Closed treatment of Jones fracture

Good results in 40 cases after 11–26 years

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40 patients with transversal or short oblique fractures of the proximal shaft of the fifth metatarsal bone (Jones fracture) were treated with full weight bearing with or without elastic bandage in 39 cases and plaster cast immobilization in one. 24 cases were acute traumatic fractures, 14 stress fractures and 2 refractures. After 17 (11–26) years, 33 of the fractures had healed primarily, evidence of refracture or delayed union was found in 7 and there were no non-unions. All but one of the patients were free of symptoms.

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Transverse fracture through the proximal part of the fifth metatarsal shaft has been called the Jones fracture (Jones 1902). A high rate of healing problems has been reported (Dameron 1975, Kavanaugh et al. 1978, Torg et al. 1984).

Various treatments have been suggested: elastic bandage and early weight bearing (Kavanaugh et al. 1978, Zelko et al. 1979), plaster cast and no weight bearing for 6–8 weeks (Torg et al. 1984) or osteosynthesis (Kavanaugh et al. 1978, DeLee et al. 1983).

Patients and methods

Between 1966 and 1980 7,312 foot fractures were recorded at our hospital, and all the radiograms were preserved. 55 patients with unilateral Jones fractures were found and 42 of them could be traced. Two children, 6 and 13 years old, were excluded. 40 patients participated in the follow-up evaluation and were called for radiographic examination (Table 1). The cause of the injury, later injuries of the foot and present symptoms were recorded on a questionnaire.

The fractures were caused by indirect violence, in 14 patients during sport activities and were classified as acute traumatic fracture, stress fracture or refracture. An acute fracture with a sharp fracture line without periosteal reaction was seen in 24 patients. 14 fractures with periosteal reaction but no history of an earlier acute injury were classified as stress fractures. Sclerosis narrowing the medullary canal was seen in 13 of these fractures and sclerosis obliterating the canal in one. Two patients with refractures had had one acute fracture and one stress fracture verified radiographically 15 and 4 months earlier.

Primarily, no treatment or an elastic bandage for optional use was given and weight bearing was permitted. One patient was treated with plaster cast immobilization for 3 weeks. The patients were primarily followed for 2 (0–17) weeks. Radiographic control was performed in only one of the patients 17 weeks after the injury.

30 men and 10 women were examined after 17 (11–26) years. 5 patients, who were free of symptoms, declined radiographic examination.

Results

No nonunions or pseudarthroses were diagnosed. Refracture or delayed union was radiographically diagnosed on the average 7 (2–15) months after the initial injury in 7 patients. Another 2 patients were examined due to pain following a new injury 2 and 7 months after the primary injury, but no radiographic examination was performed. On the radiographs the refractures could not be distinguished from delayed unions. In 1 patient a second refracture occurred after another 10 months.

All but 2 refractures/delayed unions were treated with elastic bandage and weight bearing. 1 refracture was treated by plaster cast immobilization for 14 days and 1 by screw osteosynthesis.

At the follow-up evaluation none of the patients had inability to work or participate in sports. 1

Table 1. Observations in 40 patients with Jones fracture

A	B	C	D	E	F	G	H	I	J	K
1	16	M	A	1	E	–	–	12	–	H
2	16	M	S	0	E	–	–	17	–	–
3	17	M	R-4	3	E	–	–	11	–	H
4	17	M	A	1	E	–	–	16	–	H
5	20	M	S	2	E	–	–	26	–	H
6	20	M	S	1	E	–	–	21	–	H
7	21	M	S	0	E	–	–	26	–	H
8	21	M	S	0	E	5-R	E	24	–	H
9	22	M	S	2	E	–	–	25	–	H
10	22	M	S	0	E	–	–	15	–	H
11	22	M	A	0	E	–	–	17	–	H
12	23	M	S	1	E	–	–	13	–	H
13	24	M	S	0	E	–	–	23	–	H
14	24	M	S	1	P	6-R	E	12	–	H
15	26	M	A	0	E	–	–	20	–	H
16	26	M	A	0	E	8-R	S	11	–	H
17	28	M	S	1	E	–	–	25	–	H
18	28	M	A	0	E	–	–	12	–	H
19	30	M	A	14	0	–	–	25	–	H
20	30	M	S	21	E	–	–	24	–	H
21	30	M	S	1	E	–	–	15	–	H
22	32	F	A	0	E	–	–	14	–	H
23	35	F	A	0	E	–	–	20	–	–
24	35	M	A	0	E	–	–	19	–	H
25	37	F	A	0	E	–	–	11	–	H
26	38	M	A	0	E	–	–	13	–	H
27	42	M	A	0	E	–	–	12	–	–
28	45	M	S	0	E	–	–	23	–	H
29	47	M	A	21	E	–	–	19	–	H
30	48	F	R-15	0	E	10-R	P	11	–	H
31	51	F	A	1	0	–	–	17	–	H
32	57	M	A	3	0	–	–	21	–	H
33	57	M	A	0	E	12-D	E	17	+	H
34	57	F	A	0	E	–	–	16	–	H
35	61	M	A	0	E	–	–	12	–	H
36	62	F	A	0	E	–	–	16	–	H
37	63	F	A	0	E	–	–	15	–	–
38	64	M	A	0	E	2-R	E	11	–	H
39	68	F	A	0	E	–	–	14	–	H
40	71	F	A	1	E	–	–	12	–	–

