

Spinal Fusion Surgery: Epidemiologic and Economic Burden Attributable to First Intervention

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Introduction

Low back pain (LBP) is the single most common cause for disability in individuals aged 50 years or younger with a high socioeconomic impact. In USA, LBP costs are estimated to exceed \$100 billion per year and are mainly related to lower productivity. Degenerative disc disease is one of the main causes of LBP and ways of limiting disc degeneration or even inducing disc regeneration are still desirable goals in its treatment. Spinal fusion surgery is a recognized treatment option of degenerative disc disease, however no adequate data are available about the epidemiology of spinal fusion surgery and its economic impact in Italy. The objective of this analysis was to assess the epidemiologic and economic burden of arthrodesis from a large population based-study

Material and Methods

Lombardy Region includes around 9.9 million individuals. The study population was identified through a data warehouse (DENALI), which matches with a probabilistic linkage demographic, clinical and economic data of different Healthcare Administrative databases. The study population was made by all subjects who, during the period January 2001–December 2010, underwent a spinal fusion surgery identified by one of the following codes ICD9-CM: 81.04, 81.05, 81.06, 81.07 and 81.08. The first procedure was used as index event. We estimated the incidence of first spinal fusion surgery, the population and surgery characteristics and the healthcare costs from the National Health Service's perspective.

Results

During the study period, 17,772 (mean (SD) age 52.0 (17.2), 53.2% female) spinal fusion surgeries were detected. Almost 67% of patients underwent spinal fusion reported a Lumbar Degenerative Diseases. The incidence rate of interventions increased from 12.6 to 19.1 per 100,000 person-year in the observational period between 2001 and 2006. During the past 4 years of observation, the incidence was above 20.0 per 100,000 person-year. The results showed an increasing constant patients' median age during the time period considered from 49.9 to 58.4 years. The average hospital length of stay reported for the index event was 17.1 days in the 2001 and decreased until 11.0 days in the 2004. The average cost of the spinal fusion surgery increased during the observational period, from € 4,381 up to € 9,388.

Conclusion

The study showed an increasing incidence of spinal fusion surgery and costs from 2001 to 2010 in the Italian Lombardy Region. Almost 67% of patients had a Lumbar Degenerative Diseases and the majority of them are in a working-age with a possible association to high productivity loss. These results can be used to better understand the epidemiological and economic burden of these types of interventions, and associated with quality of life and loss of productivity information could help to optimize the resources available considering the different surgical procedures available today.