Secondary Prevention of Fragility Fractures Following Distal Radius Fractures by a Multidisciplinary Clinic

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PURPOSE
Fragility fractures, constitute a major health problem and are a major risk factor for a subsequent fracture in osteoporotic patients. Studies have shown that multidisciplinary teams are most effective in prevention of these fractures, especially when the treating orthopedic surgeon is involved postoperatively.

In a previous evaluation of our medical system, we found that patients were unlikely to receive timely diagnosis of osteoporosis and/or proper evaluation and treatment for secondary prevention of fragility fractures. We have since begun the implementation of a multidisciplinary anti-osteoporotic clinic designed to treat and follow-up patients with prior fragility fractures of the distal radius.

The purpose of this pilot study was to evaluate the short-term effect of this clinic on patients sustaining a distal radius fragility fracture (DRFF) in a large health maintenance organization.

METHODS
This was a case-control retrospective study. Cases included all participants assigned to a tertiary, multidisciplinary, fracture prevention clinic. Controls were taken out of a series of surgically treated patients in the same health system that did not attend the multidisciplinary clinic. The clinical team consisted of a hand surgeon, an endocrinologist and an occupational therapist. The primary outcome measure was a second fracture during the follow up period.

Patient demographic and clinical characteristics were documented. Evaluation for osteoporosis consisted of medical history including former fractures, family history of fractures, past osteoporosis evaluations and treatment as well as social history were documented.

Data was analyzed using the chi-square test, the Fischer exact test, or t test as appropriate. All p values were two sided and statistical significance was defined as p < 0.05.

RESULTS
Thirty-six patients were included in the study. There were significant differences in age (the older group was the group treated in the multidisciplinary clinic), gender (more females in the treated group), background disease (more in the treated group) and follow-up period, which was longer in the untreated group. These differences would favor the untreated group (Table 1).

Thirty-two patients (88.9%) fractured their distal radius in one hand only while the other two (5.6%) fractured both hands. Four patients (11.1%) sustained a concomitant fracture in another location in addition to the distal radius; three of them were hip fractures.

More patients who attended the multidisciplinary clinic received anti-osteoporotic pharmacological treatment than did patients who did not attend the clinic. Table 2

All patients went through separate post-operative rehabilitation with an occupational therapist according to their physical ability and healing progression. No new fractures were documented during the follow period. This did not differ between the two groups (treated in clinic and untreated) p=0.07. When we compared the difference in subsequent fracture occurrence between the groups at 1 year the difference was also not significant p=0.12.

CONCLUSIONS
1) It is possible that we were underpowered to detect a difference in fracture occurrence rate and that short-term follow-up is not enough for a fracture known to occur years before a second fragility fracture.
2) The evidence from this study may support the effectiveness of the multidisciplinary anti-osteoporotic clinic in reducing subsequent fractures and improving treatment rates following a minimal trauma fracture due to bone fragility.
3) Further study is needed to improve our ability to implement effective prevention of fragility fractures.

Table 2: Pharmacological treatment for osteoporosis prevention

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Treat group (n=19)</th>
<th>Untreated group (n=19)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any nutritional supplement</td>
<td>16/19 (84.2%)</td>
<td>11/19 (57.9%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Antiresorptive therapy</td>
<td>12/19 (63.2%)</td>
<td>10/19 (52.6%)</td>
<td>0.53</td>
</tr>
<tr>
<td>Bisphosphonates</td>
<td>11/19 (57.9%)</td>
<td>10/19 (52.6%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Hormone replacement therapy</td>
<td>5/19 (26.3%)</td>
<td>6/19 (31.6%)</td>
<td>0.72</td>
</tr>
<tr>
<td>Selective estrogen receptor modulators</td>
<td>0/19</td>
<td>0/19</td>
<td>1.00</td>
</tr>
</tbody>
</table>