

**Orthopedics Abstracts**

**Title:** UPPER EXTREMITY OVERUSE INJURIES IN THOSE WITH SPINA BIFIDA: RESULTS OF A CHART REVIEW AND CASE STUDIES

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**Background:** Research by Boninger and other authors about overuse injuries of full-time manual wheelchair users show that they are extremely common. Various studies show rates between 37 and 80% within 20 years of starting wheelchair use.

Most of the published studies focus on patients with spinal cord injury, and there are typically few patients with spina bifida in any of the studies of upper extremity overuse.

At Gillette Lifetime Specialty Healthcare Clinic, we had seen many patients in our rehab department who had had serious problems with upper extremity overuse, leading to loss of employment and independent living status.

**Method:** A retrospective chart review was performed of 36 patients with spina bifida, aged 16-71 who had attended clinic appointments at Gillette Lifetime clinic.

In addition, more detailed case description was made of several other patients with SB.

**Results:** More than half of the 36 patients with SB who used manual wheelchairs for mobility reported symptoms of upper extremity overuse syndromes. Shoulders, elbows and wrists were all affected in various patients.

For several of the patients, upper extremity injuries were the cause of loss of employment, and independent housing, and led to a spiral of deleterious consequences, such as inability to transfer independently and chronic pain. Several of the subjects ended up having U/E surgeries to repair serious pathologies.

At least six of the subjects ended up obtaining either power or power assist wheelchairs, with reports of increased function and energy levels, with decreased U/E pain after receipt and use of their power chairs.

Some of the patients were referred to occupational therapy to learn shoulder stretching and strengthening exercises which have been shown to be helpful with SCI patients. Long-term follow-up has not yet been done to see whether instruction and performance of the exercises has led to increased improvements in mobility or in decreased U/E pain.

**Conclusion:** Power mobility or power assist should be introduced early on, in late teens or early twenties, for many manual wheelchair users with spina bifida. Prevention of common overuse injuries to the shoulders, elbows and wrists is essential. Painful, debilitating injuries can be prevented by avoiding overuse. In addition, it is likely that regular performance of targeted shoulder stretching and strengthening exercises for shoulder extension, external rotation and horizontal abduction may help reduce pain and to prevent injury for patients with SB, as they have with SCI patients.