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Disjunction of the Pubic Symphysis in the Chu Gabriel Toure: Therapeutic Aspects

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Abstract

Symphyseal dissection results from high-energy trauma and usually occurs in poly trauma context. The treatment is only orthopedic in our department. The aim of this work was to study the current therapeutic aspects management of the disjunction of the pubic symphysis in the department of ortho-traumatology of CHU Gabriel Touré of Bamako MALI. This was a prospective and analytical study; from 1 July 2021 to 30 June 2022, within 15 patients classified according to Young and Burgess, with a functional evaluation according to Majeed and a minimum follow-up of 4 months. We report symphyseal disconnections accounted for 20.83% of the traumas of the pelvic ring, and 1.84% of patients hospitalized for fracture in the department during the period of the study. We noted a predominance of gender male in 87% of cases with a ratio of 2.75 and the average age in our series was 32 years, with extremes ranging from 18 to 63 and a SD of 13.96. The most common etiologies are APR with 66.7% and traditional mine slide cases with 20%, and the anteroposterior compression mechanism is most frequently encountered at 73.3%. The APCI types: 20%, APCII: 40% and VC: 20% of the Young and Burgess classification are the most found. The treatment of these patients was surgical in 53% cases by locked screw plate. The surgical approach of Pfannenstiel was preferred to the ilio-inguinal of Judet. Non-surgical treatment by trans-osseous traction and the wearing of a pelvic belt was recommended for cases of stable disjunction or severe associated lesions. The average length of stay is 17.27 days with extremes of 5 and 34 days. The functional assessment according to Majeed allowed us to classify 73.3% of patients' cases as excellent, showing a good socio-professional reintegration. Symphyseal disjunction is a rare pathology but of serious functional consequences, regardless of the therapeutic method good management allows to minimize these functional sequelae.

Keywords

Disjunction of the Pubic Symphysis, Therapeutic

1. Introduction

Symphyseal disjunction, like any other traumatic injury to the pelvic ring, is caused by high-energy trauma [1]. They are serious because they can cause immediate, medium and long-term death from hemorrhagic shock. They are often associated with urological, neurological and even orthopedic complications leading to real functional disorders [2]. Disjunction of the pubicsymphysis accounts for 13 to 16% of pelvic ring fractures and 4.6% of all fractures [3]. Pelvic fractures are observed in 10% of severely traumatized patients treated at a level 1 trauma centre in Lyon, France [4].

In Africa: in Morocco, a study at the Mohammed VI University Hospital found 19.8% of cases of symphyseal disjunction in hospitalized patients with pelvic trauma [2]. In the southern Sahara of the Democratic Republic of the Congo, at the Matanda Hospital, the surgical department observed 41% disjunction in those with traumatic pelvic tissue over a period of 5 years in 2019 [5]. Few studies have been carried out on this lesion in Mali, a retro-prospective study from January 2005 to March 2011 at the CHU-GT had identified 27 cases of symphyseal disjunction [6]. Young and Burgess found that all fractures of the pelvic ring result from trauma, either by anteroposterior compression, lateral compression, vertical shear or a combination of these usually following a public road accident [7] [8]. They may be stable or unstable, non-operative treatment is typically reserved for stable fractures in the absence of fracture of the associated pubic body [7]. The ideal treatment for unstable fractures is surgery, but the therapeutic indications can be adjusted according to the technical plateau and the surgeon's experience [4] [6]. The aim of this work is to study the current therapeutic aspects of the management of disjunction of the pubic symphysis in our department.

2. Material and Methods

This was a 12-month prospective and analytical study, running from July 1, 2021 to June 30, 2022. The study population was all patients admitted for pelvic trauma who met our inclusion criteria during the study period.

Inclusion criteria:

-All patients with recent pubic symphysis disjunction (less than 3 weeks) admitted to the department during the study period.

-Patients whose file was complete.

The limitations of this study were:

-The small sample size.

-The insufficient technical platform.

Our sample was comprehensive, consisting of all patients treated in the ward for a disjunction of the pubic symphysis.

The variables studied were: age, sex, profession, etiology, anatomopathological type.

