

# Pediatric Fractures Through the Eyes of Parents

## *An Observational Study*

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**Abstract:** The present study is an observational cross-sectional study. The main purpose of this research was to analyze the perception and behaviors of parents in a series of pediatric upper extremity fracture cases.

Hundred and seventeen patients younger than 12 years who were conservatively treated for the upper extremity fracture were included in our study. Parents of the patients were requested to answer a family-centered questionnaire related to their child's fracture and its treatment.

When the parents were asked whether they believe casting would be sufficient or not as the treatment of their child's fracture, 84.6% answered 'yes', 13.7% answered 'I am not sure,' and 1.7% answered 'no.' Sixty-four of the parents were not worried about any residual defect in joint or extremity functions related to fracture, whereas 21 were worried and 32 were not sure on this. The rate of searching further information about the child's fracture was 34.2% and the mostly used source was the Internet. Twenty-eight of the 117 respondents (23.9%) emphasized that they would reduce the time their child spend outside the home at least for a while after the removal of cast.

When conservatively treating a child's fracture, physicians dealing with traumatology should always consider the parents' perception and behaviors as critically important.

(*Medicine* 94(2):e407)

**Abbreviation:** BMI = body mass index.

## INTRODUCTION

Fracture injuries constitute approximately 15% of trauma-related injuries in children.<sup>1</sup> Unlike the fractures of adults, pediatric fractures heal faster, have higher potential to remodel,

and need shorter immobilization period.<sup>2,3</sup> Relatively few fracture types require surgical intervention in children and thus, most of the cases are treated with conservative methods in general practice of traumatology.<sup>4</sup> Many different clinical studies reporting functional and radiological outcomes of conservatively treated pediatric fractures have been published in the literature.<sup>2,5-8</sup> However, treating a child's fracture is not only the application of a medical profession, but also a continuous process of healing that includes parents as major participants in every step from the first admission to hospital until the child returns to a level of social functioning as in his or her pre-fracture life. Therefore, parents' perception, point of view, and beliefs related to their child's fracture and its treatment are critically important. Few studies evaluating the parents' point of view have been published in the literature. The main purpose of this cross-sectional observational research was to analyze parents' perception and behaviors in a series of conservatively treated pediatric fracture cases.

## MATERIALS AND METHODS

Hundred and seventeen patients younger than 12 years (range 1–12 years) who were conservatively treated for long bone fractures of the upper extremity were included in our study. All fractures were primary cases due to a direct trauma. None of our patients had personal history of any osseous pathology in their medical history. Open fractures, re-fractures, multiple trauma patients, pathologic fractures, patients with multiple fractures, the ones needed hospitalization, and the patients who had conservatively treated at the beginning but surgery became indicated at any point of the clinical follow-up were excluded from the study. The patients included 69 males and 48 females with a median age of 9 years (range 1–12 years). The fractures included 90 radii, 3 ulnae, 6 both bones of the forearm, and 18 humeri. Median time period from the first admission to the hospital following the incident until the removal of the cast was 26 days (range 18–34 days). Readmissions to the hospital within the first week of cast application were recorded. Parents of the patients included 51 males and 66 females with a median age of 36 years (range 24–48 years). Thirty-four (29%) of the parents were college graduates, 57 (48.7%) were high-school graduates, and 26 (22.2%) were primary school graduates. The parents were informed about their child's fracture and its treatment process by the same orthopedic surgeon with a 15- to 30-minute face-to-face interview on the day of cast application, the first outpatient clinic follow-up visit, and after the cast removal. The participants were requested to answer a family-centered questionnaire, which was composed of 7 questions related to their child's fracture and its treatment (Figure 1). The questionnaire was applied by allied health personnel instead of treating physician to make parents feel comfortable when answering the questions and this was to help avoiding bias in data collection. This study

Editor: Stuart Poliser.

Received: October 16, 2014; revised: November 23, 2014; accepted: November 28, 2014.

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There are not any conflicts of interest regarding the submission and publication of this manuscript. None of the authors received any external source of funding for this study.

