



STUDY OF UNSTABLE PELVIC FRACTURES FROM CHILDREN IN TERTIARY CARE HOSPITAL

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Abstract

Introduction: Globally, in the young age group of people mortality and morbidity is due to the high-energy trauma. The losing of young age group of population will get impact in the social economic losses of family as well as the nation. Fractures are generally caused by high-energy trauma, high-impact accidents and are often associated with injuries to other organic lesions like abdominal viscera, genitourinary system, neurovascular, musculoskeletal structures and central nervous system. There was relatively low rate of occurrence of fracture of pelvic injuries that associated with high levels of morbidity and mortality. According to the studied of the post-mortem examined only in children 66 deaths caused by trauma that showing pelvic fracture and severe bleeding to be the cause of death in 42% of the cases. In the case of adult in cases of unstable pelvic fractures retroperitoneal bleeding is the worst complication.

Aim: The main objective of this study is to study of Unstable Pelvic Fractures from children in tertiary care hospital

Material and methods: In this study total 10 patients were included who had suffered unstable fractures of the pelvic ring with the age from 1 to 15 years old.. From all the patients detail clinical history were taken with analysis of the pre and postoperative radiographs by presence of the triradiate cartilage of the iliac.

Result: In this study total 10 patients were included with unstable fractures of the pelvic ring evaluated where female were 6 and male were 4 with the ration 6: 4. The age ranges were 2 to 15 years with the mean age 7.5 ± 4 years old. Symphysis disjunctions of the pubic fracture were present in maximum with the fracture of two rami and fracture of four rami respectively. In five of the cases Sacroiliac dislocation correspond to posterior lesion were seen. The AO-OTA classification was used to evaluate the cases with the following distribution as 61 B1 (one case); 61 B2 (one case); 61 C3 (one cases), 61 C2 (one case) and 61 C1 (seven cases).

Conclusion: Now a day's also many research which still have a controversy for treatment, which has been recommended for treating these fractures for many years. Their concerns relate to the complications encountered that in leg length and residual pain in the sacroiliac joint.

Keywords: unstable pelvic fracture, pelvic asymmetry, children

Introduction:

Globally, in the young age group of people mortality and morbidity is due to the high-energy trauma. The losing of young age group of population will get impact in the social economic losses of family as well as the nation^{1,i}. In children Pelvic fractures are relatively rare as less than 0.2% of all paediatric fractures and 1-5% of admissions to tertiary children's health centre^{ii,iii}. Fractures are generally caused by high-energy trauma, high-impact accidents and are often associated with injuries to other organic lesions like abdominal viscera, genitourinary system, neurovascular, musculoskeletal structures and central nervous system^{iv}. Pelvis is defined as a structure like a basin shaped bony that supports the spinal column and protects the abdominal organs. It may be fracture due to high energy forces such as fall from a height or motor vehicle crash.

There was relatively low rate of occurrence of fracture of pelvic injuries that associated with high levels of morbidity and mortality. According to the studied of the post-mortem examined only in children 66 deaths caused by trauma that showing pelvic fracture and severe bleeding to be the cause of death in 42% of the cases. In the case of adult in cases of unstable pelvic fractures retroperitoneal bleeding is the worst complication^{v,vi,vii}. Studied showed that 95 children suffering from pelvic fractures, locomotion capacity and dependence was assessed which showed that 80% of patients had unstable fractures and 52% of patients with stable fractures were dependent on help for locomotion^{viii}. When involving emergency situation cases with hemodynamic instability immediate treatment must be conducted using an external fixation, though it is only for temporarily to prioritise controlling the bleeding and saving the patient's life^{ix}. In cases with dislocation of the sacroiliac joint an anterior external fixator alone will not be sufficient to reduce and stabilise the posterior ring^x.

