

Secondary Fracture Prevention: Plucking The Low Hanging Fruit

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Abstract

It is well known that one fragility fracture begets another. Fracture Liaison Services have been shown to narrow the care gap that exists in the care of patients with fragility fractures. A secondary fracture prevention programme “OPTIMAL” (Osteoporosis Patient Targeted and Integrated Management for Active Living) has been in existence in the public restructured hospitals and polyclinics of Singapore since 2008 and this is beginning to show significant beneficial results in terms of identification and management of fragility fractures. However, significant obstacles in the path of appropriate management of the patient with a fragility fracture still exist. A concerted, multipronged and interdisciplinary approach is needed to overcome these barriers.

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“Osteoporosis care of fracture patients has been characterized as the Bermuda Triangle made up of orthopaedists, primary care physicians and osteoporosis experts into which the fracture patient disappears”¹

One in 2 women and 1 in 5 men will suffer an osteoporotic fragility fracture in their lifetime.^{2,3} This imposes a significant economic burden amongst societies. The magnitude of this burden is expected to increase exponentially⁴ and is going to be maximally felt in Asia with its rapidly ageing population. The oft quoted statistic that half of all hip fractures worldwide will occur in Asia by the year 2050 is not something that can be taken lightly.

The natural progression and trajectory of osteoporosis have clearly shown to us that fractures beget fractures. Half of all hip fracture patients have suffered a prior fracture before breaking their hip.⁵⁻⁷ Even radial and humeral

fractures are predictors of subsequent hip fractures.^{8,9} These sentinel first fractures are the archetypal “low hanging fruit” that are ready for the plucking because we know that treating patients with previous fragility fractures can reduce subsequent fractures by up to 50%.^{10,11} However, the disappointing truth is that only about 20% of patients or less with low impact fractures are ever tested or treated for osteoporosis.¹²⁻¹⁵ This chasm in care appears to be ubiquitous and universal.

There appear to be several reasons that may explain the less than optimal care that is provided to patients with osteoporotic fractures. The failure to “think osteoporosis” even when the patient presents with an obvious fragility fracture and the fragmented delivery of care in which there is uncertainty regarding upon whom, clinical responsibility should lie with regard to the management of the osteoporotic patient are the two most important pitfalls. The path that

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the patient traverses after “fixing” of the fracture by the orthopaedic surgeon is often murky. This is especially so after major fractures like that of the hip. The internist or the geriatrician is often too consumed by the management of the comorbid conditions the patient may have. Subsequent care if at all in rehabilitation facilities is more often than not focused entirely on improving the patient’s functional capacity. Somewhere along this chain of care, the fact that osteoporosis was the cause of the fragility fracture is completely forgotten.

Wherein hip fractures cannot but be recognised clinically and the majority of patients with hip fractures are admitted for surgical management and an opportunity for diagnosis and treatment of osteoporosis though under-utilised exists, the situation with non-hip fractures is dismal. Many patients who present to the emergency department with fractures other than those of the hip are treated conservatively and discharged without arrangements made for osteoporosis evaluation. The population with occult fractures of the vertebrae, ribs etc pose an even more challenging problem. Under-diagnosis of vertebral fractures is a problem worldwide.¹⁶ Only very few patient summaries document the presence of vertebral fractures incidentally detected whilst imaging for other conditions and only a small minority of these patients subsequently receive osteoporosis treatment.^{17,18} Even if the history reveals a prior vertebral or rib low trauma fracture, this is often ignored and submerged under other problems that are perceived by the physician as being more critical.

Failure to prescribe appropriate anti-osteoporosis therapy even if osteoporosis is recognised may stem from patient and/or physician related factors such as fear of complications and costs. Lack of time to devote to extensive evaluations and inadequate communication between the surgeon fixing the fracture and the clinician who will provide continuing care also are stumbling blocks to providing appropriate care.¹⁹ Thoughts have to be given to answering the question as to why the particular patient had a fracture. To this end, it is important that a thorough evaluation with careful history and physical examination and laboratory tests aimed at ruling out common secondary causes of osteoporosis be performed. A survey conducted amongst healthcare practitioners in the Asia Pacific region showed the disappointing finding that less than 40% of physicians routinely order blood tests to screen for secondary osteoporosis.²⁰ The other potential barrier to initiation of anti-osteoporosis therapy in the inpatient setting is the view held by some healthcare providers that fracture healing may be delayed by agents such as bisphosphonates though there is no evidence in humans to prove this.²¹

The Situation in Singapore

The rapidly aging population of Singapore has been described as a Silver Tsunami with the number of people aged 65 and older expected to triple from the current 350,000 to 960,000 by the year 2030. The age adjusted rates of osteoporosis among women over the age of 50 years in Singapore are currently among the highest in Asia.²² The direct costs imposed by osteoporotic hip fractures in Singapore have been found to be very high, closely paralleling that of the west.^{23,24} Costs imposed by vertebral fractures are likely to be high also, though this is more difficult to assess. This is because the definition of a vertebral fracture differs between studies and the costs differ depending on whether the patient is hospitalised or not.

