Clinico-Radiological Presentations of Patients with Traumatic Pelvic Injuries in Lagos, Nigeria

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Abstract
Vehicle and domestic accidents are common in developing country with limited functional heath care facilities. Traumatic injury to the pelvis is usually accompanied with multiple vascular and neuro-musculoskeletal complications. The objective of this study was to determine the prevalence of vascular and neuro-musculoskeletal complications of traumatic pelvic injury in Lagos.

One hundred (100) patients with pelvic injuries were recruited for the study. The radiographic findings, sociodemographic biodata and clinical findings were documented. Statistical analysis was done using Epi Info Version 6 Statistical Software.

One hundred (100) patients comprising 51 (51%) females and 49 (49%) males were recruited for this study from three tertiary hospitals in Lagos, Nigeria.

The most common presenting signs of pelvic injury were fractures and hematoma, and nerve injuries

Keywords: hemiplegia; paraplegia; Hemoperitoneum; hematuria, pelvic trauma

Introduction
The pelvis is a complex structure with close interplay of bone and soft tissue, and serves as a conduit of vital structures to the legs. The lumbosacral and coccygeal plexuses and vessels are intimately located within the pelvis¹

Open pelvic fractures present clinical challenges, approximately 10 to 20% of pelvic fractures are complex especially if caused by high-force mechanism. These fractures can be complicated by severe blood loss, shock, sepsis, musculoskeletal and adult respiratory distress syndrome.¹ ³ ⁵ ⁶ ⁷

It is important to recognize pelvic fractures and its complications timely, to reduce the negative effect on patients.

Materials and Methods
This is a cross-sectional retrospective study of 100 patients with high velocity pelvic trauma in three tertiary hospitals in Lagos, Nigeria. We used a questionnaire to obtain patient personal data. In addition, the clinical findings, complications, type of treatment, radiography and Ultrasoundography results were obtained from the patients' case files.

Results
The subject comprises of 100 patients, 51 females and 49 males whose age ranges from 6 to 69 years with a mean of 31.5 ± 2 years seen at tertiary hospitals in the Lagos metropolis.

Table 1 shows that most of the patients were below the age of 50 years. Table 2 shows that
the major cause of injury was road traffic accident 90%.

The major immediate complications of pelvic fractures, include Vascular injury, Radiculopathy, Paraparesis and Enuresis. (Table 3)

The most common vascular complications were Hemorrhage 66%, Hematuria 35%, and Hemoperitoneum 15%. The musculo-skeletal complications were Acetabular and Pelvic fractures 14%, and Limb shortening 10% and the most common neurologic complications were Radiculopathy Paraparesis and Enuresis.

**Discussion**

The most common age group with pelvic injury in this study is 30-50 year. Sampson et al's reported a similar observation.

**Table 1: Age group and sex distribution of the patients in the study (n=100).**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11-20</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>21-30</td>
<td>22</td>
<td>19</td>
<td>41</td>
</tr>
<tr>
<td>31-40</td>
<td>9</td>
<td>7</td>
<td>16</td>
</tr>
<tr>
<td>41-50</td>
<td>8</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>51-60</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>61-70</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>51</td>
<td>100</td>
</tr>
</tbody>
</table>

The bimodal distribution of age group in pelvic injuries in this study occurred between the ages of 11 to 30 years and 31 to 50 years whilst it was 15 to 30 years and 50 to 70 years in others. The male to female ratio of 1:1.04 also compares favorably with Ekwere's equal sex distribution of accidental injuries, but at variance with some other workers. These age groups constitute the active workforce, a situation that presumably placed them at high risk for road traffic accident.

**Table 2. Aetiology of pelvic Injuries in males and females**

<table>
<thead>
<tr>
<th>MECHANISM OF INJURIES</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTA</td>
<td>39</td>
<td>45</td>
<td>84</td>
<td>40</td>
</tr>
<tr>
<td>Sports</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Domestic Accident / Fall</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>Child Birth Trauma</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>51</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

$\chi^2=2.46, \ p>0.05$

The commonest cause of injury is road traffic accident, this is similar to the report of Dallal et al and Ferrera PC et al. The accurate assessment of the mechanism of injury of pelvic fracture depends not only on the traditional medical history, physical examination and other diagnostic measures but also the knowledge of the type, magnitude and direction of the force of impact.

Over the recent years, there has been an increase in the incidence of road traffic injuries. The vascular and neuromusculoskeletal complications in this study revealed that hemorrhage, in its various forms was the
leading cause of mortality. It was speculated that the rich vascular supply of the pelvis, disruption of the pelvic soft tissues and the high velocity trauma play central role in massive blood loss \(^{18,19,20}\). The multiplicity of bleeding sites is the likely cause of the massive blood loss. In addition, this leads to massive retroperitoneal hematoma up to 6 Litres, often necessitating transfusion of blood. Most authors reported that the mean transfusion of blood range between 16- 33.6 units.\(^{6,9,19,21}\). In this study, hematuria was observed in 35% of the subjects, this value is less than 82% obtained by Depypere and Broos's\(^{22}\).

Soft tissue injury especially those involving the genitals, perineum and rectum can serve as a portal of virulent bacteria. Jones et al noted that in patients with perineal injury 77% resulted in death as compared to 44% in those without perineal wound.

The nerve supply of the pelvis is from the lumbar and sacral plexus. Pelvic Injuries can result in damage to the nerve roots. In a study of eighty-three patients, twenty-one 21% had nerve damage.\(^{25}\). Gruen et al\(^{26}\) also reported that unstable pelvic ring fracture repaired with open reduction and internal fixation that sickness impact profile score one year after injury was high, 77% and 23% had mild and moderate disability respectively.

It is usual for extra pelvic bones to be fractured in high velocity trauma or high impact fall, involvement of both axial and appendicular skeletal system was noted in this study. Mortality rate from pelvic injuries range from 10.8 to 40% \(^{3,6,9}\), and in pediatric patients, 10 to 50% \(^{19,20,21,22,23,27,28,29}\). In our series, we had one mortality. However, the data on those that died at the accident scene were not available, and the low fatality rate in our study may be due to under reporting and lack of data.

Regardless of the etiology of the pelvic injury, the eventual outcome depends on the early recognition, fixation and rehabilitation. Hospitals should have Trauma teams in place to provide a coordinated multidisciplinary management for patients with pelvic injuries.

References


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