
Overall management of ankle fractures

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Abstract:

Background:

Ankle fractures are the most common injuries treated with variable functional outcomes.

The introduction of the A0 classification has been facilitated analysis of the commonest fracture types.

Aim of the study:

The aim of this study is to know:

- (1) The age-specific incidence of ankle fractures.
- (2) The most frequent mechanism of injury.
- (3) The incidence of the different AO subgroups.
- (4) Immediate and early post operative complications related to ankle fracture.

Materials and Methods:

Sixty three patients were enrolled in my retrospective study, there were (38) men and (25) women; the period was from January 2007 to December 2008.

The AO classification was used in the analysis of the fracture pattern.

The hypothesis:

In our opinion, the best anatomical reduction may be achieved by surgical treatment of ankle fractures that present with a talar tilt, fibular shortening and injury to the syndesmosis.

Introduction:

The epidemiology of ankle fractures is changing. Young age group is the highest age group specific incidence of ankle fractures being in men between 26 and 35 years of age. The introduction of the A0 classification¹ has been facilitated analysis of the commonest fracture types.

In this study 63 patients with ankle fractures were treated in a 2-year period in Tripoli central hospital, Orthopaedic Trauma department, shows that the commonest ankle fracture is the 4.4 B2.2.

Results:

In 2-year study period, 63 patients with ankle fracture were treated.

38 (60.3%) occurred in men, 25 (39.7%) occurred in women.

The average age of the ankle fracture population was 37.86 (16-75) years.

The highest age-specific incidence in men were seen between 26 and 35 years of age.. In women, the highest age specific incidence was between 36 and 45 years of age. (Table 1).

63.5% were trans-syndesmotic type B fractures (B2.2, B3.3 are the predominant), 27% were

supra-syndesmotic type C fractures (mainly C3.2) and the remaining 9.5% were infra-syndesmotic type A fractures (A2.1). (Table 2 and figure 1).

47.6% of all ankle fractures are caused by fall down from height injury and 33.3% are caused by RTA (road traffic accident).

These mechanisms of injuries tend to occur in young patients. The third commonest cause of ankle fractures is twisting injury while the least common causes of ankle fractures are sport injuries, direct blows. (Tables 3).

The causes of the different A0 fracture types was mainly fall from height in almost all fracture subtypes, mainly B2.2 and type B2.3 fractures, with RTA causing B2.2 and B3.3 mainly. (Table 4).

There was no immediate nor early postoperative complications, which include hemorrhage, pulmonary embolism, atelectasis, deep vein thrombosis, wound dehiscence, malreduction.

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Table 1: Age specific incidence of ankle fractures.

		Decade						Total
		16-25	26-35	36-45	46-55	56-65	66-75	
SEX	male	9	16	8	2	2	1	38
	female	5	3	6	6	3	2	25
Total		14	19	14	8	5	3	63

Table 2: Incidence of the different AO subgroups.

		Frequency	Percent	Cumulative Percent
Valid	A11	1	1.6	1.6
	A12	1	1.6	3.2
	A21	4	6.3	9.5
	B11	1	1.6	11.1
	B12	2	3.2	14.3
	B21	3	4.8	19.0
	B22	15	23.8	42.9
	B23	6	9.5	52.4
	B32	5	7.9	60.3
	B33	8	12.7	73.0
	C11	1	1.6	74.6
	C12	3	4.8	79.4
	C22	4	6.3	85.7
	C23	2	3.2	88.9
	C32	6	9.5	98.4
	C33	1	1.6	100.0
	Total	63	100.0	

