EVALUATION OF CLINICAL AND RADIOGRAPHIC CHARACTERISTICS IN PATIENTS WITH FEMORAL SHAFT FRACTURES AT DA NANG HOSPITAL

ĐÁNH GIÁ MỘT SỐ ĐẶC ĐIỂM LÂM SÀNG VÀ X QUANG Ở BỆNH NHÂN GÃY THÂN XƯƠNG ĐÙI TẠI BỆNH VIỆN ĐÀ NẴNG

Le Quang Minh

Surgery Department - Vinmec Da Nang Hospital, Vietnam

*Corresponding author: minhle.hoanmy@gmail.com

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Abstract - The article evaluates selected clinical and radiographic characteristics of patients with femoral shaft fractures treated at Da Nang Hospital. A total of 32 patients with femoral shaft fractures were included in the study, all of whom received treatment at Da Nang Hospital between January 2022 and September 2023. The findings indicated that, males accounted for the majority of cases (78.1%), while females comprised 21.9%. Most fractures occurred in the 17–40 age group (71.9%). The primary cause of injury was traffic accidents, accounting for 90.6% of cases. Right-sided femoral fractures were more frequent than left-sided ones (53.1% vs. 46.9%). According to the Winquist and Hansen classification, type I fractures predominated (40.6%), followed by type III fractures (28.1%). All patients presented with swelling, ecchymosis, limb deformity, and abnormal mobility at the fracture site.

.**Key words -** Femoral shaft fracture; road traffic accidents; swelling; bruising; limb deformity

Tóm tắt - Bài báo đánh giá một số đặc điểm lâm sàng và X quang của các bệnh nhân bị gãy thân xương đùi được điều trị tại bệnh viện Đà Nẵng. Nghiên cứu đã mô tả 32 bệnh nhân bị gãy thân xương đùi được điều trị tại bệnh viện Đà Nẵng trong thời gian từ 1/2022 đến 9/2023. Kết quả nghiên cứu cho thấy, nam chiếm phần lớn với 78,1%, trong khi nữ chiếm 21,9%; đa số các trường hợp xảy ra ở nhóm tuổi 17-40 (71,9%). Nguyên nhân chủ yếu là do tai nạn giao thông với 90.6%. Vị trí chân phải gặp nhiều hơn chân trái với tỉ lệ 53,1%. Phân độ gãy theo Winquist và Hansen chủ yếu là độ I với 40,6% và độ III với 28,1%. Tất cả các bệnh nhân đều có biểu hiện lâm sàng như: sưng nề, bầm tím, biến dạng chi và cử động bất thường ở vị trí gãy.

Từ khóa - Gãy thân xương đùi, tai nạn giao thông; biến dạng chi; cử động bất thường; bầm tím

1. Introduction

Femoral shaft fractures are serious and commonly encountered injuries, occurring across all age groups, with the highest prevalence in the working-age population. The most common causes are traffic accidents (TAs), domestic accidents, and occupational accidents. This fracture usually combines with clinical symptoms such as: swelling, bruising, limb deformity, and abnormal mobility [1], [2].

Several studies, both domestic and international, have investigated these issues; however, no such research has been done in the Da Nang region. Therefore, we conducted this study with the aim of evaluating the clinical and radiological characteristics of patients with femoral shaft fractures at Da Nang hospital and to identify if there is any difference compared to previous studies.

2. Subjects and Methods

2.1. Study Subjects

The study included 32 cases of femoral shaft fractures treated at Da Nang Hospital from January 2022 to September 2023.

Inclusion criteria: Patients with femoral shaft fractures treated at Da Nang Hospital who agreed to participate in the study.

Exclusion criteria: Patients who did not agree to participate in the study

2.2. Research Methods

2.2.1. Study Design

A descriptive case series study.

2.2.2. Sample Size and Sampling Method

All patients with femoral shaft fractures treated at Da Nang Hospital from January 2022 to September 2023.

2.2.3. Data collection procedure

- Collection of administrative information;

- Clinical examination and radiographic (X-ray) evaluation.

2.2.4. Data Analysis

Data were entered and processed using a computer-based case report form and analyzed with SPSS version 20.0 and Microsoft Excel 2010.

