https://doi.org/10.5455/pjps.1718987581

Case Report

Flame Burn Injury in a 9-Year-Old Male Due to Severe Peripheral Neuropathy Following Incorrect Casting: ACase Report

Ansa Naseem,[1] Aqsa Younas,[2] Naureena Munawar,[3] Iqra Nosheen[4]

[1]Medical Student, King Edward Medical University, Lahroe; [2-4]Department of Plastic Surgery, Mayo Hospital, Lahore

Abstract

Distal radial fracture (DRF) can lead to various nerve injuries primarily due to direct trauma. However manipulation of fracture by quacks and application of tight cast can rarely lead to Ischemic injury to the nerves. We present the case of 9 years old male who had DRF that was managed by quacks. The manipulation and application of tight cast led to ischemic injury to nerves. Later on due to loss of sensation, patient had burn injury while attempting to warm up near the fire. This led to loss of middle and distal phalanges of the hand. Flame burn injuries due to peripheral neuropathy post-incorrect casting are rare but severe. Prompt recognition and management are crucial in pediatric orthopedic care.

Received | 21-06-2024 **Accepted** | 16-08-2024

Corresponding Author | Dr. Ansa Naseem, Medical Student, King Edward Medical University, Lahore.
Email: ansanaseem17@gmail.com

Keywords: Flame Burn, Peripheral Neuropathy

Case Presentation

Here we present the case of a 9-year-old male who presented to the outpatient department of Hospital with complaints of loss of sensation in the right hand and forearm, along with a burn injury to the right hand. The patient sustained a distal radial fracture (DRF) approximately one month prior while playing. However, due to limited resources and health education in underdeveloped areas, the initial response as is a practice in such areas was seeking treatment from a local unqualified practitioner, or quack. The quack applied a cast and dressing, resulting in significant swelling, loss of sensation, discoloration of the hand, and forearm pain up to the elbow. The mother removed the dressing after 24 hours.

Subsequently, the patilahent was taken to another quack who performed an x-ray and applied a cast, which led to a burning sensation on the forearm overnight. Upon removal of the plaster, blisters were observed. The parents opted for oil massage therapy, which continued for 20 days, during which the patient experienced further loss of sensation in the forearm and hand. The patient developed burn injuries to the hand while attempting to warm up near a fire during the winter months, due to the neuropraxia-induced lack of pain perception. This resulted in the loss of the middle and distal phalanges of the hand.

Figure 1: *Palmar view of hand showing thenar and hypothenar wasting from severe neuropathy post incorrect casting.*

Discussion

This case underscores the critical importance of adhering to proper casting techniques to mitigate potential complications, particularly the development of severe peripheral neuropathy. It emphasizes the need for healthcare providers and the public to be well-informed about the inherent risks associated with incorrect casting practices. Timely recognition and intervention are essential to prevent dire consequences, in particular, the recognition of associated neuropathy in the pediatric population can be challenging and is required to avoid permanent motor and sensory neurological losses for a lifetime.[4]

Comparative analysis with existing literature highlights the rarity and complexity of flame burn injuries resulting from severe neuropathy post-incorrect casting. While documented instances of nerve damage and sensory loss following improper casting exist,[5,6] the progression to such severe neuropathy, leading to a flame burn injury as observed in this case, is a unique phenomenon. This underscores the importance of further research to understand the underlying mechanisms and identify optimal management strategies.

Furthermore, the pervasive issue of quackery exacerbates the risks associated with incorrect casting and poses a significant challenge to healthcare delivery in underserved communities.[7] Addressing this multifaceted problem requires a comprehensive approach, including enforcement of regulations, targeted public awareness campaigns, and robust community education initiatives. By empowering individuals with knowledge about the dangers of seeking medical treatment from unqualified practitioners, informed decisions can be made and potential harm can be mitigated.