The main objective of this study is to study of Unstable Pelvic Fractures from children in tertiary care hospital

MATERIAL AND METHODS:

This study was retrospective study carried out in the Dept of orthopedics, Vedanta Institute of Medical

Sciences and hospital Dahanu, India. In this study total 10 children patients were included who had suffered unstable fractures of the pelvic ring and had undergone surgical treatment in this institution during the period of 1 year. From all the patients detail clinical history were taken with analysis of the pre and postoperative radiographs by presence of the triradiate cartilage of the iliac. This study was based on radiographic quantification and the outcome of the residual pelvic and after the surgery treatment using the method of Keshishyan et al^{xi} for comparison of pre and post operative findings.

RESULT:

In this study total 10 patients were included with unstable fractures of the pelvic ring evaluated where female were 6 and male were 4 with the ration 6: 4. The age ranges were 2 to 15 years with the mean age 7.5±4 years old. Operation was done for all the patients with an average of 13.3 days after the fracture. In this study the maximum cases the initial trauma was due to the run over followed by motorcycle accident and fall from height respectively. Symphysis disjunctions of the pubic fracture were present in maximum with the fracture of two rami and fracture of four rami respectively. In five of the cases Sacroiliac dislocation correspond to posterior lesion were seen. Unilateral fractures of the posterior ilium were also seen whereas unilateral anterior opening of the sacroiliac joint was also present.

The AO-OTA classification was used to evaluate the cases with the following distribution. 61 B1 (one case); 61 B2 (one case); 61 C3 (one cases), 61 C2 (one case) and 61 C1 (seven cases) as shown in the table no 1 below. Primary health care were provided before reached to our medical college and hospital after clinical stabilization was achieved. Six patients were suffered from other associated injuries as one with a clavicle fracture was treated without surgery using external immobilization. Two with a fracture of the proximal humerus and fractures of the bones of the lower leg is lateral to the pelvic lesion, one with the upper limb was treated conservatively and the tibia was fixed with flexible intramedullary nails. One with olecranon who suffered a fall was fixed using a tension band and one with concomitant injury to the bladder, diagnosed using exploratory laparotomy during primary care.

Table 1: showing the patients data with clinical presentation

Sr. No	Age (yrs)	sex	AO-OTA classification	posterior lesion	anterior lesion	cause of accident
1	3	F	61C1	Sacroiliac dislocation	Disjunction of symphysis	Run over
2	14	F	61C1	Sacroiliac dislocation	Fracture of two rami	Motorcycle accident
3	6	M	61B1	Anterior sacroiliac opening	Fracture of two rami	Run over
4	5	F	61B2	Sacroiliac dislocation	Disjunction of symphysis	Run over
5	9	M	61C1	Sacroiliac dislocation	Disjunction of symphysis	Run over
6	11	F	61C1	Sacroiliac dislocation	Disjunction of symphysis	Run over
7	13	F	61C2	Sacroiliac dislocation + anterior compression (bilateral)		Motorcycle accident
8	5	M	61C1	Sacroiliac dislocation	Fracture of two rami	Run over
9	3	M	61C3	Sacroiliac dislocation (bilateral)	Fracture of four rami	Run over
10	7	F	61C1	Sacroiliac dislocation	Disjunction of symphysis	Fall from height

In the radiographic evaluation, pelvic asymmetry before the surgical procedure ranged from 0.7 to 2.8 cm (mean of 1.46 cm), and fall the range to 0.2 to 0.9 cm (mean 0.4 cm) after the reduction as shown in table no 2 below.

Table 2: showing the result from surgery treatment

Sr. No.	Surgery performed	Preoperative pelvic asymmetry (cm)	Postoperative pelvic asymmetry (cm)	Preoperative deformity index (Keshishyan)	Postoperative deformity index (Keshishyan)
1	Symphysis plate + sacroiliac screw	1.6	0.2	0.3	0.01
2	External fixator + sacroiliac screw	0.7	0.3	0.05	0.02
3	External fixator + sacroiliac screw	1.8	0.3	0.16	0.04
4	External fixator + sacroiliac screw	1.1	0.5	0.2	0.04
5	External fixator + sacroiliac screw	1.2	0.2	0.1	0.03
6	External fixator + sacroiliac screw	1.5	0.5	0.1	0.05
7	External fixator + sacroiliac screw	2.8	0.8	0.15	0.08
8	External fixator + sacroiliac screw	0.9	0.2	0.13	0.05
9	External fixator + sacroiliac screw	1.5	0.5	0.07	0.03
10	External fixator + sacroiliac screw	1.2	0.2	0.08	0.03

