

The Influence of Pharmacological Osteoporosis Treatment on Refractures Following Kyphoplasty

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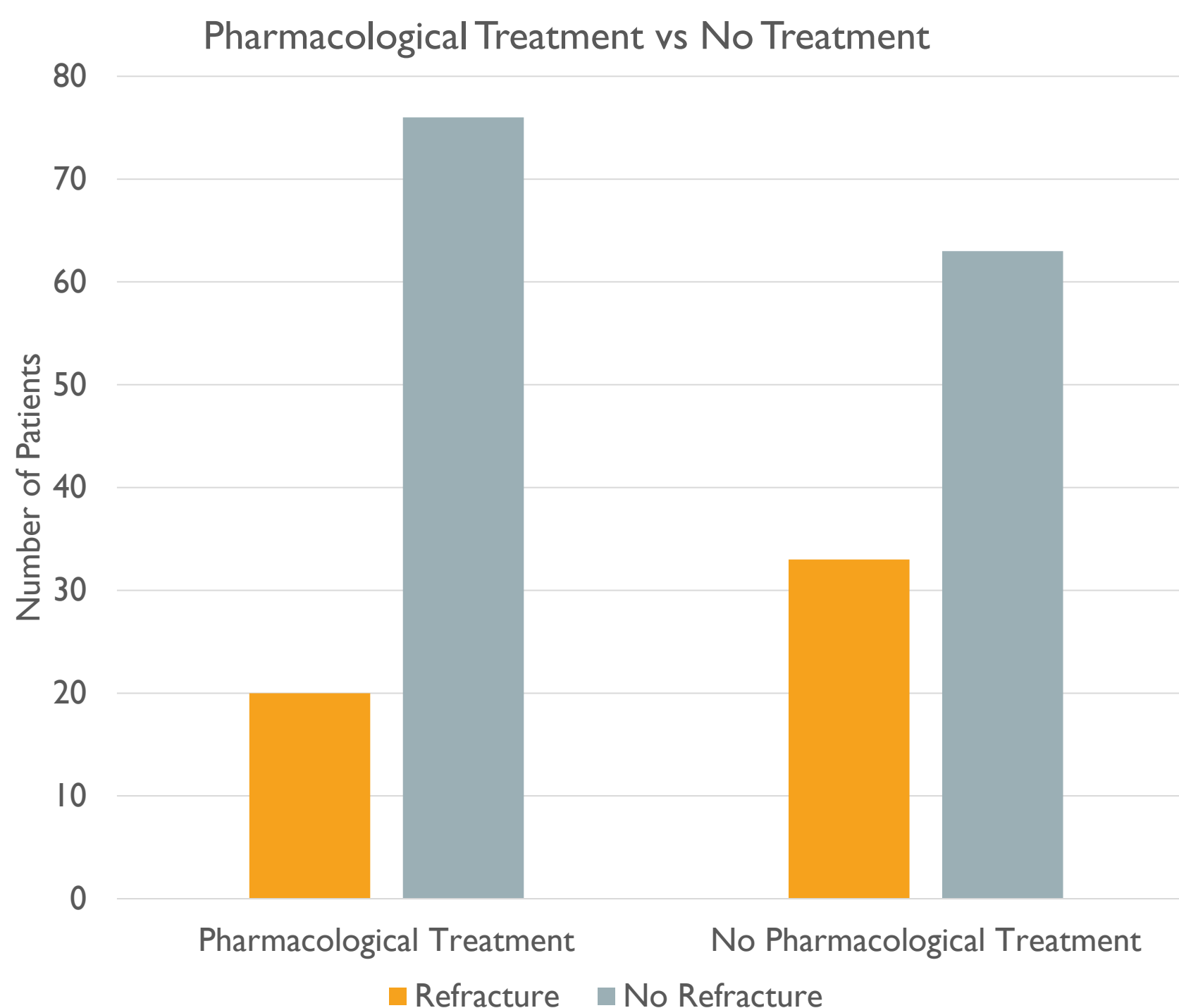
BACKGROUND

- Osteoporosis is under diagnosed and treated in America
- This study focused only on Kyphoplasty as a treatment option for Lumbar and Thoracic compression fractures.
- Patients who have had a compression fracture are diagnosed with Osteoporosis in combination
- Patients do not always start osteoporotic treatment with their diagnosis of compression fracture
- Kyphoplasty can cause other compression fractures at levels above or below the procedural level

AIM

- Examine the relationship between pharmacological osteoporosis treatment on the refracture rate in patients who have had a thoracic or lumbar level kyphoplasty.

RESULTS



METHODS

- A single center observational cohort study with 192 patients who had kyphoplasty from 2015 until 2019
- All patients who had at least one kyphoplasty from the center were included in the study.
- The patients were divided into two main groups:
 - Group I (osteoporosis medication)
 - Group II (no osteoporosis medication).
- 44 patients of Group I were placed in an Intended to Treat Group (ITT) based on their chart stating the patient would start treatment with their Primary Care Provider (PCP).
- The “refracture rate” was determined for each group and described as “No Post Kyphoplasty Refracture” (NPKR) or “Post Kyphoplasty Refracture” (PKR).
- Refracture rate was defined as the patient having at least one future kyphoplasty procedures after the initial kyphoplasty.
- If a patient had a second or more kyphoplasty procedures, then the patient was placed in the PKR group.
- If there were no future kyphoplasty procedures after the first, then the patient was placed in NPKR.
- Refracture rate was measured by the total number of patients in each group.
- Patients whose charts stated they would start pharmacological osteoporosis treatment with their PCP were placed in Group I based on the assumption that they were ITT.
- A Chi Square Independence Test was used to determine significance of data as well as level of significance of relationship between patients taking and not taking osteoporosis medication and kyphoplasty refracture rates.

RESULTS

- 121 females and 71 male
- Average age was 77 years
- In Group I (96/192):
 - 20.8% (20/96) were in PKR and 79.2% (76/96) were in NPKR.
 - 58% (44/76) of patients who were taking osteoporosis medication in NPKR claimed they would start treatment with their PCP. These patients were part of the ITT population.
 - In Group I, the ITT group (44/76) were the only patients who were lost to follow up.
- In Group II (96/192):
 - 34.4% (33/96) were in PKR and 65.6% (63/96) were in NPKR.
 - No patients in Group II were lost to follow up.
- **A Chi Square Independence Test** determined a significance in data ($p=0.03584$). The Chi Square Independence score was 4.4045.
- A 2 tailed 2 sample difference of proportions Z-test was done ($Z= 4.4045$, $p=0.036$).
- **The estimated proportion of Group I NPKR patients was 13.54 percentage points greater than Group II NPKR.**
- With 95% confidence the proportion of patients who were in Group I NPKR was by **at least 1.04 percentage points and at most 26.04 percentage points greater than Group II NPKR.**

CONCLUSIONS

- There was a significant reduction in refractures following kyphoplasty in patients who had pharmacological osteoporosis treatment.
- Chi Square Independence Test suggested a strong dependent relationship between pharmacological osteoporosis treatment and the refracture rate following kyphoplasty.
- Further observation with a larger sample size should be performed.
- Since 0 is not in this interval, we conclude that the proportion from Group I is greater than Group II. The standard error was 0.0638 and the confidence interval at 95% was +/- 12.5 percentage points.

<i>Chi Square Independence Test</i>	<i>p value < 0.05</i>	<i>Relationship Between Variables</i>
4.405	0.03584	Dependence Between Variables
<i>Z-score</i>	<i>p value < 0.05</i>	<i>Confidence Interval</i>
4.405	0.03584	1.04-26.04