A Case
B Age at injury, years
C Sex
D Type of fracture
  A Acute
  S Stress
  R Refract (months)
E Days of symptoms
F Primary treatment
  0 None
  E Elastic bandage
  P Plaster of Paris
G Time to diagnosis of refract (R) or delayed union (D), months
H Treatment of refract
  E Elastic bandage
  P Plaster of Paris
  S Surgery
I Time of follow-up, years
J Complaints at follow-up
K Radiographic follow-up
  H Healed

patient had discomfort due to thickening of the bone at the fracture site causing local pressure by shoes.

Discussion

Jones (1902) reported 4 fractures of the proximal shaft of the fifth metatarsal by indirect violence which all healed with conservative treatment. Later studies have pointed out a high rate of delayed unions and nonunions (Dameron 1975, Kavanaugh et al. 1978, Torg et al. 1984). Torg et al. (1984) defined fractures with sclerosis that narrowed the medullary canal as delayed union (26%) and fractures with sclerosis that obliterated the medullary canal as nonunions (20%). In a recent study delayed unions or refractures were found in almost one fourth of the patients (Josefsson et al. 1994). The rate of permanent nonunions is not known from earlier studies.

One third of the fractures in our series were classified as stress fractures on the basis of periosteal reaction and sclerosis at the fracture site at the time of the acute injury. This percentage is slightly lower than in previous studies (Kavanaugh et al. 1978, Torg et al. 1984, Josefsson et al. 1994). The rates of

refracture and delayed union were the same for acute traumatic fracture and stress fracture, although in a previous study the rate was higher for stress fracture (Josefsson et al. 1994).

In our study there were no nonunions present at the follow-up on the average 17 years after the injury. The rate of delayed unions could not be analyzed. However, refractures or delayed unions were diagnosed in almost one fifth of the patients. All the refractures occurred within 15 months after the initial injury and this may be due to delayed unions.

It appears that nonunions will be rare in both acute traumatic and stress type of Jones fracture primarily treated with early weight bearing.

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References

Dameron T B Jr. Fractures and anatomical variations of the proximal portion of the fifth metatarsal. J Bone Joint Surg (Am) 1975; 57 (6): 788–92.

DeLee J C, Evans J P, Julian J. Stress fracture of the fifth metatarsal. Am J Sports Med 1983; 11 (5): 349–53.

Jones R. Fracture of the base of the fifth metatarsal bone by indirect violence. Ann Surg 1902; 35: 697–700.

Josefsson P O, Karlsson M, Redlund Johnell I, Wendeberg B. Jones fracture. Surgical versus nonsurgical treatment. Clin Orthop 1994; 299: 252–5.

Kavanaugh J H, Brower T D, Mann R V. The Jones fracture revisited. J Bone Joint Surg (Am) 1978; 60 (6): 776–82.

Torg J S, Balduini F C, Zelko R R, Pavlov H, Peff T C, Das M. Fractures of the base of the fifth metatarsal distal to the tuberosity. Classification and guidelines for non-surgical and surgical management. J Bone Joint Surg (Am) 1984; 66 (2): 209–14.

Zelko R R, Torg J S, Rachun A. Proximal diaphyseal fractures of the fifth metatarsal-treatment of the fractures and their complications in athletes. Am J Sports Med 1979; 7 (2): 95–101.