Surgical Yield of Spine Surgery Referrals Based on Radiology Reports

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Disclosures

- None
Introduction

- While many academic and private neurosurgical practices are often organized around sub-specialty lines, the effect of this on surgical consultation referrals and subsequent surgical yield has not been studied.

- Additionally, although referrals for lumbar spine surgery have been studied for appropriateness, this has not been studied for other neurosurgical subspecialties as well as different spine conditions.

- Here we report appropriateness of referral and surgical yield by disease process in a multispecialty academic neurosurgery practice.
Methods

- A retrospective analysis of radiology-based referrals for outpatient neurosurgery consultation at an academic center over a three year period was performed.

- Referrals were analyzed for neurosurgical subspecialty (spine/functional, oncology, vascular, and pediatrics), appropriateness of referral, and subsequent surgery performed.

- Referrals were classified for appropriateness:
  - Radiology mismatch
  - No significant signs/symptoms
  - Patient choice
  - Indicated
<table>
<thead>
<tr>
<th>Frequency</th>
<th>Degenerative Spine</th>
<th>Oncology</th>
<th>Vascular</th>
<th>Pediatric</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiology mismatch</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>No significant signs/symptoms</td>
<td>7</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Patient choice</td>
<td>201</td>
<td>25</td>
<td>9</td>
<td>40</td>
<td>275</td>
</tr>
<tr>
<td>Indicated</td>
<td>683</td>
<td>243</td>
<td>64</td>
<td>173</td>
<td>1168</td>
</tr>
<tr>
<td>Total</td>
<td>893</td>
<td>274</td>
<td>75</td>
<td>217</td>
<td>1464</td>
</tr>
</tbody>
</table>
Proportions

% Indicated Referrals

Degenerative Spine | Oncology | Vascular | Pediatric | Average

76% | 88% | 86% | 84% | 78%
## Surgical Yield

<table>
<thead>
<tr>
<th></th>
<th>Degenerative Spine</th>
<th>Oncology</th>
<th>Vascular</th>
<th>Pediatric</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Surgery Performed</td>
<td>556</td>
<td>158</td>
<td>40</td>
<td>184</td>
<td>941</td>
</tr>
<tr>
<td>Surgery Performed</td>
<td>337</td>
<td>116</td>
<td>35</td>
<td>33</td>
<td>523</td>
</tr>
<tr>
<td>Total</td>
<td>893</td>
<td>274</td>
<td>75</td>
<td>217</td>
<td>1464</td>
</tr>
</tbody>
</table>
Surgical yield in pediatrics was significantly lower than other sub-specialties.

Although a higher proportion of spine patient referrals were not indicated, net surgical yield (49% of indicated referrals) was comparable to other sub-specialties.

Non-random assortments of appropriateness and surgical yield were found on statistical analysis (p<0.001).
Discussion

- In allocating clinic time, operating room time, and secondary staff, the proportions of appropriate referrals and surgical yield are important considerations.

- In order to optimize pediatric neurosurgeon productivity, additional clinic time with generous support staff allocations may be beneficial.

- By developing more uniform descriptions of indicated and non-indicated neurosurgery referrals, unnecessary and unproductive patient referrals from primary providers may be reduced.
Summary Points

- While a higher number of spine referrals are not appropriate as compared to other neurosurgical specialties, conversion to surgery among appropriate candidates is relatively high.

- As compared to other neurosurgical subspecialties, pediatrics has a particularly low level of surgical yield based on radiology referrals.

- Sub-specialty groups may raise the productivity of their members by formulating guidance to primary care and emergency providers on indicated and non-indicated referrals.