Descriptive Study

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

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ABSTRACT

AIM: To study the outcome following combined management of fracture distal end of femur with ipsilateral patellar 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 in Supracondylar femur fracture with Ipsilateral fractured patella. A total of 35 patients fulfilling the inclusion criteria and excluding the exclusion 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 Patellar Fracture was fixed with K-Wire Tension Band Wiring (TBW) , Encirclage , Patellectomy or conservative treatment. Postoperatively, Wound inspection was done on 2nd , 5th and 8th day. Sutures were removed on 15th day and patients were followed at 2nd , 6th ,10th week and 3rd month. Range of motion , time for radiological union and time required 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 the most common method for fixation of supracondylar femur fracture. K-wire TBW was satisfactory method of 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 of fractures of distal femur & patella have better restoration of ROM.

KEYWORDS

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

ARTICLE HISTORY

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INTRODUCTION

Distal femur fracture is a complex fracture and treating it has always been challenge for orthopaedic surgeon whether non- surgical or surgical methods are used in 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 the youngsters) and osteoporotic bones (in the 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 functional, 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. Supracondylar fracture with fracture of patella can occur as patella is located subcutaneously location 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 improved rates of bony union. Currently, several fixation methods of patellar fractures are in use, including tension band wiring, circlage wiring, and screw fixation.(10,11)

The patients with supracondylar fractures with patellar fractures are multiple trauma victims with other skeletal, abdominal, head and chest injuries. So, the initial concern is stabilizing the general condition and preservation of the life & subsequent treatment of extremity injuries. Hence the aim of this study was to evaluate functional outcome in supracondylar fractures with fractured patella.(11)

MATERIAL AND METHODS

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

STUDY DESIGN : A total of 35 patients of both sexes and age between 18- 70 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 were taken. They were then considered 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 Conservatively. Wound was inspected om 2nd , 5th and 8th day and sutures were removed on 15th day. Patients were followed in OPD at 2nd week , 6th week , 10th week and 3rd month and at each visit Range of Motion (ROM) at knee joint and X-Ray thigh with knee joint AP and Lateral view. All patients were mobilized within 48-72 hours of surgery and time required for weight bearing was recorded of each patient. Patient's functional results were evaluated using Friedman and Wyman scoring system. After that data was be collected and results were analysed.

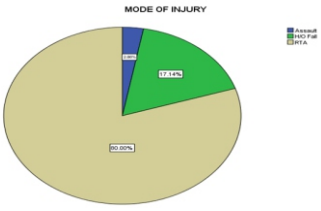
RESULTS

Age wise distribution

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

Average age of presentation = 39.885 + 14.5 yrs

		Frequency	Percent
Valid	female	6	17.1
	Male	29	82.857
	Total	35	100.0



ASSOCIATED INJURIES

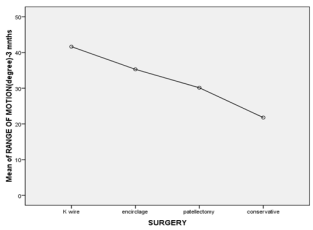
		Frequency	Percent
Valid	No	10	28.6
	Yes	25	71.4
	Total	35	100.0

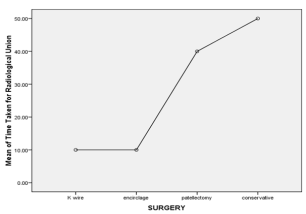
Associated injuries included Head injury, Tibial fracture , metatarsal injury, calcaneum injury, rib fracture, orbital fracture, facial bones fracture, dental fractures etc.

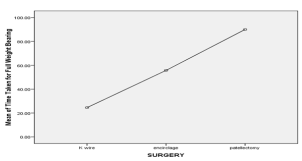
RANGE OF MOTION

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

	SURGERY	N	Mean	Std.	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)-6 wk	Surgical Methods	26	14.73	3.986	.000
	Conservative	9	7.78	4.494	
RANGE OF MOTION(degree)-10 wk	Surgical Methods	26	24.58	4.675	.000
	Conservative	9	14.67	2.739	
RANGE OF MOTION(degree)-3 mnths	Surgical Methods	26	36.38	7.272	.000
	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. 70.14% patients had associated injuries that 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. 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 of 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.

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