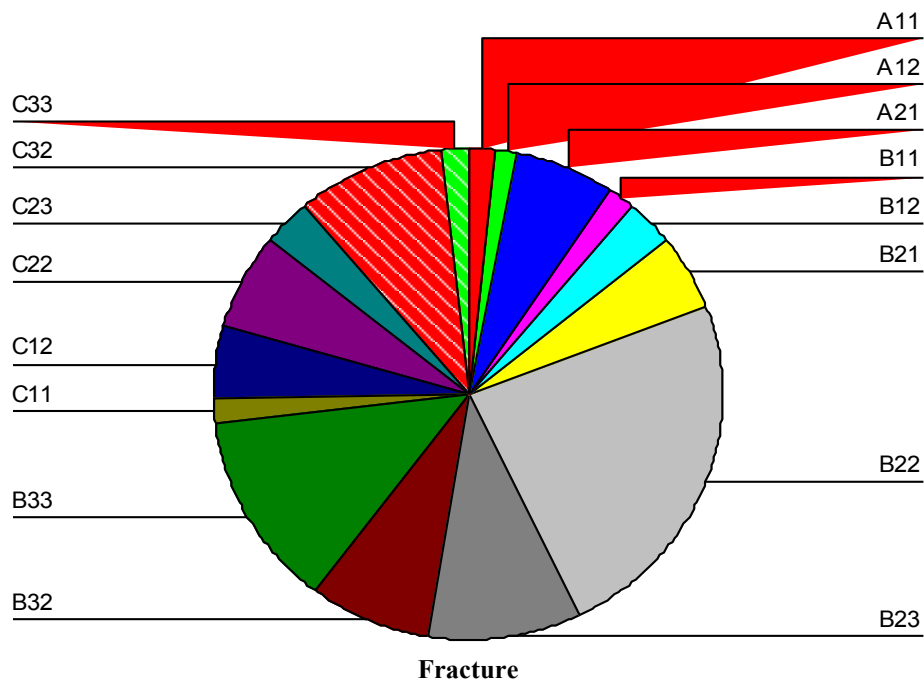


Figure 1: Incidence of the different AO subgroups.

Table 3: Frequency of the mechanism of injury.

	Frequency	Percent	Cumulative Percent
Valid twist	9	14.3	14.3
fall	30	47.6	61.9
sport	1	1.6	63.5
blow	1	1.6	65.1
RTA	21	33.3	98.4
other	1	1.6	100.0
Total	63	100.0	

Table 4: The cause of fracture for each A0 subgroup.

		CAUSE						Total
		twist	fall	Sport	blow	RTA	other	
fracture	A11	0	1	0	0	0	0	1
	A12	0	0	0	0	1	0	1
	A21	2	1	0	0	1	0	4
	B11	0	1	0	0	0	0	1
	B12	1	0	1	0	0	0	2
	B21	1	0	0	0	2	0	3
	B22	3	8	0	0	4	0	15
	B23	0	6	0	0	0	0	6
	B32	0	2	0	0	3	0	5
	B33	0	4	0	0	4	0	8
	C11	0	0	0	0	1	0	1
	C12	0	2	0	0	0	1	3
	C22	1	1	0	0	2	0	4
	C23	0	1	0	0	1	0	2
	C32	0	3	0	1	2	0	6
	C33	1	0	0	0	0	0	1
Total		9	30	1	1	21	1	63

Discussion:

After investigation about the frequency of ankle fractures, it was surprised that so little has been written about their epidemiology in recent years.

Bengnkr et al.² documented the increasing incidence of ankle fractures in Sweden between the early 1950s and the early 1980s and Kannus et al.³ showed a similar increase in Finland between 1970 and 1994. Daly et al.⁴ examined the epidemiology of ankle fractures in Minnesota, USA.

This group had difficulty in applying the early A0 classification. We found no particular problems in using the A0 classification, although it was sometimes difficult to distinguish between B 1.1 and B 1.2 fractures. The only difference between these fractures are damage to the anterior syndesmosis, which

is frequently difficult to detect clinically in an acute fracture.

There was also some difficulty in distinguishing between B2.2 and B2.3 fractures, where the degree of comminution is the only difference and a similar problem sometimes arose with B3.2 and B3.3 fractures. Notwithstanding these minor problems, we found the A0 classification useful and easy to apply.

The incidence of ankle fracture is rising, but there are discrepancies between the various figures quoted in the literature. The most likely reason for this is that a number of researchers have examined only inpatient data and consequently their age-specific incidences are lower than they should be.

عبد المجيد محمد سالم (43 سنة).



عيسى سامي (68 سنة).



عافية شرف الدين الجحش (55 سنة).



This study shows that the overall incidence of ankle fractures in men is higher than in women, but that in recent years the section of the population showing the most dramatic increase in the incidence of ankle fractures is elderly women. This is particularly shown by Bengtson et al.² who demonstrated that the number of women in Lund, Sweden, over the age of 65 years who presented with ankle fractures increased by 173% in a 30-year period. Kannus et al.³ also found a 145% increase in osteoporotic ankle fractures in Finnish women between 1970 and 1994, with an equivalent increase of 116% in Finnish men.

Most of the ankle fractures in men were seen between the ages of 26 and 35, when there was an incidence of 16 fractures per 100,000 patients a year. Not surprisingly, one third of this group had height-related injuries.

References:

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All authors agree that A0 type B trans-syndesmotic fractures are commoner than type A infra-syndesmotic or type C supra-syndesmotic fractures. We had as high incidence of type B fractures as Lindsjo⁵ or Bengtson et al.²

Conclusion:

In our opinion, ankle fractures are seen more in the young males due to high-velocity injuries and the best anatomical reduction may be achieved by surgical treatment.

Acknowledgment:

To my parents.

To all my teachers and colleagues who helped me to finish this work.

To my patients.

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