

Fracture Rate & Quality Of Life Of Conservative Vs Surgically Treated Children & Young Adults With Osteogenesis Imperfecta On Bisphosphonate Therapy

¹Chee Chun Pon; ¹Kamal Jamil; ¹Abdul Halim Abd Rashid; ¹Ahmad Fazly Abd Rasid;
²Joyce Soo Synn Hong; ³Khairil Anuar Md Isa

¹Department of Orthopaedics and Traumatology, Canselor Tuanku Muhriz Hospital, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.

²Department of Paediatrics, Canselor Tuanku Muhriz Hospital, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.

³Department of Basic Sciences Faculty of Health Sciences, UiTM Cawangan Selangor Kampus Puncak Alam, Selangor, Malaysia.

PURPOSE:

Osteogenesis imperfecta (OI) is a rare skeletal dysplasia, and bisphosphonates are widely recognized as a primary pharmacological intervention for treating OI, known for their potential to reduce fracture rates and alleviate bone pain. Despite their known benefits, the long-term efficacy of bisphosphonates in enhancing bone quality and relieving bone pain remains inconclusive, particularly beyond the initial year of treatment. The combination of bisphosphonate (BP) therapy and rodding has shown several advantages for individuals with Osteogenesis Imperfecta (OI). This study seeks to investigate and compare fracture rates and quality of life in OI patients undergoing bisphosphonate treatment with those receiving a combination of bisphosphonate and intramedullary rodding.

MATERIALS AND METHODS:

Cross-sectional study done on 20 OI patients from June 2021 to Dec 2023. Data encompassing demographics, bisphosphonate therapy, fractures, rod insertion and Quality of Life (QoL) assessed by the Pediatric Quality of Life Inventory (PedsQL), were studied.

RESULTS AND DISCUSSIONS:

Sixty-percent of the patients were treated with combination of bisphosphonate therapy and intramedullary rodding, while 40% treated with bisphosphonate therapy only. Overall, the average fracture rate per year was 0.87 ± 0.38 . The fracture rate for

intramedullary rodding group was low (0.47 ± 0.27), but not significant when compared to bisphosphonate only (0.85 ± 0.49 , $p=0.13$). PedsQL showed a trend towards a higher mean score in bisphosphonate therapy and intramedullary rodding group compared to bisphosphonate therapy only, but did not reach statistical significance (71.42 ± 11.5 , $p=0.21$). Additionally, there is strong correlation between age and fracture rate per year with $r = -0.460$ and $p = 0.041$. The present study showed that while fracture rates did not differ between the two groups, it decreases with age. The trend towards a high physical score in the intramedullary rodding group may represent a positive impact in physical and mobility well-being in OI.

CONCLUSION:

The low average fracture rate per year and its overall impact on quality of life favored the combination of bisphosphonate and intramedullary rodding therapy in our small population of OI patients. A larger study i.e multicentre trial is needed to investigate the treatment outcome in the country.

REFERENCES:

1. Celin MR et. al. JBJS 2020; 5(3)
2. Folkestad L et. al. J Bone Miner Res. 2017; 32(1): 125-134
3. Feehan AG et. al. Bone 2018; 113: 137-143
4. Lai et. al. Life Research 2020; 3(4): 169-175