

Fractures of the pelvis: Complications and Mortality in a Sub-Saharan Hospital



Souleymane Diao*, Joseph Davy Diouf, Amadou Ndiassé Kassé, Abdoulaye Keïta, Mamadou Dème, Mamadou Lamine Diagne, Ountyess Mendy, Jean Claude Sané and Mouhamadou Habib Sy

Orthopedics and Trauma Surgery, Department of Idrissa Pouye General Hospital, Cheikh Anta Diop University of Dakar, Senegal

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***Corresponding author:** Souleymane Diao, Orthopedic Surgeon Orthopedics and Trauma Surgery Department Idrissa Pouye General Hospital, Dakar, Senegal

Abstract

Objective: the aim of this work was to study the prognosis of pelvic fractures in the orthopedic-traumatology department of Idrissa Pouye General Hospital.

Materials and methods: We performed a retrospective, descriptive and monocentric study over a period of 13 years. We included in this study, hospitalized patients or not for fractures of the pelvis (151 cases). We estimated the prognosis of these fractures by assessing their mortality, their complications and their sequelae.

Results: One-third of the patients died (33.88%). Early complications were dominated by vascular lesions (14.80%). The correlation between the lesional type and the occurrence of vascular complications was statistically significant. However, there was no correlation between lesion site and urinary complications.

Conclusion: The prognosis of pelvic fractures is characterized by high early mortality in our country. This high rate of death is related to immediate complications and associated lesions responsible for polytrauma.

Keywords: Pelvis; Fracture; Urinary complications; Polytrauma

Introduction

Fractures of the pelvis are frequent, of variable severity, ranging from benign parcel fractures to major forms breaking the continuity of the pelvic ring, for which the mortality rate still remains high. Road traffic accidents are the largest contributors to these injuries [1-4]. The prognosis of these fractures can be vital from the outset because of the frequency of hemorrhagic shock, related to vascular lesions or bleeding of fractured bone slices, and to the risk of infection favored by the opening of the fracture and associated intra-pelvic visceral lesions (rectum, bladder, urethra). Functionally, the prognosis remains reserved because of the frequency of nerve sequelae, genitourinary and especially osteoarticular resulting from lesions not or insufficiently reduced and fixed. The goal of this work was to estimate the prognosis of pelvic fractures in the orthopedic-traumatology department of Idrissa Pouye General Hospital.

Materials and Methods

We performed a retrospective, descriptive and monocentric study over a period of 13 years. We included in this study,

hospitalized patients or not for fractures of the pelvis (151 cases). We also add lifeless body deposits with pelvic fractures (32 cases). Patients who had an isolated fracture of the acetabulum were not included in this study. The studied population consisted mostly of men (n = 125) with a sex ratio of 2.15. The average age was 33.87 years old \pm 17.52. Pelvic fractures were more common in young adults (50.27%). The radiological data were assessed by Tile's classification and type A lésions were predominant (63.38%). We estimated the prognosis of these fractures by assessing their mortality, their complications and their sequelae.

Results

Mortality

One-third of the patients died (33.88%; n = 62). The lifeless body deposits were the most common (17.49%). Among the patients arrived alive, mortality was higher within 24 hours (11.48%). It decreased gradually over the course of the days (Figure 1). Autopsy was performed in all cases of death and found 32.24% of deaths from severe polytrauma, 1.09% from pulmonary embolism and 0.54% from septicemia.

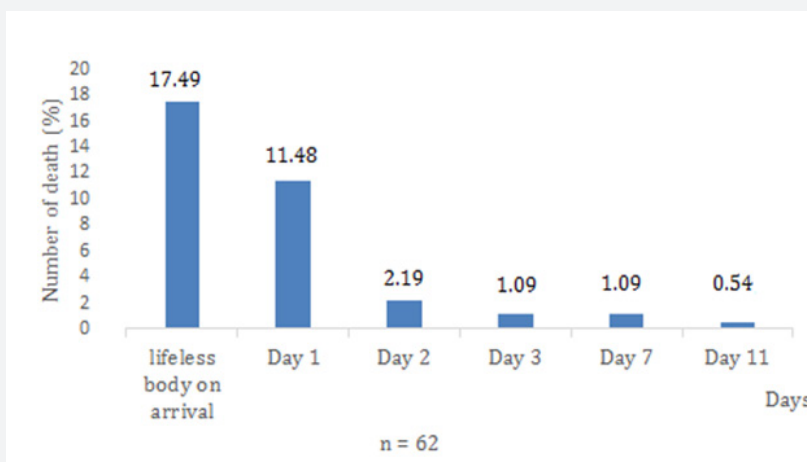


Figure 1: Distribution of patients according to delay of death.

Among the severe polytraumatic patients who died:

- a. a severe cranial trauma was noted in 10.38% of cases;
- b. a thoracic contusion with hemothorax of great single or bilateral abundance was observed in 15.84% of cases;
- c. Abdominal contusion was noted in 6.55% of cases,

including 2.76% ruptures of the spleen, 3.82% liver fractures and 1.64% renal bruising;

- d. pelvic vascular lesions were observed in 12.02% of cases;
- e. and fractures of the lower limbs were also noted in 12.02% of cases including 5.46% open fractures.

Complications and sequelae

Early complications

Table 1: Distribution of patients according to the associated pelvic lesions.

