

## Lumbar Disc Microsurgery Play any Role Today?

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### Introduction

In 1953, Zeiss produced the surgical microscope. As the exposure in the surgery field contracted, improved illumination and magnification became paramount to the success of less invasive surgery. Less tissue disruption to accomplish the surgical goal became the principle. The exact extent of magnification and illumination bundled with improved surgical instruments heralded the new era of microsurgery. Surgeons discovered a comfort zone with magnification and illumination: hand and eye coordination targeted to the surgical dimension formed the boundary of expertise. A minimalist approach to the handling of sensitive tissues brought a new appreciation to the idea that surgery altered normal anatomy in the process of dealing with the abnormal and tissues under abnormal stress responded better to minimal manipulation.

In addition, surgeons discovered that precision was tied to magnification and illumination. A magnified structure could be appreciated with a different perspective than the image on the naked eye. The gross movements supervised by distant vision (naked eye) succumbed to the accuracy of micro-instruments rolled by finger tips. As recovery times quickened under the influence of greater preservation of normal anatomy, and smaller surgical windows, the concept of rehabilitation beginning with the operation rather than some distant concept which surgeons expressed but did not understand, established a principle: the first step in rehabilitation is surgery.

### Indications

Lumbar microsurgery is indicated for the herniated lumbar disc and in selected cases of spinal stenosis. The common symptoms forming a criteria for microsurgery in association with a disc herniation are: leg pain, leg numbness, leg weakness and bowel and bladder symptoms.

### Technical Considerations

The key technical consideration is adequate exposure to identify the area of spinal nerve compression.

### Literature Review

Findlay et al. [1] reviewed a group of patients who had lumbar microsurgery for herniated disc 10 years after the original operation. Was the original successful outcome of surgery maintained over the ten year period of time? In this series, the initial outcome at 6 months after surgery was 91% successful. At 10 years, the results were 83% successful, although this minimal decline was not considered statistically significant. There was a high patient satisfaction rate with lumbar microdiscectomy. Kotilainen et al. [2] reviewed 237 patients

who had a microsurgical lumbar discectomy for lumbar disc herniation. The median follow-up time was 2 years for this group of patients. Results were tied to the intra-operative anatomy of the herniation and duration of preoperative leg pain.

Overall, 92% sciatic pain was relieved or "markedly diminished" and 79% had returned to work. "Surgical complications were infrequent in this study" [3]. Nygaard et al. reviewed 132 consecutive patients undergoing surgery for lumbar disc herniation to analyze the factors separating those patients with relief of leg pain and those patients who had residual leg pain. The patients were analyzed at 1 year after their surgery. Patients having surgery who have had leg pain for 8 months or greater had poorer results than those patients with leg pain for less than 8 months prior to surgery [4].

### Complications

Complications of lumbar microsurgery for herniated lumbar disc include the following: death, paralysis, and nerve root injury, spinal fluid leak, and spinal instability, recurrence of herniation, wound problems, infection, and failure to improve.

### Author's Comment

I have chosen these featured references to illustrate the following points: The results of surgery are tied to the duration of mechanical pressure on the spinal nerve and the type of biology of the herniation. The space available for the spinal nerve and the degree of compression of the spinal nerve are the biological factors influencing results. Surgery performed for spinal nerve compression due to lumbar herniated disc around the three month range is most successful. There are exceptions to every principle so careful review of individual circumstances is warranted. The degree of herniation and pressure determined in surgery correlates with results. An MRI scan measurement of herniation is not a predictor of results compared to the intra-operative findings. Large disc herniations (extruded or sequestered) do better than marginal disc protrusions in general. There are exceptions to this concept because a small disc protrusion in conjunction with narrowing of the bony space (spinal stenosis) for the spinal nerve may exert the same degree of pressure on the spinal nerve as the larger herniation.

### References

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