The standard radiograph of the face pelvis was the diagnostic confirmatory examination (Figure 1). The CT scan was requested in case of suspicion of a significant lesion of the posterior arch or intra-pelvic organs (Figure 2). Urological consultation and visceral surgery had been systematically requested from the emergency room. Waiting transosseous traction was systematic before any surgery. Three therapeutic methods were used (functional, orthopedic and surgical). Indications were guided by: pelvic ring stability, associated lesions, terrain and patient choice. All pelvic lesions were classified according to Youg-Burgess in anteroposterior compression (APC), lateral compression (CL), vertical shear (VC) to which must be added the mixed mechanisms (CM) [9].

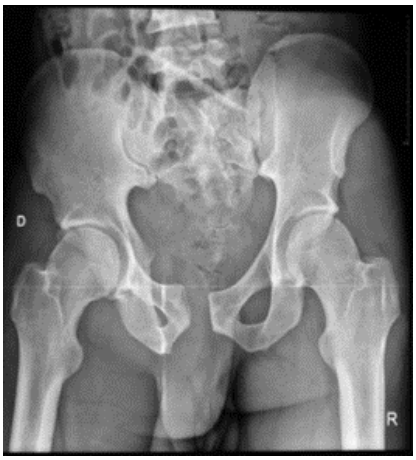

Figure 1. Pelvic X-Ray.

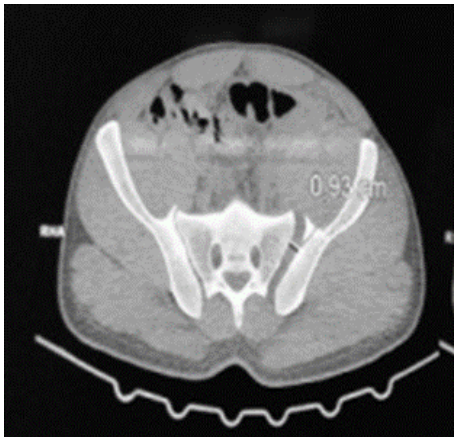

Figure 2. CT appearance of posterior lesions.

The functional assessment of patients was performed according to the Majeed functional assessment score, with a minimum of 4 months hindsight [7] [9]-[13].

Table 1. Majeed clinical score [7].

Pain		Walking aid	
Intense, continues at rest	0 - 5	Most of the time in bed	0 - 2
Intense to activities	10	Wheelchair	4
Tolerable, but limited activities	15	2 crutches	6
To moderate activities, abolished at rest	20	2 canes	8
Weak, intermittent, normal activity	25	1 cane	10
Weak, intermittent, normal activity	30	Without canes	12
Labour		Walk without help	
No regular work	0 - 4	Can't walk	0 - 2
Light work	8	A short walk	4
Changing jobs	12	Significant limping	6
Same work, reduced performance	16	Moderate limpness	8
Same work, same performance	20	Light limpness	10
Sitting position		Normal	12
Douloureuse Painful	0 - 4	Walking distance	
Painful if prolonged	6	In bed or a few meters	0 - 2
Uncomfortable	8	Very limited time and duration	4
Free	10	Limited with canes, difficult without cane	6
Sexual intercourse		1 hour with 1 cane, limited without cane	8
Painful	0 - 1	1 hour without a cane, mild pain or limping	10
Painful if prolonged	2	Normal for age and general condition	12
Uncomfortable	3		
Free	4		

Table 2. Majeed functional assessment score [7].

Professionally active before the trauma	Not professionally active before the trauma	Interpretation
>85	>70	Excellent
70 - 84	55 - 69	Good
55 - 69	45 - 54	Average
<55	<45	Worst

Table 3. Patients according to therapeutic method.

Therapeutic method	Numbers	Percentage
Functional	3	20
Orthopedic	4	26.7
Surgical	8	53.3
Total	15	100

Table 4. Patients according to treatment outcomes.

Aftercare	Workforce	Percentage
Pelvic asymmetry	2	13.3
Infection	1	6.7
Single suite	12	80
Total	**15**	**100**

Table 5. Relationship between the therapeutic method and the functional prognosis.

Functional prognosis	Therapeutic method			**Total**
	Functional	Orthopedic	Surgical	
>85	1	3	7	11
70 - 84	2	1	1	4
Total	**3**	**4**	**8**	**15**

Khi-2 = 3.281, P = 0.09.

