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Analysis of functional outcome of both bone forearm fracture in paediatric age group managed conservatively during the SARS-CoV-2 Pandemic

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Abstract
Aims and Objectives: To study the functional outcome of closed reduction casting in both bone forearm fractures in paediatric age group. To evaluate the functional outcome of closed reduction casting in both bone forearm fractures in the paediatric age group with the help of Price *et al.* criteria.
Materials and Methods: A retrospective observational study was performed on patients treated in MGM Medical College and Hospital, Navi Mumbai from April 2020 to November 2020. A total of 30 cases of both bone forearm fractures in paediatric age group were treated with closed reduction casting. Their functional outcome post-casting was evaluated according to Price *et al.* scoring.
Results: Based on Price *et al.*, criteria functional outcome was calculated, which showed excellent results in 24 patients (80%), good in 4(13.33%), fair in 2(6.6%) and no poor results. All patients with excellent results had lost 10 degrees or less of forearm rotation. In four patients with good results, two had lost 11-30 degrees of forearm rotation while the other two had lost 10 degrees or less but grouped under good rather than excellent outcomes since patients had mild complaints of pain and fatigue with strenuous activities.
Conclusion: Non-operative treatment of both-bone diaphysis forearm fracture with closed reduction casting, has well to excellent functional outcomes in children in the age group of 4- 15 years.

Keywords: SARS-CoV-2, age group, bone forearm

Introduction
Fractures of both radius and ulna are the most the most common diaphyseal injuries in the paediatric age group, which accounts for 5% to 10% of paediatric fractures [1, 2]. Successful outcomes are based mainly on the restoration of pronation and supination. Most previous studies on forearm fractures in children showed favourable outcomes during follow-up. However, the information on outcome measured after skeletal maturity is still scanty.
On January 2020, the World Health Organization (WHO) issued a global health alert for a novel coronavirus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that caused an acute respiratory infection disease (COVID-19) which originated in Wuhan, Hubei Province, China.
During SARS outbreaks, health care workers (HCWs) have a significantly increased risk of contracting the SARS-CoV-2. The risk of acute respiratory infection (ARI) transmission through surgical care services is not fully delineated. It is important to emphasize that surgical patients are a distinct patient category as they can be highly contagious for HCWs under specific conditions during the provision of surgical care services. The reason why surgical patients should be treated as highly contagious is that these patients demand close contact and prolonged exposure during surgical care and all are prone to be submitted to aerosol-generating procedures, factors that all contribute to ARI transmission [3].
Hence due to the risk of transmissions of SARS-CoV-2, in the majority of the paediatric age group both bone forearm fractures were conservatively managed, considering their high remodeling potential. This study was conducted to evaluate the functional outcomes in these patients.

Materials and methods

A retrospective observational study was performed in MGM Medical College, Kamothe, using the data collected from April 2020 to November 2020. A total of 30 patients of both bone forearm fractures in the paediatric age group were treated with closed reduction casting during this period.

All patients were evaluated post-casting to satisfy inclusion and exclusion criteria.

Patients were followed up at 4 weeks, 8 weeks and 12 weeks post casting.

At the follow-up visit, Price *et al.* score was evaluated for these patients.

Inclusion criteria

Skeletally immature patients aged between 5-15 years of age.

Closed both bone forearm fractures.

Exclusion criteria

The age beyond 4 to 15 yrs.

Isolated bone forearm fracture.

Open fracture of the forearm.

