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OUTCOME OF UNSTABLE PELVIC FRACTURES IN CONSERVATIVELY AND OPERATIVELY TREATED PATIENTS

Orthopaedics

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ABSTRACT

Introduction : Pelvic fractures account for approximately 1 to 3 per cent of all skeletal fractures and are the reason for approximately 2 per cent of orthopaedic admission. Pelvic fractures are reportedly the third most common cause of death in motor-vehicle accidents, ranking behind only injuries to the central nervous system and those to the chest. Death early (days or weeks) after the injury is generally due to hemorrhagic shock, failure of multiple organ systems, or sepsis. The rate of morbidity is also high in patients who sustain these injuries, with most having associated skeletal, head, genitourinary, thoracic, or abdominal injuries.

Aims and objectives: This study aims to assess the outcome of unstable pelvic fracture in conservatively and operatively treated patients.

Material and method: This was a perspective study carried out on 30 patients at Darbhanga Medical College, Leheriasarai between January 2015 to June 2016 to compare the clinical and radiological outcome of patients with unstable pelvic fracture in conservatively and operatively treated patients. Patients treated for unstable pelvic fracture using operative and conservative means were called for follow up at the duration of 6 weeks and 6 months and studied with respect to clinical examination and radiological findings. Patients were recruited according to TILE classification system.

Summary and Conclusion: In our study 83.3% of the patients treated operatively had good to excellent outcome with significant relief of pain and gait disturbance whereas only 16.6% of the patients treated conservatively showed good to excellent outcome. The clinical outcome correlated well with the radiological findings.Outcome was better in patients with TILE Type B fracture than in patients with TILE Type C fracture. Only one patient had a post operative wound infection and sciatic nerve palsy. Based on this study we recommend operative treatment for all patients with unstable pelvic fracture unless contraindicated due to the reasons mentioned in the text.

KEYWORDS

Unstable pelvic fracture,conservative and operative management.

INTRODUCTION

Pelvic fractures account for approximately 1 to 3 per cent of all skeletal fractures and are the reason for approximately 2 per cent of orthopaedic admission. The frequency of pelvic fractures has a bimodal pattern, with peaks in the adult and again in patients older than sixty-five years[1]. The fractures range in severity from relatively benign avulsions to massive fracture-dislocations with complete pelvic disruption[2].

Pelvic fractures are reportedly the third most common cause of death in motor-vehicle accidents, ranking behind only injuries to the central nervous system and those to the chest[2]. Death early (days or weeks) after the injury is generally due to hemorrhagic shock, failure of multiple organ systems, or sepsis. The rate of morbidity is also high in patients who sustain these injuries, with most having associated skeletal, head, genitourinary, thoracic, or abdominal injuries[2].

Management of pelvic fractures should not await full and detailed diagnosis. It is combination of assessment and treatment following ***Advanced Trauma Life Support*** protocols[5].

AIMS AND OBJECTIVES

This study aims to assess the outcome of unstable pelvic fracture in conservatively and operatively treated patients.

MATERIAL AND METHOD

This was a perspective study carried out at Darbhanga Medical College, Leheriasarai between January 2015 to June 2016 to compare the clinical and radiological outcome of patients with unstable pelvic fracture in conservatively and operatively treated patients. Patients treated for unstable pelvic fracture using operative and conservative means were called for follow up at the **duration of 6 weeks and 6 months** and studied with respect to **clinical examination and radiological findings**. 30 patients were included in study. Patients were recruited according to TILE classification system. Patients with TILE Type B and TILE Type C pelvic fractures were included in study. TILE.

The patients were divided into two groups as conservative and operative depending on the mode of treatment they received for pelvic fracture. The study patients were explained about the grading system for the functional assessment of pelvic fracture, were followed up till 6 months as per the **Majeed system** for functional assessment after pelvic fracture and radiological signs of reduction and union[11].

TREATMENT OPTIONS;

CONSERVATIVE: Circumferential wrapping with or without traction as needed due to limb length descrepancies. Alongwith it fluid resuscitation was done for hemodynamic stability.