The data were processed and statistically analysed using IBM SPPS statistics 21 software, a one-size-fits-all analysis was carried out, in which the average and standard deviation of the quantitative variables and the percentage for qualitative variables were expressed. A bi-variate analysis was performed for different crosses, for this we used the Chi 2 test for comparison of proportions and the results were considered significant for a P less than or equal to 0.05.

3. Results

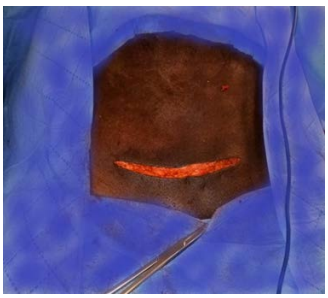

Figure 3. The first way of Pfannenstiel.

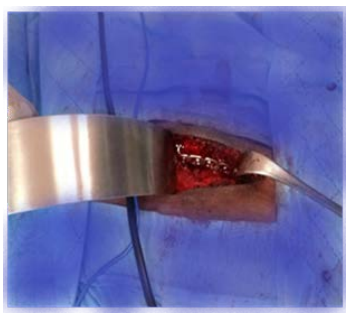

Figure 4. Mounting view during surgical operation.

We recorded 15 cases of disjunction of the pubic symphysis among the 72 patients admitted for trauma of the pelvic ring or 20.83% which represents 1.84% of hospitalized patients for fracture in the department for the period. Males were predominant (87%) with a sex ratio of 6.69. The average age was 32, with extremes of 18 and 63. Accidents on the public road were the most common etiology with 66.7%. The clinical signs were dominated by pain and functional impotence, which were present in all our patients. According to the classification of Young and Burgess, type APC1 and APC2 were predominant with 20% and 40%, respectively (Table 1). Associated lesions were dominated by head injuries (26.7%) and limb fractures (20%). Treatment was surgical in 53.3% (n = 8) (Figures 3-6), orthopedic in 26.7% (n = 4) and functional in 20% (n = 3). We noted 2 cases of asymmetry of the pelvis and a postoperative infection. Functional outcome was found to be excellent in 73.3% and good in 26.6%.

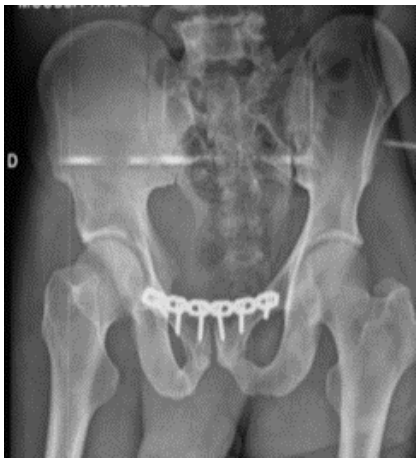

Figure 5. Post-operative check-up.

Figure 6. Osteosynthesis equipment.

4. Discussion

Over a period of 12 months we recorded 15 cases of disjunction of the pubic symphysis among the 72 patients admitted for trauma of the pelvic ring, or 20.83%.

