Thoracic Outlet Syndrome In High Performance Athletes
Venita Chandra, MD Benjamin Colvard, MD, Christine Little, Cornelius Olcott, IV, MD, Jason T. Lee, MD
Vascular Surgery, Stanford University Medical Center, Stanford, CA

Discussant: Hugh Gelabert, MD

OBJECTIVE: Repetitive upper extremity use in high performance athletes is associated with the development of neurogenic and vascular TOS. Surgical therapy in appropriately selected patients can provide relief of symptoms and protection from future disability. We sought to determine whether athletes treated for TOS can return to their prior high performance level.

METHODS: We reviewed competitive athletes treated for venous or neurogenic TOS from 2000-2012. Patient demographics, workup, and treatment approaches were analyzed. nTOS patients were assessed with quality of life surveys using the previously validated mini-QuickDASH (QD) scale (0-100, 100=worse). Return to full athletic activity was defined as returning to prior competitive high school, collegiate, or professional sports.

RESULTS: 38 competitive athletes (mean age 21, 45% female) were treated during the study period; 12 baseball players, 11 swimmers, 5 water polo players, 4 rowers, 2 volleyball players, 2 synchronized swimmers, one wrestler and one diver. 25 (65%) of the athletes presented with nTOS and 13 (34%) had Paget Schroetter Syndrome (PSS). All PSS patients underwent standard treatment of thrombolysis followed by first rib resection. Most nTOS patients were treated according to a highly-selective algorithm beginning with TOS-specific physical therapy. Based on symptom improvement after PT, 64% of the nTOS athletes ultimately underwent first rib resection and brachial plexus neurolysis. Return to full competitive athletics was achieved in 79% of all patients, including 100% of the PSS patients and 72% of the nTOS athletes. In the nTOS cohort successfully returning to sports, six (33%) were treated only with PT. If the athlete underwent surgery for nTOS, 75% returned to full competitive levels. Mean QD scores improved from pre-op 36 to post-op 12, indicating minimal disability. Recurrence of symptoms was noted in two nTOS (8%) and two PSS (15%) athletes.

CONCLUSIONS: Standardized treatment algorithms and aggressive TOS-specific physical therapy are key components to minimizing disability in this special cohort of TOS patients. The majority of athletes treated for neurogenic and venous TOS can successfully return to competitive sports at their prior high performance level.