OPERATIVE: External fixator,Iliosaral screws,Iliosacral plating, Pubic symphysis plating,Pubic rami plating

Clinical grade based on the Total Score out of 100 for working and 80 for the non working population

WORKING	NONWORKING	
>85	>70	**EXCELLENT**
70-84	55-69	**GOOD**
55-69	45-54	**FAIR**
<55	<45	**POOR**

The radiological outcome was classified as Good, Fair and Poor on the basis of sacro-iliac (SI) and pubic symphysis (PS) diastasis.

RADIOLOGICAL OUTCOME	SI DIASTASIS	PS DIASTASIS
GOOD	< 5MM	< 5MM
FAIR	5-10MM	5-10MM
POOR	>10MM	>10MM

Table. Majeed System for functional assessment after pelvic fractures[11]

Pain - 30 pointss	
Intense, continuous at rest	0-5
Intense with activity	10
Tolerable, but limits activity	15
With moderate activity, abolished by rest	20
Mild, intermittent, normal activity	25
Slight, occasional or no pain	30

Work – 20points

No regular work	04
Light work	8
Change of job	12
Same job, reduced performance	16

Sitting - 10 points

Painful	04
Painful if prolonged or awkward	6
Uncomfortable	8
Free	10

Sexual intercourse - 4 points

Painful	01
Painful if prolonged or awkward	02
Uncomfortable	03
Free	04

Standing – 36 points

A walking aids (12)

Bedridden or almost	02
Wheelchair	04
Two crutches	06
Two sticks	08
One stick	10
No sticks	12

B unaided gait (12)

Cannot walk or almost	02
Shuffling small steps	04
Gross limp	06
Moderate limp	08
Slight limp	10
Normal	12

C walking distance (12)

Bedridden or few meters	02
very limited time and distance	04
Limited with sticks, difficult without prolonged standing possible	06
One hour with a stick limited without	08
One hour without sticks slight pain or limp	10
Normal for age and general condition	12

OBSERVATION AND RESULTS

comparison of changes in radiological outcome in both the groups after the treatment

Assessment	Conservative Rx (N=12)		Operative Rx (N=18)	
	No.	%	No.	%
Good	01	08.3	*14	77.8
Fair	05	41.7	04	22.2
Poor	06	50.0	-	-

By Chi Square Test *P<0.05 Significant

Comparison of changes in mean total score between both the groups

Duration	Mean Total Score ($\bar{X} \pm SD$)		P Value
	Conservative Rx (N=12)	Operative Rx (N=18)	
Pre	96.67 ± 07.78	96.67 ± 07.67	1.0000
Week 6	37.42 ± 17.17	45.39 ± 10.27	
Month 6	59.67 ± 14.58	78.22 ± 10.37	
Mean change (Pre – Wk 6) P Value	*59.25 ± 16.18 0.0000	*51.28 ± 13.78 0.0000	0.2134
Mean change (Pre – 6 Mth) P Value	@*37.00±12.77 0.0000	*18.45 ± 11.27 0.0000	0.0009
Mean change (6Wks – 6 Mth) P Value	*22.25 ± 6.27 0.0000	@ *32.83 ± 10.05 0.0000	0.0012

By Mann-Whitney U Test *P < 0.05 Significant @Betn Grps *P < 0.05 Significant

DISCUSSION

There are many reports on the treatment of pelvic injuries but the results usually expressed lack objectivity. We carried out a perspective study. Patients were selected as per the TILE classification system as this classification system is easy to understand and reproduce. Thirty patients with TILE type B and TILE type C pelvic fracture were included in the study and were divided into conservative and the operative group as per the mode of treatment they received. Age of the cases ranged from 8 to 50 years with mean age of 29.08 in Conservative group and 26.50 in Operative group.76% of the total cases were males. 33.3% cases among the conservative group and 27.8% cases among the operative group had Tile type B fracture whereas 66.6% cases among the conservative group and 72.2% cases among the operative group had Tile Type C fracture where the difference was comparable and was not statistically significant (p>0.05).