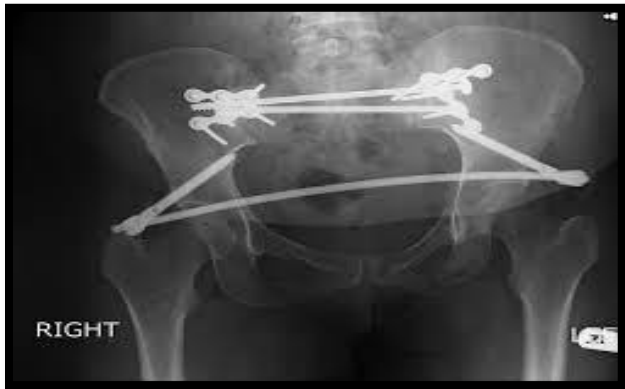


Fig I: X-ray of pelvic using external fixation after stabilisation.



Fig II: postoperative X-ray, AP view showing the final result.

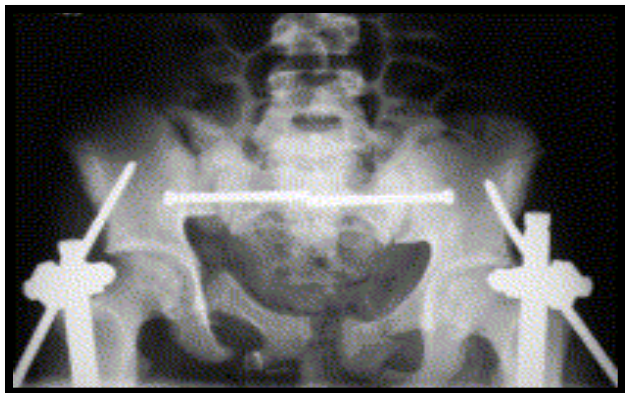


Fig III: AP view showing supra-acetabular external fixation and cannulated screws in both sacroiliac joints.

DISCUSSION:

Unstable pelvic fractures are relatively rare which are caused by high-impact traumas. In comparison to adults; in children pelvic injuries are accompanied by various organ injuries that are associated with high morbidity and mortality^{xii, xiii, xiv, xv}. In this study run

over on public roads was main cause. However, most frequently lesion occur in male gender but whereas in this study maximum cases were female almost 70 %. This study showed that run over on public roads was the most frequent cause of the fracture that was agree with the studied done by Signorino et al^{xvi} who reported as commonest causes were being run over and traffic accidents.

There are many studied which have analyzed the long-term evolution of unstable and stable lesions of the pelvic ring that were treated conservatively^{xvii, xviii, xix}. Studied of Schwarz et al^{xx} showed that 47% rate of poor results due to pelvic asymmetry; which underline the importance of achieving anatomical reduction and conclude that unstable pelvic fractures. Several studies presented long-term progression of unstable fractures of the pelvic ring that were treated non-surgically and evolved with unsatisfactory results, with residual pain in the posterior region of pelvis which is due to residual pelvic asymmetry. None of the cases treated surgically whereas in this studied showed evolved with residual pain, step on any abnormality on physical examination^{xxi, xxii, xxiii}.

The result of this study helps to encourage continue to indicate surgical treatment for cases in which there is pelvic asymmetry greater than 0.5 cm when there is present of associated dislocation of the sacroiliac joint, that would be unlikely to evolve satisfactorily without surgical measures. The combination with Posterior fixation with a sacroiliac cannulated screw in the sacroiliac joint was based on the facts that this technique is noninvasive, that provides adequate mechanical stability to the posterior portion of the pelvis. Therefore the application of an anterior external fixator does not enable the control of the posterior elements of the pelvic ring^{xxiv}.

CONCLUSION:

There are many research which still have a controversy for treatment, which has been recommended for treating these fractures for many years. Their concerns relate to the complications encountered that in leg length and residual pain in the sacroiliac joint.

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