Introduction

Love’s method is currently considered the “gold standard” for surgically addressing lumbar disc herniation. Alternatively, Caspar has proposed a procedure to address herniated discs using microsurgical techniques which suggests is less invasive and can be easily and accurately performed enabling patients to return to their normal daily lives much sooner after the operation. Since 1992 microdiscectomy following

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Caspar’s method have been performed on patients with lumbar disc herniation. We report on our analysis of postoperative outcomes for the patients treated with microdiscectomy.

**Materials and Methods**

Seventy-five patients diagnosed with lumbar disc herniation were treated by microdiscectomy and were enrolled in this study. Patient parameters are 54 males and 21 females with an average age of 35 years (17 to 65 years). Average duration of the symptoms was 21.5 months (10 days to 12 years). Disc herniations determined MRI and myelogram were located as follows: one at L1-2, two at L2-3, nine at L3-4, six at L4-5, and 17 at L5-S1. All patients presented on a single disc level. Microdiscectomy was performed on patients who did not obtain a reduction of their symptoms after a course of conservative treatment lasting more than three months and whose neurological findings and symptoms corresponded with their MRI and radiological findings. However, the operation was performed immediately on patients who presented with severe neurological deficit such as foot drop.

All microdiscectomies were performed utilizing Caspar’s method. Patients were placed in a knee-chest position and Caspar’s retractor was employed. Epidural fat tissue was retained to the greatest extent possible. However, ten patients who did not possess sufficient fatty tissue underwent free-fat transplantation.

The postoperative program from 1992 to 1996 allowed patients in a soft corset to start walking two days postoperatively and to carry out light work beginning at the fourth week. The corset was removed at sixth week and heavy work was permitted at eighth week. In contrast, a postoperative treatment program begun in 1997 allowed patients wearing a soft corset to walk only to a toilet four days after the operation and to walk inside the hospital one week after the operation.

The average follow-up period was 64.4 months (7 to 88 months). The postoperative outcomes were evaluated according to the Japanese Orthopaedic Association (JOA) scoring system for lumbar disease and Hirabayashi’s Improvement Rate.

**Results**

The herniation types are classified as the protrusion type (17 patients), subligamentous extrusion type (43 patients), transligamentous extrusion type (8 patients), and seques-
The average operation time was 91.8 min (53 to 187 min) and the average amount of blood loss during the operation was 36.5 g (10 to 160 g) and the average amount of disc extracted was 1.0 g (0.0 g to 2.86 g). No patients had their dura or root injured during the operation. Postoperatively the average JOA score significantly improved to 26.7 points (14 to 29 points) from 12.2 points (0 to 22 points). Hirabayashi’s improvement rate was 86.4% (Fig. 2).

Recurrence of herniation was observed in 3 patients all of whom exhibited recurrence of herniation of the same disc 2 patients on the same side and 1 patient on the opposite side.

Discussion

Microdiscectomy is considered to be less invasive to the root and dura and causes less epidural adhesive scarring than the Love’s method. In addition, since mechanical damage to paraspinal muscles is minimal complaints of postoperative low back pain are decreased enabling patients to return to normal daily lives sooner. In this study microdiscectomy provided satisfactory postoperative outcomes with an average amount of blood loss of 36.5 g during the operation and only 6.7% complained of resultant postoperative low back pain suggesting that this procedure was less invasive.

In recent years some disadvantages of mi-

Table 1  Postoperative program

<table>
<thead>
<tr>
<th>Period after operation</th>
<th>1992 ~</th>
<th>1997 ~</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd day</td>
<td>SLR ex 0</td>
<td>SLR ex 0</td>
</tr>
<tr>
<td></td>
<td>soft corset</td>
<td>start walking (in a hospital)</td>
</tr>
<tr>
<td>4th day</td>
<td></td>
<td>soft corset</td>
</tr>
<tr>
<td>7th day</td>
<td></td>
<td>walking in a hospital</td>
</tr>
<tr>
<td>10th day</td>
<td>discharge</td>
<td>discharge</td>
</tr>
<tr>
<td>2nd week</td>
<td>light work</td>
<td>light work</td>
</tr>
<tr>
<td>4th week</td>
<td></td>
<td>remove the corset</td>
</tr>
<tr>
<td>6th week</td>
<td>remove the corset</td>
<td>light work</td>
</tr>
<tr>
<td>8th week</td>
<td>permit heavy work</td>
<td>permit heavy work</td>
</tr>
</tbody>
</table>

Fig. 2  Preoperative and postoperative JOA score

Postoperative JOA scores are significantly improved over preoperative JOA score.
crodiscectomy have been reported\(^3\). In a middle- and long-term study, the recurrence of herniation has been reported to be 6.6\% in all cases\(^8\). This recurrence rate is higher than the recurrence rate using Love’s method\(^4\). However, the recurrence of herniation in our department was calculated at 4\% (3 patients among 75 patients). This recurrence rate was not as high when compared with the outcomes in patients treated using the Love’s method\(^4\). All 3 of our patients with recurrent herniation were allowed to walk on the second postoperative day. We have concluded that early stress on the affected fragile disc due to operative invasion is a significant contributing factor in the recurrence of disc degeneration. The mechanism for recurrent postoperative disc degeneration was pointed out by Nishiyama\(^7\) et al. who stated that walking should not be allowed for one week postoperatively. And Miyasaka\(^6\) et al. noted that patients should be required to remain in bed for at least two weeks before participating in extensive and intensive physical rehabilitation treatments. Allowing the soft tissue time to recover from the trauma associated with surgery was found to be beneficial. In 1992, when we started performing Caspar derived microdiscectomy, patients were allowed to walk one day postoperatively. However, since 1997, after experimenting with recurrent disc herniation in three patients, the period at which patients were allowed to start walking was changed from one day to four days postoperatively. Other details in the postoperative program were also changed. Recurrence of herniation has not occurred in our patients since the postoperative program was changed.

**Conclusion**

1. Microdiscectomy was performed on 75 cases with lumbar disc herniation and postoperative results of the cases were studied.
2. The average amount of blood loss during operation was 36 g and the average percentage of patients having remaining postoperative low back pain was 6.6\% indicating that the procedure was less invasive.
3. Satisfactory postoperative results for Hirabayashi’s improvement rate of 86\% were obtained. However, the recurrence of herniation was observed in three cases. After adjusting our postoperative rehabilitation program in 1997, we have not experienced any further instances of recurrent disc herniation in our microdiscectomy patients.
4. Microdiscectomy has some problems such as a postoperative program and possible recurrence of herniation. However, our experience with microdiscectomy indicates it being less invasive and with satisfactory postoperative results makes us believe that this procedure is effective and should be considered by spine surgeons in cases of disc herniation that meet our diagnostic criteria.

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2. Goald HJ: Microlumbar discectomy. Spine 1978:


