Comparison of lumbar fusion surgery with/without ISOBAR device among patients with lumbar spine degeneration

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Background

1. Studies revealed that lumbar fusion surgery may decrease pain and improve disability, but it may also induce adjacent segment disease (ASD), whereby segments at the upper and lower borders of the surgical site develop instability.
2. The ISOBAR device has been developed and used in the lumbar fusion surgery for preserving postoperative lumbar spinal activity and preventing ASD.
3. However, the relevant study is lack in Taiwan to compare the effectiveness of lumbar fusion surgery with ISOBAR device & PLIF (traditional fusion surgery without ISOBAR device).

Objective

Compared efficacy of lumbar spine fusion surgery with ISOBAR and PLIF.

Methods

- **Complete questionnaires (Pre-/Post-OP 6 months)**
  - Demographic questionnaire: 13 items
  - Oswestry Disability Index (ODI): 10 items
  - Back Pain Questionnaire (JOABPEQ): 5 domains, 25 items

**Statistical Analysis**

- Descriptive statistics
- Nonparametric test: Wilcoxon signed rank test、Mann-Whitney U-test、Kruskal-Wallis test

**Table 1. Comparison of JOABPEQ and ODI levels before and after surgery between ISOBAR and PLIF groups**

<table>
<thead>
<tr>
<th>Device (n)</th>
<th>ISOBAR (n=23)</th>
<th>PLIF (n=21)</th>
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</thead>
<tbody>
<tr>
<td>Social Life function</td>
<td>mean (SD)</td>
<td>mean (SD)</td>
<td>p</td>
<td>mean (SD)</td>
<td>mean (SD)</td>
<td>p</td>
</tr>
<tr>
<td>Post-surgery</td>
<td>79.41±10.33</td>
<td>78.59±10.15</td>
<td>.41</td>
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<td>ODI</td>
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<td>p</td>
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<td>p</td>
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<td>Post-surgery</td>
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**Table 2. Demographic stratified according to JOABPEQI and ODI levels after surgery**

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Results

1. Both ISOBAR and PLIF groups had improvement in back pain (JOABPEQ) and disability (ODI), (all p < .01).
2. ISOBAR group had better improvement than PLIF group in lower back pain, walking ability, social life function, mental health and disability, (all p<0.05), but did not appear better improvement in the domains of lumbar function (p=.135).
3. In the ISOBAR group, female patients had better improvement in social life function and mental health than the male, (all p < .05).
4. The ISOBAR group had better improvement in social life function and ODI than the PLIF group in all age brackets and work; ISOBAR group had better improvement than PLIF group in in mental health in work categories (Table 2).

Conclusions

1. Both surgery both can significantly improve back pain and daily disability for LDD patients.
2. Lumbar fusion surgery with ISOBAR device helped significant improvement of social life function and mental health of LDD patients, especially in female and work categories.
3. Using ISOBAR in the lumbar fusion surgery can have better improvement in social life function and daily function limitation.

References


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