

Reducing Refracture Rate in Postmenopausal Women: Review of Fracture Liaison Service Program Outcomes



Alexandra S. Laykova¹, Tarik Wasfie², Avery Jackson³, Jennifer R. Hella⁴, Caramarie Brock³, Stefanija Galovska³

1. Michigan State University College of Osteopathic Medicine, East Lansing MI, USA
2. Genesys Regional Medical Center, Genesys Trauma Services, Grand Blanc MI, USA
3. Michigan Neurosurgical Institute, PC, Grand Blanc MI, USA
4. Genesys Regional Medical Center, Department of Research, Grand Blanc MI, USA

INTRODUCTION

- Fragility fracture is a fracture caused by injury that would be insufficient to fracture a normal bone; such as a fall from standing or no identifiable trauma.¹ Vertebral compression fractures are among the most common.
- Osteoporosis greatly increases the risk of fragility fracture, particularly in postmenopausal women.
- A women's incident risk of dying from a fragility hip fracture exceeds the lifetime risk of death from breast cancer, uterine cancer, and ovarian cancer combined.²
- 1 in every 2 women over 50 years of age will have an osteoporotic fragility fracture in their lifetime.⁴
- 2 million fragility fractures occur yearly, costing 19 billion healthcare dollars annually.¹
- Remains one of the most demanding resources on the health care system and only growing with an aging population.

OBJECTIVE

- Can a Fracture Liaison Service (FLS) Program play a role in reducing the refracture rate in postmenopausal women?

METHODS

- A retrospective analysis of patients presenting with osteoporotic vertebral compression fractures to the trauma service at Ascension Genesys Hospital between 2012-2017, with a specific focus on postmenopausal women 50 years and older.
- Patients were divided into two groups.

Group A	Group B
Patients from 2012-2014 Not enrolled in FLS Program	Patients from 2015-2017 Enrolled in the FLS Program

Table 1: Type of groups.

- All patients received vertebral augmentation in the form of kyphoplasty or vertebroplasty.
- All patients were followed for a 2 year period from their injury date to determine refracture rate.
- Variables collected include age, sex, comorbid conditions, serum calcium and vitamin D levels, dual-energy X-ray absorptiometry (DXA) T-scores, Fracture Risk Assessment Tool (FRAX) score (calculated as 10 year fracture risk) and the two year refracture rates.

DATA ANALYSIS & RESULTS

- Statistical analysis was conducted on the results using the t-Test and Chi-square test, with a P value of ≤ 0.05 .
- Total of 365 patient chart reviews completed, with 70% being postmenopausal women.

Group A (n=150)	Group B (n=215)
Male = 47 Female = 103	Male = 62 Female = 153

Table 2: Total patients in each group.

- Total of 256 postmenopausal females.
- Compliance with the FLS program protocol was 95%.
- No statistically significant difference was found between Group A and B, for all variables; including serum calcium, vitamin D, T-Score or FRAX score.
- Total refracture rate, as well as vertebral refracture rate were significantly less in post FLS group, Group B, compared to Group A; 37% vs 55%, p=0.0001.

	Vertebral Refracture Rate	All other Refracture Rate	Total Refracture Rate
Group A (n=76)	26.3%	28.9%	55.2%
Group B (n=118)	19.5%	17.8%	37.3%
P Value	0.003	0.0001	<0.0001

Table 3: Refracture Rate results.

- **17.9% reduction in total refracture rate**, between groups.
- The number needed to treat to prevent refracture is 5.6.

CONCLUSION

Refracture rates were higher in Group A, the pre-FLS group, which we attribute to the lack of structural follow-up and treatment by appropriate healthcare providers. The post-FLS group saw a significant reduction in total refracture rate at 17.9%. Fragility fractures create a high burden on healthcare costs and mortality and morbidity for patients, they pose a significant healthcare threat to the elderly population. It is essential that more FLS programs, such as this one, are established to provide this susceptible patient population with the multifaceted healthcare and support they need, in order to extend quality of life and save healthcare dollars.

REFERENCES

1. World Health Organization. *Guidelines for Preclinical Evaluation and Clinical Trials in Osteoporosis*. Geneva, Switzerland: WHO; 1998.
2. Bukata SV, Digiovanni BF, Friedman SM, et al. A guide to improving the care of patients with fragility fractures. *Geriatr Orthop Surg Rehabil*. 2011;2(1):5-37.
3. Singer A, Exuzides A, Spangler L, et al. Burden of illness for osteoporotic fractures compared with other serious diseases among postmenopausal women in the United States. *Mayo Clin Proc*. 2015;90(1):53-63
4. O'Hanlon CE, Parthan A, Kruse M, et al. A model for assessing the clinical and economic benefits of bone forming agents for reducing fractures in postmenopausal women at high, near-term risk of osteoporotic fracture. *Clin Ther*. 2017;39(7):1276-1290.
5. Burge R, Dawson-Hughes B, Solomon DH, et al. Incidence and economic burden of osteoporosis-related fractures in the United States, 2005-2025. *Bone Miner Res*. 2007;22(3):465-475.
6. Bonanni S, Sorensen AA, Dubin J, Drees B. The Role of the Fracture Liaison Service in Osteoporosis Care. *Mo Med*. 2017;114(4):295-298.

DISCUSSION

- In the US, among women 55 years and older, the hospitalization burden of osteoporotic fragility fractures and population facility-related hospital costs is greater than that of myocardial infarction, stroke, and breast cancer combined.³
- Women accounted for more than 70% of costs incurred for fragility fractures in 2005.⁵ With a rapidly increasing aging population, osteoporotic disease is likely to increase proportionally, thus creating an even greater burden on the healthcare system.
- Experts predict that by 2025 osteoporosis will be responsible for ~3 million fragility fractures and 25.3 billion healthcare dollars annually.⁵
- The FLS program that was started at the Michigan Neurosurgical Institute in 2015 has proven to decrease the total refracture rate in postmenopausal women by 17.9%.
- It has also shown a 6.8% reduction in vertebral refractures as compared to the group of patients who did not receive FLS program follow up.
- This means that the number of patients needed to treat to prevent one refracture over a 2-year period is 5.6.
- Fracture Liaison Service programs began in the UK around the 1990s, offering a multidisciplinary systemic approach to reducing refracture rates and risk in patients with recent fragility fractures.⁶
- FLS programs have repeatedly shown to not only reduce refracture rates and improve treatment adherence, but also save healthcare dollars. Previous studies have shown a reduction in refracture rates of up to 30%.⁶
- The results of this study support previous data that proves the effectiveness of FLS programs and their necessity in the follow up of patients with fragility fractures.