2.2.5. Research ethics

This study was approved by the Ethics Committee of Da Nang hospital and conducted in accordance with the principles of the Declaration of Helsinki

3. Research Results

From January 2022 to September 2023, 32 patients with femoral shaft fractures were treated at Da Nang Hospital.

3.1. Gender

There were 25 male patients (78.1%) and 7 female patients (21.9%).

3.2. Age group

Table 1. Age group

Age group	n	%	Mean ± SD
17-40	23	71.9	31.9 ± 17.0
41-60	5	15.6	
>60	4	12.5	
Total	32	100	

Most patients were aged 17–40 years (71.9%), with a mean age of 31.9 ± 17.0 years

3.3. Cause of fracture

Table 2. Causes

Cause	n	%
Traffic Accident	29	90.6
Work Accident	1	3.1
Domestic Accident	2	6.3
Total	32	100

Most cases were caused by traffic accidents (90.6%), followed by domestic (6.3%) and work accidents (3.1%).

3.4. Distribution of causes by age group

Table 3. Cause distribution by age group

Age group	Cause						p
	Traffic accident		Work accident		Domestic accident		
	n	%	n	%	n	%	
17-40	22	68.8	1	3.1	0	0	0.213
41-60	4	12.5	0	0	1	3.1	
>60	3	9.4	0	0	1	3.1	
Total	29	90.6	1	3.1	2	6.2	

Traffic accidents were the most common cause (90.6%), predominantly affecting patients aged 17–40 years (68.8%). The difference was not statistically significant (p = 0.213 > 0.05).

3.5. Distribution of causes by gender

Table 4. Cause distribution by gender

Gender	Cause						p
	Traffic accident		Work accident		Domestic accident		
	n	%	n	%	n	%	
Male	22	68.8	1	3.1	2	6.2	0.629
Female	7	21.9	0	0	0	0	
Total	29	90.6	1	3.1	2	6.2	

Traffic accidents were the leading cause (90.6%), mainly among males (68.8%). Work and domestic accidents occurred only in males.

3.6. Injured limb

Among the 32 patients, 53.1% had fractures of the right leg, and 46.9% had fractures of the left leg.

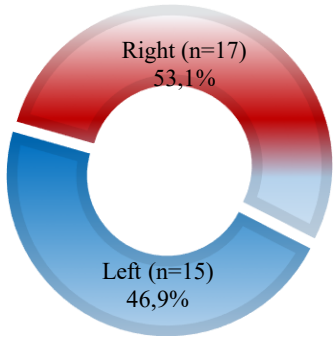

Figure 1. Fractured limb

3.7. Classification by Winquist and Hansen

Table 5. Fracture classification

Grade	Cases	%
0	2	6.3
I	13	40.6
II	7	21.9
III	9	28.1
IV	1	3.1
Total	32	100

Grade I fractures were most common (40.6%), followed by grade III (28.1%), grade II (21.9%), grade 0 (6.3%), and grade IV (3.1%).

3.8. Clinical symptoms

Swelling, bruising, limb deformity, and abnormal mobility: 100% patients.

4. Discussion

In our study, males accounted for the majority at 78.1%, while females made up only 21.9%. This ratio differs from the study by Do Dinh Tung, where females outnumbered males at 53.1% and 46.9%, respectively [3]. Our ratio is similar to that of Le Viet Thong (66.7% male, 33.3% female) [4], Xingguang Tao (65.7% male, 34.3% female) [5], Tzu-Hao Wang (63.4% male, 36.6% female) [6], Yu-Hung Chen (76.6% male, 23.4% female) [7], and Wei Shui (65% male, 35% female) [8]. This can be explained by the fact that femoral fractures are more common in males due to high-energy trauma, mainly from traffic accidents (TAs).

