

Repair Of Defects After Lumbar Discectomy With Autologous Bone Marrow Mesenchymal Stem Cells And Annular Suture

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Objective: To evaluate the safety and validity of enriched autologous bone marrow mesenchymal stem cells (BMSCs) and annular suture for repairing defect after lumbar discectomy.

Methods: 89 patients with lumbar disc herniation underwent discectomy with mobile microendoscopic discectomy. Discectomy group: 26 cases; suture group: 32 cases received annular suture after discectomy; BMSCs+suture group: 31 cases received intradisc transplantation of gelatin sponge particles enriched with autologous BMSCs and annular suture after discectomy. There were no significant differences in VAS, ODI, Pfirrmann classification, disc height and degree of herniation among the groups.

Results: Operation time: 35-55 min. 83 cases were followed up for 2-3 years, VAS and ODI scores decreased significantly after operation in all patients. At final follow-up, the VAS improvement rate of BMSCs+suture group ($80.2 \pm 7.9\%$) was higher than discectomy group ($71.3 \pm 8.9\%$) and suture group ($70.2 \pm 6.9\%$); the ODI improvement rate of BMSCs+suture group ($65.6 \pm 8.8\%$) was higher than discectomy group ($57.8 \pm 8.1\%$) and suture group ($59.9 \pm 5.5\%$). Pfirrmann grade of disc increased 0.7 in discectomy group, 0.5 in suture group, while it did not increased significantly in BMSCs+suture group and BMSCs group, the progress of Pfirrmann grade in BMSCs+suture group and BMSCs group were lighter than discectomy group and suture group. The loss rate of disc height in BMSCs+suture group ($17.2\% \pm 4.3\%$) was less than discectomy group ($29.3\% \pm 6.3\%$) and suture group ($20.6\% \pm 5.7\%$); and suture group was less than discectomy group. The degree of herniation was reduced by more than 50% in all groups, while 1 case in discectomy group had herniation without clinical symptoms.

Conclusion: Autologous BMSCs and annulus suture are safe and effective in repairing the defect after lumbar discectomy, which may help to slow down the degeneration of intervertebral disc.