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ISSN: 0025-7974

DOI: 10.1097/MD.0000000000000407

- Q.1: Do you believe casting would be sufficient as the treatment of your child's fracture?
- a. Yes                      b. No                      c. I am not sure
- Q.2: Are you worried about any residual functional impairment in joint or extremity functions of your child related to the fracture?
- a. Yes                      b. No                      c. I am not sure
- Q.3: Do you feel satisfied with the doctor's explanations about your child's fracture?
- a. Yes                      b. No
- Q.4: Have you made any search for further information on your child's fracture?
- a. Yes                      b. No
- Q.5: What is the source of information you get, other than your doctor?
- a. Consulting to relatives
- b. Talking to families of children with similar fractures
- c. Internet
- d. Scientific journals
- e. Other: .....
- Q.6: Do you prefer consulting your child to another orthopedic surgeon?
- a. Yes                      b. No
- Q.7: Do you prefer reducing the time your child spend outside home after the removal of cast at the end of fracture treatment?
- a. Yes                      b. No

**FIGURE 1.** The questionnaire used for data collection.

was conducted after having approval from the local ethical research committee of Erzincan University. Informed consent was also obtained for all participants.

### Statistical Analysis

SPSS 22.0 (SPSS Inc, IBM, Chicago, IL) was used to analyze data that we acquired in this study. Nonparametric Mann–Whitney *U* test and *t* test were used to compare 2 different independent variables. *P* values of <0.05 were considered as statistically significant.

### RESULTS

When the parents were asked whether they believe casting would be sufficient or not as the treatment of their child's fracture, 99 of them (84.6%) answered "yes," 16 (13.7%) answered "I am not sure," and 2 (1.7%) answered "no." Sixty-four (54.7%) of the parents were not worried about any residual defect in joint or extremity functions related to fracture, whereas 21 (17.9%) were worried and 32 (27.3%) were not sure on this. Median age of the children whose parents were worried about residual functional impairment secondary to fracture was 2 years (range 1–12 years) and in parents who were not worried was 9 years (range 2–12 years) ( $P < 0.05$ ). Hundred and one (86.3%) of the parents were satisfied with the treating physician's explanations, but the other 16 (13.7%) were not. Ten (62.5%) of these 16 dissatisfied parents mentioned that they would prefer consulting to another orthopedic surgeon to

prove the reliability of casting treatment; however, none of the parents who were satisfied with the physician's explanations would prefer to behave so ( $P < 0.05$ ). Furthermore, all of the patients who were readmitted to the hospital >2 times within the first week of cast application (12 patients, 10.2%) were the children of parents who were dissatisfied. The rate of searching further information about the child's fracture was 34.2% (40 participants) and the mostly used source was the Internet (30 participants, 75%). Consulting with their relatives (6 parents, 15%) and talking to families of children with similar pathologies (4 parents, 10%) were the other methods of searching further information. We could not detect any significant difference in searching further information and using the Internet as an information source according to educational level of the parents. Twenty-eight of the 117 respondents (23.9%) emphasized that they would reduce the time their child spend outside the home at least for a while to prevent the risk of any other new fracture or re-fracture after the cast removal. Twelve (40%) of 30 parents who searched information on the Internet would prefer reducing the time their child spend outside the home, whereas 16 (18.4%) of the other 87 parents who did not make any search on the Internet would behave so ( $P < 0.05$ ).

### DISCUSSION

When treating any disease in children, parents play a key role during the whole process of treatment; thus, their perception, beliefs, and behavior pattern should be taken into

