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Pattern of Femoral Fractures in Ughelli North, Nigeria (Ten Years Retrospective Study).

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Background: Femoral fractures are common injuries that affect people of all ages in most populated cities as a result of commercial activities in these areas. This study aimed at determining the patterns of femoral fractures in Ughelli North Local Government Area. Materials and Methods: It adopted a retrospective study design and made use of purposive sampling technique. Data was retrieved from medical records of the hospital and was analyzed using statistical package for social science (SPSS) version 22.0. A total of 2,346 subjects (60.9% males and 39.1% females) with a mean age of 40.9 \pm 16.87 years. Result showed that most common type of fracture was the open fracture (n=541, 23.1%), oblique (n=475, 20.2%), transverse (n=461, 19.7%), spiral (n=448, 19.1%), comminuted (n=365, 15.6%) and closed (n=56, 2.4%). Further findings reveal that the most frequent site of fracture was midshaft (n=1020, 43.5%), with distal site (n=688, 29.3%) and the proximal site (n=638, 27.2%). Conclusion: The most prevalent type was the open femoral fracture; however, the midshaft region of the femur was more common especially in male subjects, why the middle age group (31-60) was the most affected.

Key words: Femur, Fracture, Ughelli-north

INTRODUCTION

Femoral fractures are fractures that affect the femur bone; they are common injuries seen at the accident and emergency section. The femur is vital for transmission of body weight therefore fractures affecting it require intensive investigation of their impact on the bone and the entire human body, it is composed of head, neck, greater and lesser trochanters, shaft and the distal condyles, hence the site of fracture could be in any of these areas.¹

Femoral fractures could cause prolonged morbidity and extensive disability if not treated properly. Complications and injures associated with femoral fractures in the adult could be life threatening.²

They are common injuries that affect people of all ages in most populated cities as a result of commercial activities in these areas sometimes due to high energy trauma from motor vehicle collisions, pedestrian accidents, gunshot injures and falls from heights. Review by Anyaechie *at al.*, on pattern of fractures and associated injuries in a tertiary trauma centre in Enugu confirmed the main etiological factor as road traffic accidents.³

Fracture patterns vary according to the direction of force applied and the amount of force absorbed. The amount of comminuition present increases with the amount of energy absorbed by the femur at the time of fracture.⁴ Signs of fracture include swelling, deformity and shortening of the leg. Extensive soft-tissue injury,

bleeding and shock are common; however severe pain capable of restricting movement of the leg is often observed.⁵

Ughelli North Local Government Area, Delta State, Nigeria is predominantly inhabited by Urhobo ethnicity, as well as a mixture of several tribes. It is the location of the 3rd most populated city Ughelli in Delta State and one of the main routes for travelers to the other parts of the Niger Delta.

This study aimed at determining the patterns of femoral fractures in Ughelli-north LGA and compares the frequency of occurrences with certain demographic factors like age and gender. Due to the deteriorating state of major and minor roads in Nigeria, there seems to be increase in road traffic accidents which sometimes affect the femur bone resulting in different fracture pattern hence the need to develop a baseline data on the various patterns of presentation in Delta State using Ughelli North as a study area.

MATERIALS AND METHODS

It was a retrospective study design. Study population comprised of patients who attended the Radiology department of Ufor Hospital Ughelli, Delta State, Nigeria from 2008 to 2018.

All properly documented cases of femoral fracture were used for this study and the purposive sampling technique was adopted. The file numbers of the subjects who had visited the radiology department within the study period was traced and their case notes were retrieved from the medical records department of the hospital and relevant findings were recorded in a data collection sheet. Only subjects with proper documentation and diagnosis of femoral fracture within the stipulated period of 2008-2018 were included for this study.

Ethical clearance was obtained from the Research and Ethics Committee of Human Anatomy Department,

Faculty of Basic Medical Sciences, Delta State University, Abraka with the clearance number DELSU/CHS/ANA/18/41. Permission was also obtained from the management of Ufor Hospital, Ughelli, Delta State. Data retrieved was analyzed using Statistical Package for Social Science (SPSS) version 22.0.and results presented in frequency tables and charts with P value lesser than 0.05 at a 95% confidence interval considered significant. Chi-square test was used for inferential statistics.

RESULTS

Majority of the subjects used were males (n=1429, 60.9%) with a mean age of 49.09 ± 16.87 years.



Fig 2:Distribution Showing Femoral Fracture Site

Table 1: Association of Age and Fracture Site

	10-30 years	31-60 years	61-90 years	>90 years
Distal	94 (13.7%)	401 (58.3%)	193 (28.0%)	0 (0%)
Midshaft	162 (15.8%)	586 (57.5%)	272 (26.7%)	0 (0%)
Proximal	87 (13.6%)	371 (58.2%)	178 (27.9%)	2 (0.3%)

P = 0.257

31-60 years had the highest prevalence of the distal, midshaft, and the proximal fracture site.

Table 2: Relationship between Gender and Fracture Site

		Frequency	Percentage (%)
Distal	М	414	60.2
	F	274	39.8
Midshaft	М	645	63.2
	F	375	36.8
Proximal	М	370	58.0
	F	268	42.0

P=0.093

Distal, Midshaft, and Proximal Femoral Fracture site were more prevalent among males when compared to females. This was not statistically significant (p>0.05).

