Combined Spinal Surgery and Tertiary Rehabilitation: A Prospective Evaluation Study of Treatment Efficacy
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Introduction. With the increased prevalence and cost of low back pain in industrialized countries, finding appropriate methods for effective treatment has become paramount. One long-standing method of treatment in spinal surgery in alleviating disability has been raised recently in the literature, particularly for fusion for degenerative conditions. Meta-analyses of the efficacy of surgery have thus far been inconclusive. In other musculoskeletal regions, however, particularly the knee, aggressive sports medicine rehabilitation customarily follows surgery and is essential in achieving successful outcomes. No such surgery/rehabilitation combination has been carefully evaluated with disabled workers undergoing spine surgery. Functional restoration is a tertiary, medically directed, interdisciplinary rehabilitation program based on a "sports medicine" approach, which monitors specific socioeconomic outcomes as part of its treatment process for end stage chronically disabled workers with spinal disorders, primarily in a compensation environment.

Methods. In order to systematically evaluate the effectiveness of a combined treatment of spinal surgery followed by aggressive rehabilitation, the present study prospectively evaluated a cohort of consecutive functional restoration program graduates (n=1202). It assessed a discectomy group D (n=123, mean age=38.4, 77% male) and a fusion group F (n=101, mean age=39.0, 78% male). They were compared to two groups of matched controls (no pre-rehabilitation surgery) selected from the same large cohort of rehabilitated chronic spinal disorder patients with work disability: nondiscectomy group C/D (n=123, main age=38.5, 77% male) and nonfusion group C/F (n=101, mean age=39.5, 78% male). Nonsurgery control groups were matched to the preprogram surgery groups by age, sex, race, length of disability and workers’ compensation venue (eg, federal or specific state system). A structured clinical interview aimed at specific socioeconomic outcomes (return to work, medical utilization, recurrent injury, etc.) was administered twelve months after program completion.

Results. The two groups of patients who had spinal surgery made significant functional improvements on physical measures such as range of motion, strength, isokinetic and iso inertial lift that were similar to the nonsurgery groups measured pre- and six weeks post-treatment. A contact rate for various outcomes of 95%-99% revealed that 86.7% of the D group returned to work within the twelve month period following rehabilitation compared to a 90.3% return to work rate for the C/D group. Return to work was 87.0% for the F group compared to 88.0% for C/F group. There were no statistically significant differences among the groups. The C/D, C/F and D groups all had significantly more visits to other health care professionals following rehabilitation (1/5 time greater frequency) than the F group (p<.005). Surgery over the next year was lowest for the fusion group and highest for the discectomy group, with F=2.0% rate of post program surgeries, D=8.2%, C/F=3.0% and C/D=4.0% (D vs. F, p<.0001). There were no statistically significant differences in recurrent lost time re-injury rates for the groups: F=2.0%, C/F=3.0%, D=3.3% and C/D=2.3%.

Conclusions. This study represents the largest evaluation to date of treatment outcome of a combination of spinal surgery followed by tertiary rehabilitation. Overall, these results demonstrate remarkable successful socioeconomic outcomes of spine surgery in a compensation setting, if accompanied by
medically directed tertiary care. Surprisingly, fusion patients had work outcomes comparable to
discectomy and control patients, with lower future health utilization and comparable recurrent injury
outcomes. This occurred in spite of the fact that fusion patients generally had longer periods of disability
and more major structural intervention than discectomy patients. Prospective randomized trials of spine
surgery plus rehabilitation are called for to replicate these findings.