Mortality rates following hip fractures in Singapore are similar to that of the West^{25,26} with 20% becoming semi or fully dependent even if they survive the fracture.²⁶ Only 8% of patients are cared for by chronic health care facilities. This suggests that the main social and economic burden is borne by the families of those affected. Findings from a pilot project, the HSDP Osteoporosis Management Programme that was conducted in one of the large health care clusters in 2007 and had recruited a total of 1056 patients across 3 hospitals and 9 polyclinics over a 2-year period, showed that a significant care gap exists in osteoporosis with only 16% of patients found to have been started on appropriate treatment for their osteoporosis within 2 years of their hip fracture.

Secondary causes have been found to be quite common amongst Singaporean patients presenting with osteoporosis and osteoporotic fractures.²⁷ However, these secondary causes do not appear to be routinely screened for except by a few specialists as was evidenced in the results of the previously mentioned survey amongst physicians of the Asia Pacific region which had a large Singaporean representation.²⁰

What is Being Done to Alleviate the Problem?

There is no question that the patient with fragility fracture needs to be better evaluated and treated. The situation is not all doom and gloom however. Fracture Liaison services have successfully closed or at the least, narrowed the secondary fracture prevention gap in many countries.²⁸⁻³⁰ A systematic review and meta-analysis of various models of care for secondary fracture prevention was conducted recently.³¹ This report showed that only fully coordinated, multipronged and interdisciplinary models of care for secondary fracture prevention improve patient outcomes and reduce fracture rates. International organisations, such as the International Osteoporosis Foundation and the American Society for Bone and Mineral Research, have formed task forces and

have launched campaigns that provide not only the best practice frameworks but also resources and/or tool kits for the establishment of fracture liaison services.^{32,33} These help to take the guess work out of the process of delivery of such secondary prevention programmes although it has to be acknowledged that different socioeconomic and geopolitical situations necessitate differing modes of implementation in different countries and healthcare systems.

Implementation of a Fracture Liaison Service in Singapore

OPTIMAL (Osteoporosis Patient Targeted and Integrated Management for Active Living) is a Singapore Ministry of Health funded secondary fracture prevention programme that was implemented in the 5 public restructured hospitals that existed in Singapore in 2008 and later was expanded to include all the 18 polyclinics. The aim of OPTIMAL was to meet the needs of fracture patients by providing routine assessment and treatment for osteoporosis after their primary osteoporotic fracture. The programme is currently offered to any patient who has had a fragility fracture after the age of 50 years. OPTIMAL which has at its core, dedicated hospital specific clinician champions and case managers makes provisions for fracture case-finding, performing and assessing diagnostic evaluations (including axial dual-energy X-ray absorptiometry (DXA)), providing falls prevention recommendations and exercise prescription and making specific treatment recommendations for secondary fracture prevention. Detailed operational characteristics and initial audit data of patients who have completed the 2-year follow-up through the OPTIMAL programme at the largest hospital in Singapore have been published.³⁴

What Have We Learned During the Process of Delivery of OPTIMAL?

During the process of implementation of a programme and in the months and years following, it is important to look back periodically and try to understand where all the “ball was dropped”. Several weak links in OPTIMAL have been identified. A 100% capture rate of fragility fractures has not been attained. We have to acknowledge that it takes time for a “trickle-down” effect to occur and to get all involved healthcare providers on the same page with regard to recognising and treating osteoporotic fractures. A dearth of adequate number of personnel to serve as case managers in large volume hospitals exists. A lack of understanding of the importance and long-term value of fracture prevention programmes and the critical role that they play in it is still very much existent amongst healthcare staff. Incentives in the form of long-term career progression and recognition awards are vital to “keep” care coordinators

in their vital roles. Though an established referral pattern flow to primary care clinics exist in OPTIMAL, right-siting (the concept of managing patient with chronic diseases in primary care instead of specialist settings)³⁵ continues to be a problem. Integrating not just polyclinics but also general practitioners into the programme and providing more seamless transition pathways may help overcome this problem. Creation of reimbursement mechanisms for hospitals and primary care physicians to incentivise secondary fracture prevention have been implemented in the United Kingdom (UK).³¹ Whether this will work in countries like Singapore where the healthcare model differs drastically from socialised delivery systems has to be studied. We do not have osteoporosis metrics that will assess how the best care can be delivered while constraining costs. It is also high time that osteoporosis performance measures suitable for use by various healthcare providers in different settings be put in place.

Though medication compliance rates amongst patients recruited into OPTIMAL have been noted to be quite high,³⁶ many still discontinued medications prematurely, citing experiencing or fear of experiencing side effects to long-term medicines and cost as reasons for their non-compliance. Even with the subsidised care provided at our restructured hospitals, some patients find the treatment and follow-up costs beyond their means. It is unfortunate that Osteoporosis is not amongst the diseases included in the Chronic Disease Management Programme (CDMP) in Singapore. If it were, patients could make use of Medisave—the compulsory national health insurance to pay for outpatient clinic visits pertaining to their osteoporosis care. To this end, it is the responsibility of professional organisations and societies that have osteoporosis care as their priority to continue to lobby key decision-makers in the government to bring about favourable changes in the healthcare policy.

Conclusion

Focusing on keeping the fragility fracture patient at the centre of care and developing effective fracture liaison services that are multipronged and are developed through interdisciplinary and not just multidisciplinary efforts will ensure that no patient with a fragility fracture is ever neglected. The first fracture if at all it happens in any patient should really be the last.

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