Fracture Type	Frequency	Percentage (%)
Closed	56	2.4
Comminuted	365	15.6
Oblique	475	20.2
Open	541	23.1
Spiral	448	19.1
Transverse	461	19.7
Total	2346	100.0

 Table 3: Types of Fracture

Open fracture was the most common type

Table 4: Age Correlation with Types of Fractur	Table	4: Age	Correlation	with Types	of Fracture
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	10-30 years	31-60 years	61-90 years	>90 years
Closed	19 (5.5%)	31 (2.3%)	6 (0.9%)	0 (0.0%)
Comminuted	44 (12.8%)	220 (16.2%)	101 (15.7%)	0 (0.0%)
Oblique	52 (15.2%)	290 (21.4%)	133 (20.7%)	0 (0.0%)
Open	51 (14.9%)	321 (23.6%)	168 (26.1%)	1 (50%)
Spiral	133 (38.8%)	229 (16.9%)	85 (13.2%)	1 (50%)
Transverse	44 (12.8%)	267 (19.7%)	150 (23.3%)	0 (0.0%)
Total	343 (100%)	1358 (100%)	643 (100%)	2 (100%)

P = 0.000

Closed, comminuted, oblique, open, spiral, and transverse femoral fracture type was more prevalent among age group 31-60 years as compared to the others. There was a statistical age association with the fracture type (p<0.05).

Table 5: Relationship between Gender and Fracture Typ	Fable 5: Relations	nip between	Gender and	Fracture'	Гуре
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		Frequency	Percentage (%)
Closed	М	34	2.4
	F	22	2.4
Comminuted	М	220	15.4
	F	145	15.8
Oblique	М	279	19.5
	F	196	21.4
Open	М	343	24,0
	F	198	21.6
Spiral	М	272	19.0
1	F	176	19.2
Transverse	М	281	19.7
	F	180	19.6

Midshaft femoral fracture was more prevalent among males when compared to females.

Table 6: Year Distribution of Fracture

Year	Frequency	Percentage (%)
2008	119	5.1
2009	211	9.0
2010	219	9.3
2011	399	17.0
2012	284	12.1
2013	296	12.6
2014	305	13.0
2015	204	8.7
2016	145	6.2
2017	126	5.4
2018	38	1.6
Total	2346	100.0

DISCUSSION

In recent times, there seem to be geometric increase in population across the globe with ripple effect on the economy resulting to increased commercial activities especially in densely populated cities.⁶ Femoral fractures are most prevalent fracture type usually caused by a wide range of factors from minor and major falls, to high trauma accidents, gunshot injuries and certain bone disease ref. an array of reports shows that incidence of femoral shaft fractures among middle aged male subject is a common phenomenon as they represent the most productive group.⁷

This present study comprises of about 2,346 subjects, the male group were most affected and make up about 60.9% of the entire sample population, this may be attributable to their hardworking nature, bearing the responsibility of the family to make ends meet making them involved in strenuous activities, this in accordance to the findings of Akinyoola et al.⁸ However the mean age accounts for 49.09±16.87 years representing the young and highly engaged group prone to trauma injury from Road traffic accident and sporting activities. Findings on mean age is at variance with the report of Ikem et al., and Dim et al., whose result state 35+13.2 and 35+11.9, these discrepancies may be due to socio-economic and factors.^{9, 10} Several report have showed that road traffic accidents are the most prevalent cause of major trauma incidents in Nigeria and some associated risk factors include poor state of the roads, and ignorance of safety rules by the drivers.¹¹

Midshaft of the femur was the most affected site especially among the young working-class age group of 31-60years which accounts for 43.5%, this was in accordance with Whittle *et al.*, ¹⁴ whose report showed the midshaft region as the most frequent site of fracture, Salminen *et al.*, and Alexander *et al.*, also had similar findings.^{15, 16} This may be as a result of the exposure of the shaft making it prone trauma injuries. Alternatively, proximal fractures affecting the neck and trochanters of the femur was prevalent in elderly subjects above the age of 90 years possibly due to decrease in bone density from related diseases like osteoporosis in accordance with findings from Nieves *et al.*, ¹⁷

As shown in this current study the most common type was the open fracture, more prevalent in males when compared to females. This was not statistically significant (p>0.05) but strongly supported by the findings of Antonio *et al.*,¹⁸ who recorded open femoral fracture type with higher incidence in males when compared to females however age was positively correlated with the fracture type as open fracture make up 23.6% closely followed by oblique (21.45) and transverse (19.7%) types among the age group of 31-60 years.

CONCLUSION

The findings of this study established the pattern of femoral fractures in Ughelli-north as there was a steady increase in the frequency of occurrences across the first few years of the study (2008-2014) and a concomitant decline afterwards. The male subjects were more affected with open fracture as the common site of occurrence among the young active population was midshaft region of the femur, however proximal fractures affecting the neck and trochanteric regions were seen among the elderly. Public enlightenment programs should be carried out to inform the populace of safety rules in driving across the commercial cities and constructive measures should be applied in road maintenance to reduce the risk of vehicle collisions and car crashes across the country, subsequently further studies about the subject matter in other regions and zones in Nigeria is highly recommended.

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