Pain forms the major part of patients dissatisfaction and is relatively easy to score. Tornetta et al (1996)[5] reviewed 29 patients with rotationally unstable but vertically stable pelvic ring injuries treated with ORIF with more than 3 years of follow-up. The primary indication for surgery was symphyseal disruption. Follow-up evaluation revealed that 96% had no pain or pain only with strenuous activity. Seventy-six percent ambulated without assistance or limitations, and 76% returned to their pre-injury occupation.

Letournel (1978)[6] found that problems with sitting were more common than expected and the most common difficulty was having to sit only on one buttock because of malunion of ischium.

Henderson(1989)[7] presented 26 patients with nonoperatively treated pelvic fractures with a minimum of 5-year follow-up. Subjective symptoms included frequent or daily low-back discomfort (50%), localized dysesthesias (46%), and work disability (38%). Objective findings included neurologic deficits (42%), motor weakness or abnormal deep tendon reflexes, and persistent limp (32%). Long-term outcomes correlated well with the amount of residual vertical displacement and the stability of the fracture.

Difficulties in sexual intercourse with pelvic fracture have been grossly underestimated in the earlier studies. Kellam et. al.(1987)[8] observed that some male patients had significant pain as a result of internal fixation across the pubic symphysis, others had sacro-iliac pain. In the female, dyspareunia was most commonly associated with lateral compression injuries and tilting of pubic rami towards perineum[8].

Gruen et al(1995)[9] studied the outcome of patients with multiple injuries that included unstable pelvic ring injuries who were treated with ORIF. In this study, 62% of patients returned to work full time, and most patients with pelvic fractures (77%) had mild disability at 1 year. Persons with open-book injuries tended to have higher individual and total Sickness Impact Profile scores than individuals with lateral compression fracture despite similar Injury Severity Scores.

Semba et al(1983)[10] also found a correlation between displacement on the initial film and residual symptoms. Patients with a combined AP and vertical displacement of less than 1 cm at initial injury were asymptomatic, whereas those with a displacement at injury greater than 1 cm had an increased frequency of late severe low-back pain.

Radiological assessment of patients in our study showed that 77.8% subjects in Operative treatment group had good outcome which was significantly higher than 8.3% in Conservative treatment group. 50.0% patients in Conservative treatment group had poor outcome.

When the total score was compared the Pre injury mean total score was 96.67 among conservative and operative treatment which was same

and the difference was not statistically significant ($p>0.05$).

After the treatment at the end of 6 weeks mean total score showed a significant fall in both the groups and was 61.3% among conservative group and 53.0% in operative group from pre injury.

At the end of 6 months mean total score of the conservative group was 38.3% and of the Operative group was 19.0% from pre injury score. The change from 6 weeks to 6 months was significantly more among Operative group than Conservative group.

At the end the study showed that patients with unstable pelvic fracture treated conservatively 58.3% had fair outcome, 25% had poor outcome 8.3% had good and 8.3% had excellent outcome whereas patients who received operative treatment 44.44% had excellent outcome, 38.88% had good results 16.66% had fair outcome and none of the patients showed poor result.

Our study also showed that the clinical outcome was directly proportional to the radiological findings and patients with SI and PS diastases of <0.5mm had significantly better outcome than the patients with SI and PS of >1cm.

The shortcomings of this study are its small cohort size and short follow up period. The current trend at our institution is to treat all the unstable pelvic fractures with either open reduction internal fixation or percutaneous ilio-sacral screw unless contraindicated.

SUMMARY AND CONCLUSION

In our study 83.3% of the patients treated operatively had good to excellent outcome with significant relief of pain and gait disturbance whereas only 16.6% of the patients treated conservatively showed good to excellent outcome. The clinical outcome correlated well with the radiological findings and patients with SI and PS diastases of less than 0.5 mm had a better outcome when compared with the other patients. Outcome was better in patients with TILE Type B fracture than in patients with TILE Type C fracture. Only one patient had a post operative wound infection and sciatic nerve palsy. Based on this study we recommend operative treatment for all patients with unstable pelvic fracture unless contraindicated due to the reasons mentioned in the text.

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