consideration. However, publications evaluating pediatric fractures in the literature have generally focused on the epidemiology, different methods of treatment, or the functional and radiological outcomes.<sup>2,4-11</sup> The number of studies evaluating pediatric fractures in the aspect of the parents' point of view is limited in the literature. Stancin et al emphasized that pediatric fractures can have adverse consequences for child adjustment and family functioning immediately after injury.<sup>12</sup> Gill et al analyzed parent satisfaction with acute pediatric pain treatment at home following arm fracture and concluded that parents' dissatisfaction suggested more research is needed to evaluate the factors that result in improvements in both parent and child satisfaction.<sup>13</sup> According to Gamell et al, most of the parents wish to stay beside their children during invasive procedures.<sup>14</sup> Furthermore, they also reported that 51.6% of the respondents in their study believed that parents should decide on their own whether their presence was desirable. These findings from different studies obviously demonstrate that parents should be included in all steps of a child's treatment process. To reach a better understanding of parents' role in the treatment of pediatric fracture, the main purpose of our study was to analyze their perception and behaviors via a family-centered questionnaire. According to our data, nearly half of the parents have concerns about the risk of residual functional impairment related to fracture. The younger the child's age, significantly the higher was the anxiety level of parents about residual functional impairment. Number of respondents who found casting treatment sufficient (84.6%) was correlated with the number of those who were satisfied with the treating physician's explanations (86.3%). Our study demonstrated that when parents were dissatisfied or felt anxiety, most of them would prefer consulting to different orthopedic surgeons. Furthermore, it may also be a reason for increased number of readmissions to the hospital. These findings indicate that when the parents of such patients are in doubt on the treatment of their child's fracture, redundant hospital visits may be a reason for increasing financial burden on the national healthcare system. Sawyer et al<sup>15</sup> also stated that a program including patient education, triage, and follow-up may help to not only improve the quality of patient care but also to decrease the financial burden on healthcare system and the number of redundant hospital visits. Therefore, it is very important that treating physicians should allow adequate time to talk to parents, have ability to explain the process with all of its components to ones from different sociocultural levels of population, and consider higher anxiety levels in the parents of relatively younger patients.

Many patients and their families want to know all about their disease and its treatment. Parents may also use different ways to reach information on their child's fracture. Today, Internet is the easiest and the most widely used source that one can reach many different kinds of information about any issue worldwide. An enormous amount of information about health conditions is available on the Internet. Sim et al reported that the Internet could be a useful educational tool in teaching parents about their child's condition.<sup>16</sup> However, reliability of the online health information is questionable. Academic websites may provide the most accurate information, but they may also be incomprehensible to ordinary people who do not deal with medicine professionally. Commercial websites including medical information have been exponentially increasing in number for the last decade, but the trustworthiness of the health content they supply is pretty much controversial. One of the most important findings in this study was that, the number of parents who emphasized that they would prefer reducing the time their child

spend outside the home at least for a while to prevent any new fracture or re-fracture was significantly higher among the ones who searched information on the Internet. This means that information on the Internet may affect parents' tendency of limiting the child's social activities outside the home after a fracture. This may be due to conflicting, incomplete, or inconsistent information they got on the Internet. Therefore, physicians should be aware of misleading online health content, which may affect the parents' behavioral pattern about their child's fracture and its treatment process. We agree with Sim et al's<sup>16</sup> study mentioning the best way to ensure that parents have access to proper and accurate information on the internet is to provide it ourselves. We believe that further studies that will help to improve and standardize health information on the internet are needed.

Nonoperative management of the pediatric fractures remains the most widely used method of treatment; however, as with most diseases, prevention can be the best and the first approach. Schalamon et al<sup>11</sup> concluded that prevention strategies should not aim to reduce the level of exposure, but should increase the risk awareness and encourage children and their parents to use necessary precautions. Lam et al<sup>17</sup> suggested that supervision at the playground, preferably from the child's parents or siblings, and keeping a child's BMI within limits as guided by the BMI charts, may potentially reduce the occurrence of severe fractures. Our study demonstrates that approximately one-quarter of parents may have a tendency to restrict their child's outdoor activities as a protection following a fracture. Therefore, parent education and participation seem to be crucial during the whole process of the treatment. A parent education program including psychosocial counseling, executed by a team of allied health professionals as an outpatient service, may help improve healthcare.

There are some limitations of our study. First, the cohort included a relatively small group of parents. Second, all cases were long bone fractures of the upper extremity; hand, foot, or lower extremity fractures were not included. Finally, we do not have any data comparing the behaviors of parents whose child had a fracture history with the ones whose child did not ever sustained a fracture.

In conclusion, when conservatively treating a child's fracture, physicians dealing with traumatology should always consider the parents' perception and behaviors as critically important. Physicians should also keep in mind higher anxiety levels in the parents of relatively younger patients. Parents in doubt about the treatment of their child seem to be more prone to redundant hospital visits, which may be a reason for increasing financial burden on the national healthcare system. It should be explained to parents that the information on the Internet may be misleading. Prevention strategies should be considered without restricting the child's social activities. Our study may be a reference to further investigations with larger cohorts in evaluating and understanding the factors that may affect parental perception and behaviors to improve effectiveness of daily clinical practice.

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