Table 1: Price *et al.* criteria [4]

Outcomes	Symptoms	Forearm rotation
Excellent	No complaints with strenuous activity	<15
Good	Mild complaints with strenuous activity	15-30
Fair	Mild complaints with daily activities	31-90
Poor	All other results	>90

Results

This study was a retrospective study conducted in MGM Medical College, Kamothe, using the data collected from April 2020 to October 2020. The study included 30 paediatric patients of both bone forearm fractures that were. In 30 children 9 were female and 21 were male. The mean age of patients 10.2 years ranges 5-15 years. Mechanism of injury being 23 had fall while playing sports, 4 had road traffic accidents and rest 3 had a history of fall from height. Right forearm involvement in 26 patients and left forearm in 4 patients. Based on Price *et al.*, criteria functional outcome was calculated, which showed excellent results in 24 patients (80%), good in 4(13.33%), fair in 2(6.6%) and no poor results. All patients with excellent results had lost 10 degrees or less of forearm rotation. In four patients with good results, two had lost 11-30 degrees of forearm rotation while the other two had lost 10 degrees or less but were grouped under good rather than excellent outcomes since patients had mild complaints of pain and fatigue with strenuous activities.

Discussion

Both bone forearm fractures in paediatric age group can be managed conservatively despite the newer operative techniques. Their younger age and tremendous remodeling capability are the main advantages for healing successfully [5]. Given the excellent remodeling potential with younger patients, certain studies have argued that even with 100% displacement of the radius and ulna, closed reduction and casting is an excellent treatment choice for children 9 years old and younger [6, 7]. Daruwalla *et al.* [8], reviewed 53 displaced forearm fractures in children with an average of three years of follow-up and found that all the patients were asymptomatic and had no limitations in their activities even though 6% of them had lost more than 30 degrees of forearm rotation. This data was further supported by Hogstrom *et al.* [9], and Morrey *et al.* [10], who described that with the limitation of 60 degrees or less in the range of pronation and supination, patients seemed to be unaware of their incapacity due to good compensation by shoulder motion. Sinikumpu *et al.* [11], reviewed 47 nonoperatively treated both-bone forearm shaft fractures in children and found that the prono-supination of the forearm was not decreased in the long term, the grip strength was also equally as good as in the controls and the patients were satisfied with the outcome.

Conclusion

Non-operative treatment of both-bone diaphyseal forearm fracture with closed reduction casting, has well to excellent functional outcomes in children in the age group of 4-15 years.

References

1. Mann DC, Rajmaira S. Distribution of physeal and nonphyseal fractures in 2,650 long-bone fractures in children aged 0-16 years J Pediatr Orthop 1990;10:713.
2. Worlock P, Stower M: Fracture patterns in Nottingham children. J Pediatr Orthop 1986;6:656.
3. Blouhos K, Boulas KA, Paraskeva A *et al.* Understanding Surgical Risk during COVID-19 Pandemic: The Rationale behind the Decisions. Front Surg 2020;7:33.
4. Price CT. Acceptable Alignment of Forearm Fractures in Children: Open Reduction Indications. Journal of Pediatric Orthopaedics 2010;30:S82-S84.
5. Hadizie D, Munajat Ismail. Both-Bone Forearm Fractures in Children with Minimum Four Years of Growth Remaining: Can Cast Achieve a Good Outcome at Skeletal Maturity. Malaysian Orthopaedic Journal 2017;11:1-9.
6. Zionts LE, Zalavras CG, Gerhardt MB. Closed treatment of displaced diaphyseal both-bone forearm fractures in older children and adolescents. J Pediatr Orthop 2005;25:507-12.
7. Franklin CC, Robinson J, Noonan K, Flynn JM. Evidence-based medicine: management of pediatric forearm fractures. J Pediatr Orthop 2012;32:S131-4.
8. Daruwalla JS. A study of radioulnar movements following fractures of the forearm in children. Clin Orthop Relat Res 1978;139:114-20.
9. Hogstrom H, Nilsson BE, Willner S. Correction with growth following diaphyseal forearm fracture. Acta Orthop Scand s1976;47:299-303.
10. Morrey BF, Askew LJ, Chao EY. A biomechanical study of normal functional elbow motion. J Bone Joint Surg Am 1981;63(6):872-7.
11. Sinikumpu JJ, Victorzon S, Antila E, Pokka T, Serlo W. Nonoperatively treated forearm shaft fractures in children show goodlong-term recovery. Acta Orthop 2014;85(6):620-5.