint Surgery A, vol. 49, no. 4, pp. 591–613, 1967.
- S. Olerud, "Operative treatment of supracondylar—condylar fractures of the femur. Technique and results in fifteen cases," Journal of Bone and Joint Surgery A, vol. 54, no. 5, pp. 1015–1032, 1972.
- J. Schatzker and D. C. Lambert, "Supracondylar fractures of the femur," Clinical Orthopaedics and Related Research, vol. 138, pp. 77–83, 1979.
- T. F. Higgins, "Distal femoral fractures," The Journal of Knee Surgery, vol. 20, no. 1, pp. 56–66, 2007.
- Mishra SK, Muvel D, Maravi DS et al. A Study of Combined Management of Fracture Distal End of Femur With Patellar Fracture in Tertiary Health Care Centre in Central India. Volume-5, Issue-3, March - 2016 ISSN No 2277 – 8160.
- Nagla A, Manchanda A, Gupta A et al. Study to evaluate the outcomes of surgical stabilization of distal 1/3rd fracture shaft femur with retrograde nailing. Int J Res Orthop. 2017 Jan;3(1):96-102.
- Steven I Rabin, MD; Chief Editor: Jason H Calhoun, MD, FACS et al. Supracondylar Femur Fractures. <http://emedicine.medscape.com/article/1269699-overview#a4>
- Ong TK , Chee EK, Wong CL et al. Fixation of Comminuted Patellar Fracture with Cmbined Cerclage and Tension Band Wiring Technique. Malaysian Orthopaedic Journal 2008 Vol 2 No 2.
- Coltan Chris, Florian Gebhard, Phil Gregor et al. Femoral fracture- Distal femoral and patellar fractures – Treatment with a long leg cast. AO Handbook—Nonoperative Fracture Treatment. Chapter 3. Page 1-7.