

A Family Practice Orthopedic Trauma Clinic

Joel Alcott, MD, USNR, and Glenn Iben, MD, USNR
Charleston, South Carolina

In order to help provide care for acute orthopedic injuries to a portion of a military patient population and to add simultaneously a new aspect to the orthopedic rotation of family practice residents, a family practice orthopedic trauma clinic, staffed solely by family physicians, was initiated, and the records for six months were examined and summarized. A total of 540 patient visits, 286 (52.9 percent) of whom were adults, during 45 sessions of this clinic were noted. Fractures accounted for 79.2 percent of the injuries, while sprains and contusions accounted for 17.7 and 3.1 percent, respectively. The most frequent injuries were fractures of the radius, fractures of hand phalanges, and ankle sprains. Orthopedic consultation was obtained at 88 (16.2 percent) of the patient visits. The results of this study indicate that family physicians can effectively manage the majority of nonsurgical, acute orthopedic injuries and that a clinic of this type may be a valuable addition to the orthopedic rotation of family practice residencies.

The treatment of acute musculoskeletal injuries is an important part of family practice. In a 1972 study of the profile of the primary care specialties in the United States in the early 1970s, it was shown that approximately 80 percent of general practitioners reported inclusion of fracture care in their practices.¹ A recent survey of 302 family physicians in North Carolina revealed, however,

that one half of the respondents felt their training in orthopedics was inadequate.² For the purpose of defining which common acute orthopedic injuries can be managed by family physicians, with or without orthopedic consultation, the records of an acute trauma clinic, staffed solely by family physicians, were examined and summarized.

From the Department of Family Practice, Naval Regional Medical Center, Charleston, South Carolina. The opinions expressed herein are those of the authors and do not necessarily reflect those of the Department of the Navy. Requests for reprints should be addressed to Lt Comdr Joel Alcott, MC, USNR, Box 146 NRMC Charleston, Charleston, SC, 29408.

Setting

Naval Regional Medical Center (NRMC), Charleston, is a 250-bed general hospital serving a military population, both on active duty and retired, of approximately 107,000 in the Charleston,

Table 1. Spectrum of Acute Traumatic Conditions				
Location	Pediatric (0-14 years)	Adult	Total	Percent
Fracture				
Radius	36	53	89	16.4
Phalanges (hand)	36	29	65	12.0
Fibula	30	10	40	7.4
Clavicle	38	0	38	7.0
Carpal	5	22	27	5.0
Metacarpal	8	17	25	4.7
Tibia	8	16	24	4.4
Metatarsal	9	14	23	4.3
Radius and ulna	19	0	19	3.5
Ulna	7	9	16	2.9
Humerus	3	12	15	2.7
Tarsal	3	8	11	2.0
Ribs	0	8	8	1.4
Tibia and fibula	5	1	6	1.1
Phalanges (foot)	1	4	5	.9
Sprains, Strains				
Ankle	20	27	47	9.4
Knee	12	15	27	5.0
Wrist	8	14	22	4.0
Contusions				
Knee	1	8	9	1.6
Elbow	3	4	7	1.2
Shoulder				
Dislocation	0	11	11	2.0
Acromioclavicular separation	0	6	6	1.1
Total	254	286	540	

South Carolina, area. Military family practice consists of the residency program at NRMC and two branch clinics, one which is staffed by Navy family physicians and the other by Air Force family physicians. Family practice is the only residency at the Naval Regional Medical Center. Approximately 2,000 families are enrolled in the residency program. There are 30 residents and seven full-time board certified staff.

In June 1980 the active duty orthopedic staff at NRMC Charleston was reduced to only three physicians, and all patients, other than those on active duty, with orthopedic problems were referred to civilian orthopedic physicians in the

Charleston area. In an attempt to help respond to the service need and to add a new dimension to the one-month orthopedic rotation during the first and second years of the family practice residency, a Family Practice Acute Orthopedic Trauma Clinic, for the dependent and retired portions of the patient population, was begun in July 1980. It was scheduled two afternoons a week with a first and second year resident present. It was staffed by one of two junior staff family physicians, both of whom had completed their residency training in 1979, and a staff orthopedic surgeon who was present in the clinic at all times for consultation purposes.

Table 2. Types of Plaster Casts Applied

Cast	Pediatric (0-14 years)			
	Pediatric (0-14 years)	Adult	Total	Percent
Long arm	22	28	50	33.7
Short arm	13	13	26	17.5
Short arm with thumb spica or outrigger	5	15	20	13.8
Long leg cast	4	3	7	4.7
Short leg cast				
Weight-bearing	15	24	39	26.3
Non-weight-bearing	2	4	6	4.0
Total			148	

The majority of the patients with acute traumatic musculoskeletal injuries were referred to this clinic for follow-up care having been seen during the evenings and weekends by family practice residents on duty in the emergency room. In addition, a smaller number of patients were referred from the three family practice clinics. No patients were referred who had undergone a surgical procedure for acute traumatic injuries. All patients were followed until their musculoskeletal injuries were judged completely resolved by the staff family physician in attendance.