The age group from 17–40 years accounted for more than twice the proportion of other age groups, making up 71.9%, while the least affected group was those over 60 years old, at 12.5%. Our results align with the findings of Nguyen Tien Linh, where the 17–40 age group comprised 67.2%, the 41–60 group 21.3%, and those over 60 accounted for 11.5% [9]. Similarly, our data agrees with that of Do Dinh Tung, with the 17–40 age group representing 56.3% [3], and Vu Truong Thinh, whose 20–39 age group made up 61% [1]. Other studies show similar average ages: Xingguang Tao (42.4 ± 15.9) [5], Syed I. Ghouri (33.08) [2], Ericka P. von Kaeppler (31.3 ± 10.58) [10], Tzu-Hao Wang (28.5 ± 13.4) [6], Yu-Hung Chen (31.64 years) [7], and Wei Shui (38 years) [8].

These findings indicate that femoral shaft fractures are commonly seen in young individuals, who are in their most productive working years. Treating femoral shaft fractures in this group has advantages: younger patients are generally healthier, better tolerate major surgery compared to the elderly, and recover more quickly. They can begin early rehabilitation and mobilization after surgery, helping them return to the workforce sooner.

Table 2 shows that traffic accidents accounted for the majority of femoral shaft fractures (90.6%). This is similar to the studies of Le Viet Thong (75%) [4] and Nguyen Tien Linh (70.4%) [9]. A study in Nigeria, a developing country similar to Vietnam, by Ugezu Al also showed a high rate due to traffic accidents (78%) [11], as did Syed I. Ghouri in Qatar (TA: 73%, work accidents: 27%) [2], and Ericka P. von Kaeppler (TA: 87%, falls from height: 12%) [10]. These findings reflect the reality in Vietnam, where weak transportation infrastructure and the growing number of vehicles contribute to the high and increasing incidence of traffic accidents. Additionally, in our study, most patients were young (17–40 years old). According to the World Health Organization in 2002, the global traffic accident mortality rate was 19 per 100,000 people, while in Vietnam it was 27 per 100,000. In 2003, Vietnam recorded 20,774 traffic accidents, with 12,864 deaths and 20,704 injuries, causing financial losses in the thousands of billions of VND. According to Ericka P. von Kaeppler, the annual rate of femoral shaft fractures in Tanzania is 18.4 per 100,000 people [10].

Fracture classification is crucial as it helps clinicians choose the appropriate treatment and predict possible outcomes and complications. We used the Winquist and Hansen classification [12] because it is relatively simple, easy to differentiate, and sufficiently comprehensive.

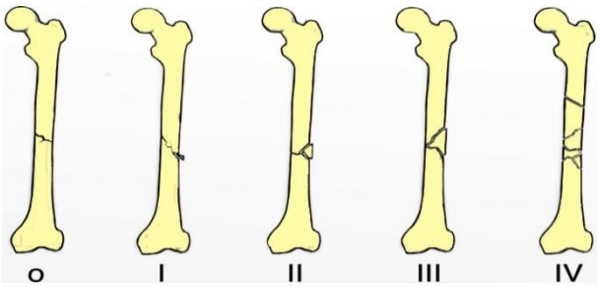

Figure 2. *Winquist and Hansen classification [12]*

In our study, most cases fell into types I, II, and III, with proportions of 40.6%, 21.9%, and 28.1%, respectively. Type I fractures - unstable fractures with a third fragment less than 25% of the shaft's width - were the most common. This finding aligns with that of Nguyen Tien Linh, who also reported the highest rate for type I fractures (54.1%) [9], and with Syed I. Ghouri, who found type I at 73%, type II at 21.7%, and types III and IV both at 0.9% [2]. However, our results differ from those of Do Dinh Tung, who found type 0 to be the most common at 56.3% [3].

The clinical symptoms such as swelling, bruising, limb deformity, and abnormal mobility were also reported in the studies of Do Dinh Tung [3], Vu Truong Thinh [1], and Le Viet Thong [4], Nguyen Tien Linh [9].

5. Conclusion

Femoral shaft fractures treated at Da Nang Hospital are more common in males, with the leading cause being traffic accidents. Injuries predominantly occur in the working-age group (17–40 years). Swelling, bruising, limb deformity, and abnormal mobility are in 100% patients.

Our study results indicate that clinical and radiological characteristics of femoral shaft fractures are largely consistent with findings from other studies, both domestically and internationally. Based on these findings, preventive measures and programs aimed at reducing this type of injury can be implemented for the population of Da Nang, drawing on experiences and strategies from other regions.

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