Associated lesions		Number	Percentage
Vascular lesions		27	14.80%
Urinary lesions	Rupture of the membranous urethra	9	4.91%
	Bladder rupture	5	2.73%
Nerve damage		2	1.10%
Skin openings		9	4.91%
Rectal perforation		1	0.54%
Vaginal perforation		1	0.54%

They were dominated by vascular lesions (14.80%) followed by urinary lesions (7.64%). Of these, rupture of the membranous urethra was the most common (4.91%). Cutaneous opening was noted in 4.90% of patients (Table 1). Vascular complications were more common in type C lesions (7.65%). The correlation between the lesional type and the occurrence of vascular complications was statistically significant with a p-value= 0.0025 (Table 2). Lesions of the anterior arch were noted in all patients with urinary complications (7.65%). Isolated injury of the anterior arch was responsible for 3.27% urethral rupture and 1.64% of bladder rupture. Simultaneous injury of the anterior and posterior arches resulted in 1.64% urethral rupture and 1.09% of bladder rupture. The correlation between the site of injury and the occurrence of

urinary complications was not significant with a p-value = 0.98% (Table 3).

Secondary complications

Massive pulmonary embolism was noted in 1.64% of patients. One case of sepsis was observed (0.54%).

Late complications and sequelae

The malunion was observed in 4.91% of patients. One patient had a shortening of a lower limb (0.54%). Sacroiliac pain was observed in 5.46% of patients, of which 1.64% had sacroiliac arthrodesis in the long run. Urethral stricture was noted in two patients (1.09%). A urethroplasty was performed in everyone.

Table 2: Correlation between the lesional type and the vascular complications

Lesional type (Tile's classification)	Vascular complications (n=27)
A	4.91%
B	2.18%
C	7.65%

Table 3: Division of urinary complications according to the lesional location

Lesional location	Urinary Complications	
	Urethral rupture (n=9)	Bladder Rupture (n=5)
Anterior arch only	3.27%	1.64%
Posterior arch only	0%	0%
Anterior arch and posterior arch	1.64%	1.09%

Table 4: Division of mortality according to series.

Authors (Year)	Number of cases	Countries	Mortality
Ameziane and al. [1] (1999)	56	Morocco	1.78%
Caillot [9] (2016)	67	France	19%
Caitlin and al. [10] (2014)	2247	United Nations	10%
Sy and al. [3] (1995)	47	Senegal	8.51%
Our series (2017)	183	Senegal	33.90%

Discussions

Mortality

One third of our patients died (33.88%). Overall pelvis trauma mortality is typically between 5 and 15%, but can reach 50% [5-8]. In France, Caillot et al. [9] reports a mortality rate of 19% in polytrauma victims with pelvic fractures (Table 4). This high frequency of mortality is explained by the fact that in our study we took into account the cases before their arrival at the emergency department. Indeed, we think that among the dead polytrauma, there are probably some who had a fracture of the pelvis that has been unknown. Lifeless body deposits are

the most common (17.48%). This could be explained by the violence of traffic accidents encountered in the cities of Dakar and the poor conditions of pre-hospital care. Among patients who arrived alive, the mortality is higher within 24 hours (11.47%) and decreases gradually over the days. This rate is very high compared to that obtained by Caitlin et al. [10] (2%). In fact, in our surgical emergencies, the lack of qualified trauma equipment and staff present a real problem in the immediate care of pelvis trauma patients. In addition to this, the multi-disciplinary care of traumatized of pelvis is not promoted in our hospitals. This is also the cause of this high mortality in the first 24 hours.

Table 5: Division of immediate complications according to authors.

Authors (Year)	Number of cases	Countries	Immediates Complications		
Ameziane and al. [1] (1999)	56	Morocco	2.50%	21%	-
Traoré and al. [4] (1997)	10	Burkina Faso	10%	10%	-
Odzébéa and al. [12] (2013)	22	Congo	11.40%	-	-
Ngongang and al. [2] (2012)	40	Cameroon	17.15%	-	-
Sy and al. [3] (1995)	47	Senegal	34%	2.12%	-
Our series (2017)	183	Senegal	7.65%	14.81%	1.1%

Complications

The state of hemorrhagic shock is noted in 25.68% of patients. Our results are consistent with those of Ngongang et al. [2] and

Ameziane et al. [1] which are respectively 20% and 28% of the announced patients in shock state. This very high frequency of hemodynamic instability is related to pelvic vascular lesions

associated with fractures more often in unstable pelvic fractures and multiple extra-pelvic lesional associations. In Caillot's work [9], 48% of patients were in hemorrhagic shock. This is related to the predominance of type C lesions (58%) in her study.

In our series, vascular complications are the most common among the associated pelvic lesions (14.80%), in the work of Ameziane et al. [1] and Traoré et al. [4], vascular lesions are predominant with 21% and 10% respectively (Table 5). This high frequency of vascular complications is related to the importance of vascularization of the pelvis. In addition, the vessels are in direct contact with the bone frame and they can be damaged in case of fracture of the pelvis following a violent trauma. We have had 7.65% urinary complications. Among them, urethral rupture is the most common lesion (4.91%) and it concerns only the membranous portion. In the series of Sy et al. [3] and Ngongang et al. [2], urinary lesions are the most common immediate complications with 34% and 17.15%, respectively. They are all dominated by urethral rupture (Table 5). The frequency of urinary complications is 11.40% in the Odzébéa and al. series with predominantly membranous urethra involvement. According to Le Guillou and Ferrière [11], rupture of the membranous urethra is the most frequent lesion of urinary complications that can reach 90%. This is explained by the high frequency of ruptures of the pelvis's anterior arch. The predominance of rupture of the membranous urethra is due to the fact that it passes through the uro-genital diaphragm which, anatomically, is sharp like a razor blade.

Conclusion

The prognosis of pelvic fractures is characterized by high early mortality in our country. This high rate of death is related to immediate complications and associated lesions responsible for polytrauma. Thus, to improve the lesion prognosis of patients:

- a. the pick-up of trauma victims at the accident site must be done with a medical ambulance.
- b. and the management of severe pelvic fractures must be multidisciplinary in our hospitals.

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