Methods

From November 1, 1980, to May 1, 1981, a record noting sex, age (pediatric vs adult), diagnosis, use of a plaster cast, therapy other than casting, number of visits, and the use of orthopedic consultation was kept for each patient visit. At the end of this six-month period, all residents who had rotated on this service were asked to rate the clinic as an addition to the orthopedic rotation on a scale of 1 (least valuable) to 5 (most valuable). They were also asked to evaluate the importance of the clinic family practice staff as teachers and role models on a scale of 1 (least important) to 5 (most important).

Results

A total of 540 patient visits were noted during 45 sessions of the clinic for an average of 12 patient visits per session. Adults (more than 14 years of age) accounted for 286 (52.9 percent) of the patient visits, and 254 patients (47.1 percent) were pediatric. A total of 265 patients were treated for an average of two visits per patient. The number of visits per patient varied from one to five.

Table 1 lists the acute traumatic conditions that were seen. Fractures accounted for 79.2 percent of the total, followed by sprains (17.7 percent) and contusions (3.1 percent). As can be seen, the most frequent acute orthopedic injuries, in decreasing order of frequency, were fractures of the radius, fractures of phalanges of the hand, and ankle sprains. Of the 210 fractures in the pediatric age group, 47 (23.2 percent) were of the Salter classification. Of these, 21 (44.6 percent) were Salter 3, and 1 (2.4 percent) was a Salter 4. Thirteen (6.2 percent) of the pediatric fractures were of the torus type.

Plaster casts were applied at 148 (27.4 percent) of the 540 patient visits. As noted in Table 2, long arm casts were most frequently applied (33.7 percent), followed by short leg walking casts (26.3 percent). Orthopedic consultation was obtained at 88 (16.2 percent) of the 540 patient visits. Table 3 lists the most frequent orthopedic consultations.

Of the 20 residents who had rotated on this

Table 3. Most Frequent Orthopedic Consultations

Problem	Number
Fracture—distal radius	25
Fracture—radius and ulna (in combination)	10
Fracture or rule out fracture, navicular (carpal)	9
Fracture—humerus	7
Fracture—tibia and fibula (in combination)	7
Knee contusion	7
Salter 3 fracture—tibia	6

service as of May 1, 1981, 17 responded to the survey. A value of 4.7 on a scale of 1 to 5 was obtained on the first question (rating the clinic as an addition to the orthopedic rotation) while a value of 4.4 was noted for the second question (importance of family practice staff as role models and teachers in the clinic).

Discussion

The type and frequency of acute musculoskeletal injuries noted in this study are comparable to the series reported by Geyman and Gordon from four separate family and general practice sources.³ As one might expect, fractures of the radius, fractures of the hand phalanges, and ankle sprains were the most frequent injuries encountered. In addition, as noted in other studies, a considerable difference existed in the injuries presented by adults and children. Clavicular, radius and ulna, and fibular fractures were more common in the pediatric age group, while rib, humerus, and carpal fractures were seen more frequently among adults. In addition, shoulder dislocations and acromioclavicular separations were noted exclusively in adults.

The 22.3 and 6.2 percent incidence of epiphyseal and torus fractures, respectively, in the pediatric portion of the patient population differ slightly but are still consistent with a Canadian

study of 410 pediatric fractures in which a 13.9 percent incidence of epiphyseal injuries and a 16.3 percent incidence of torus fractures were noted.⁴

It is interesting that the 5 percent incidence of carpal fractures in this study was solely navicular. Only 4 of the 27 were definitely fractured. The remainder had a diagnosis of “rule out navicular fracture” because of the presence of tenderness in the “anatomist’s snuffbox” and the need for continued casting and careful follow-up.

As can be seen in Table 3, most of the orthopedic consultations were for fractures with potential for significant angulation and displacement with subsequent deformity, chronic pain, and in the case of epiphyseal injuries, growth disturbance. In addition, consultations for knee contusions or strains were often obtained to help rule out an internal derangement, and thus, the need for possible arthroscopy and surgery. Although only orthopedic consultations are listed, frequent use was made of the excellent physical therapy facilities at the institution as part of the treatment regimen of many of the patients.

Despite the fact that data were not collected on the remainder of the acute orthopedic injuries seen at this institution during this time period, the study population is a select one only in that active duty personnel, whose care was provided by the staff orthopedists, were excluded. Otherwise, the age distribution and the cross-section of nonoperative traumatic musculoskeletal injuries encountered most likely represent the military population in general.

Although this study is unique to a military setting, it demonstrates that residency trained family physicians can effectively manage the majority of nonsurgical acute orthopedic injuries with only a relatively small rate of consultation.

References

1. Mechanic D: General medical practice: Some comparisons between the work of primary care physicians in the United States, England and Wales. *Med Care* 10:402, 1972
2. Sneiderman C: Orthopedic practice and training of family physicians: A survey of 302 North Carolina practitioners. *J Fam Pract* 4:267, 1977
3. Geyman JP, Gordon MJ: Orthopedic problems in family practice: Incidence, distribution, and curricular implications. *J Fam Pract* 8:759, 1979
4. Reed MH: Fractures and dislocations of the extremities in children. *J Trauma* 17:351, 1977