Efforts to improve access to legitimate healthcare services, particularly in marginalized and remote areas, are paramount.[8] This requires substantial investments in healthcare infrastructure, comprehensive training programs for healthcare providers, and the implementation of policies to ensure equitable access to quality care for all individuals. Strengthening healthcare systems and fostering a culture of awareness and accountability can effectively mitigate the risks associated with incorrect casting and other forms of medical malpractice, thereby safeguarding the health and well-being of vulnerable populations, especially children.[9]

Conclusion

Flame burn injuries due to peripheral neuropathy post-incorrect casting are rare but severe. Prompt recognition and management are crucial in pediatric orthopedic care. Addressing socio-economic factors like poor resources and poverty in remote areas is vital to ensure healthcare access and prevent similar incidents.

Conflict of Interest: *None*
Source of Funding: *None*

Author's Contribution

Ansa Naseem: Data Collection, Conception and design of the study, data analysis and interpretation, agreement to be accountable for all aspects of the work and final approval of the version to be published.

Aqsa Younas: Data analysis, Critical revision of the article, conception and design of the study and final approval of the study.

Naureena Munawar: Substantial contribution to acquisition of data, concept and design and final approval of the version to be published.

Iqra Nosheen: Concept and design, substantial contribution to acquisition of data, critical review and final approval of the study.

References

1. Shah AS, Guzek RH, Miller ML, Willey MC, Mahan ST, Bae DS; Pediatric Distal Radius Fracture (PDRF) Study Group. Descriptive Epidemiology of Isolated Distal Radius Fractures in Children: Results From a Prospective Multicenter Registry. J Pediatr Orthop. 2023 Jan 1;43(1):e1-e8. doi: 10.1097/BPO.0000000000002288. Epub 2022 Oct 26. PMID: 36299238.
2. Lutz K, Yeoh KM, MacDermid JC, Symonette C, Grewal R. Complications associated with operative versus nonsurgical treatment of distal radius fractures in patients aged 65 years and older. J Hand Surg Am. 2014 Jul;39(7):1280-6. doi: 10.1016/j.jhsa.2014.04.018. Epub 2014 Jun 2. PMID: 24881899.
3. Singh R, Seth I, Seth A, Singh S, Aiyappan RK, Yadav CM, Jain H, Tawde A, Agrawal GK, Jain A. How Not To Fix a Tibial Fracture: A Case Report on Treatment By a Quack. Cureus. 2023 Jun 9;15(6):e40203. doi: 10.7759/cureus.40203. PMID: 37435249; PMCID: PMC10331172.

4. Zabane Z, Andresen CH, Bünger MH, Hellfritzsch MB. Median nerve entrapment during closed reduction of antebrachium fracture in a child. Ugeskr Laeger. 2023 Dec 18;185(51):V05230320. Danish. PMID: 38105734.
5. Cortesi E. L'impatto della patologia neoplastica sullo stato di benessere del paziente [The impact of cancer on the healing status of patients]. Tumori. 1998 Jan-Feb;84(1 Suppl):S20-3. Italian. doi: 10.1177/03008916980841s105. PMID: 9617380.
6. Compartment Syndrome –orthoinfor-AAOS
7. Kotela I, Bednarenko M, Wilk-Frańczuk M, Kotela A. Znachorstwo--wciaz aktualny problem polskiej wsi. Na podstawie doświadczeń w chorobach narzadu ruchu [Quack medicine--a continual problem in Polish rural communities. Illnes occurring within the musculo-sceletal system]. Przegl Lek. 2010;67(5):402-4. Polish. PMID: 20684347.
8. Coombs NC, Campbell DG, Caringi J. A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. BMC Health Serv Res. 2022 Apr 2;22(1):438. doi: 10.1186/s12913-022-07829-2. PMID: 35366860; PMCID: PMC8976509.
9. Healthcare Facilities in Developing Countries: Infrastructure. Available from: https://link.springer.com/referenceworkentry/10.1007/978-3-030-74786-2_209-1.