Exposure of two interspaces for lumbar disc surgery

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In a study of matched pairs of patients with a single ruptured disc, exploration of an additional lumbar interspace did not increase the morbidity of surgery. The author believes that the desire to avoid additional surgery does not, by itself, justify routine myelography.

KEY WORDS • intervertebral disc • lumbar disc surgery • myelography

Routine myelography is recommended by some surgeons for localizing the level of disc rupture, thereby avoiding exposure of a normal interspace. Others contend that since one must disregard a normal myelogram in patients with definite physical signs, and since 97% of lumbar disc ruptures occur at the last two interspaces, myelography is not required routinely. If no myelogram is done, exploration of both lower interspaces will usually be necessary; because it is the only definite way to rule out multiple disc protrusions, some surgeons always examine both lower interspaces.

This paper reports an attempt to answer the following question: Barring occasional gross trauma to the nerve root during exposure and retraction, can an additional lumbar disc interspace be explored with impunity, or does the inevitable scar tissue increase the morbidity of the operation?

Method

From a group of patients reported previously, each patient in whom both lower lumbar interspaces had been explored, but only one ruptured disc found, was matched with a control patient who had a single ruptured disc and no other interspace exposed. All pairs of patients selected for study had definite herniated discs with nerve root compression and were matched according to the level of disc rupture, physical findings, presence or absence of compensation, sex, and age. Patients thought to have significant psychogenic components were excluded. Thus, 54 pairs of patients were obtained. Each patient's self-evaluation of relief of symptoms was obtained using a modification of the questionnaire described by Semmes, mailed at least 1 year after surgery.

Results

Results (Table 1) were classified by the method of Odom, et al., and were analyzed statistically by both chi-square distribution and Student's paired t-test. There was no significant difference by either method, indicating that exploration of an additional interspace does not significantly increase the morbidity of lumbar disc surgery.
TABLE 1
Clinical postoperative status of 108 patients after exploration of one versus two interspaces

<table>
<thead>
<tr>
<th>Interspaces Explored</th>
<th>No Residual Symptoms</th>
<th>Intermittent Discomfort (able to work)</th>
<th>Improved but Physical Activity Limited</th>
<th>Same or Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>one</td>
<td>18</td>
<td>26</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>two</td>
<td>20</td>
<td>23</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>total</td>
<td>38</td>
<td>49</td>
<td>16</td>
<td>5</td>
</tr>
</tbody>
</table>

Discussion

Recurrent or persistent leg pain, especially after negative reoperation, is often attributed to scarring around the nerve roots. But scarring must also occur in patients who obtain complete relief after removal of a ruptured disc, and in the absence of persistent or recurrent disc protrusion probably does not cause symptoms. Furthermore, lysis of extradural scar and adhesions about the nerve root rarely salvages a failure of disc surgery. Although occasional untoward results are apt to occur, avoiding exposure of an additional interspace probably does not justify routine myelography. Myelography is not an innocuous procedure and it seems likely that surgical exposure of an additional interspace produces more accurate information at no greater risk of complications than does myelography.

After myelography has been performed, what is the possibility of missing a second symptomatic disc rupture in a patient with a single defect if only that interspace is operated on? If myelography fails to detect 15% of disc ruptures, and multiple ruptures are present in 6% of operations, then a second disc rupture would escape detection in only 1% of patients. Therefore, it seems logical to forego exploration of a second interspace if the myelogram shows no definite defect there, unless the neurological examination indicates compression of that nerve root. In 75% of the patients with definite nerve root signs, such as weakness and reflex changes, a rupture of the corresponding disc is found.

References


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