This high rate compared to the literature 13 - 16% [3] could be explained by the

increasing frequency of public road accidents in Mali and the CHU Gabriel Touré is relatively the main trauma emergency centre in the city of Bamako. This frequency is close to that of Hadou. M 19.8% in Morocco [2]. It is significantly lower than that of Muluem OK [14] 43%, but higher than that of Kaghoma 13.5% [5]. The average age in our series was 32+ or −13.96 and with extremes of 18 and 63 years. This is close to the observations of Mulem [14] in Cameroon 35 years with extremes from 20 to 65 years. In England, Pradeep [15] find an average age of 46 years (extreme 14 to 74 years). We observed a predominance of the male sex in our series 87%, with a sex-ratio of 2.75. This male dominance is the most common finding in the literature [2] [14] [15]. This can be explained on the one hand by the hyper activity of men in relation to women from our country, and on the other hand by the fact that the interpubic disc of the woman is thicker than 2 - 3 mm, giving more flexibility to the pelvis and therefore bio mechanically more resistant to trauma than that of man [16]. We noted a 66.7% rate of accidents on public roads and 20% of patients were victims of landslide accidents due to the frequency of traditional mine accidents in winter. This rate is higher than that of Pradeep [15] 43% but lower than those obtained by Lawson [7] and Muluem [14] with 86% and 81% respectively. In our series the mechanism by anteroposterior compression of Type 2 is the most found with 40% (**Table 2**). Anteroposterior compression is the mechanism frequently found in the literature. This frequency is lower than those reported by Saliba Uliana [17] in Brazil and Hadou M [2] in Morocco reported the same finding. In Mohamed [18] in Niger, 81% of patients with a positive Larrey and Verneuil sign were found. Pradeep K [15] in England with 70.96% and 59%, respectively. In our series treatment was surgical in 53.3% of patients by 5 or 6-hole locked reconstruction screw plate. This rate is close to that of A. Mohamed [18] 59%. Hadou M [2] and Pradeep K [15] were exclusively surgical. Treatment was functional in 20% of patients due to the occurrence of trauma on a 28 SA pregnancy with abortion threat in one patient, and the importance of associated lesions in two other patients: one case of abdominal contusion operated on in emergency by general surgery and 1 case of spinal injury managed by neurosurgery. In 80% of the cases the consequences of the management were simple, however we observed 2 cases of asymmetry of the pelvis following the functional treatment is 13.3%, 1 case of infection or 6,7% recorded after the patient's discharge from hospital with dismantling of osteosynthesis equipment and breaking of two screws in the bladder collected 24 h later in the urine. Management in agreement with the urologists after re-hospitalization by removal of the material, debridement and a resting of the bladder by urethral sampling leading to complete remission after two weeks. We have not found such a complication in the literature. This complication rate is lower than that obtained by Muluen [14] 22.58% (P = 0.2168) in Cameroon but higher than that of Hadou M. [2] [11] in Morocco 13.2%. We found a statistically significant correlation between the therapeutic method and the follow-up of management with P = 0.04. The average length of stay was 17.27 days. This is close to that of Hadou M. [2] 17 days but significantly

lower than that reported by Lawson [7] [12] 41 days with extremes of 1 and 18 days in which the management was strictly orthopedic. All our patients were active before their trauma and with a minimum of 4 months, we recorded 73.3% excellent result and 26.7% good results (**Table 3**). These rates are higher than those obtained by Lawson (58%) of excellent result, 25% of good result and 11% of passable and bad result in which the management was strictly orthopedic, Hadou M. [2] found 50% of excellent result, 40% good result and 10% bad result. We did not find a statistically significant correlation between the functional prognosis and the therapeutic method with P = 0.09 (**Tables 4-6**).

Table 6. Patient summary.

Patients	Age	Gender	Type of disjunction	Etiology	Type of treatment	Complications	Score
1	63	M	APC1	AVP	Functional	Simple sequences	Sup to 85 points
2	18	M	VC	Fall from the high level	Orthopedic	Simple sequences	Sup to 85 points
3	57	M	APC2	AVP	Surgical	Simple sequences	Sup to 85 points
4	27	F	APC3	AVP	Orthopedic	Asymétrie du bassin	70 - 84 points
5	30	M	APC2	Mine-ebb	Surgical	Simple sequences	Sup to 85 points
6	30	M	APC2	Mine-ebb	Surgical	Simple sequences	Sup to 85 points
7	31	M	MC	AVP	Surgical	Infection	70 - 84 Points
8	18	F	APC3	AVP	Surgical	Simple sequences	Sup to 85 points
9	30	M	APC2	AVP	Functional	Asymétrie du bassin	70 - 84 Points
10	25	F	APC2	AVP	Surgical	Simple sequences	Sup to 85 points
11	35	F	APC1	Delivery	Functional	Simple sequences	Sup to 85 points
12	49	M	VC	AVP	Surgical	Simple sequences	Sup to 85 points
13	18	M	APC2	AVP	Surgical	Simple sequences	Sup to 85 points
14	30	M	APC1	AVP	Functional	Simple sequences	Sup to 85 points
15	19	M	APC2	Mine ebb	Orthopedic	Simple sequences	Sup to 85 points

5. Conclusion

Symphyseal disjunction occurs in the context of high-energy trauma and often polytrauma that must be sought. It usually occurs after receiving an anteroposterior shock of the pelvis following a public road accident. All therapeutic methods: functional, orthopedic and surgical still retain their place in the management of this lesion, when it is early and well managed to achieve a good functional result with a socio-professional reintegration.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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