

Dr. George Athwal

“The Biomechanical Assessment of Complex Shoulder Instability”

Shoulder instability is a disabling condition, associated with pain and an inability to participate in sports and work. Recurrent instability is more common when there are associated bony defects, such as anterior glenoid bone loss (bony Bankart) and humeral head impression fractures (Hill-Sachs defect). Shoulder instability with associated bone defects has been termed “complex” instability.

“The occurrence of these associated defects is directly related to the risk of recurrence and importantly, the failure of standard surgical stabilization techniques. Due to this high failure rate, several new, alternative and controversial surgical techniques have been developed. While each surgical technique has purported advantages and disadvantages, there is a lack of high level of evidence clinical outcomes literature comparing the various procedures. In circumstances of insufficient clinical literature, biomechanical studies can assist with decision making. Unfortunately, in 2011 the biomechanical literature on the management of complex shoulder instability with these newer procedures was sparse. Therefore, the purpose of this work was to employ an experimental biomechanical approach to study the advanced surgical techniques used to manage complex shoulder instability.

“Since 2011 we have been devoted to assessing several surgical procedures, such as the Latarjet procedure, Bristow transfer, remplissage procedure, allograft humeral head reconstruction, and partial resurfacing arthroplasty.”

Dr. Athwal’s research program has led to over 15 peer-reviewed articles on the biomechanics of shoulder instability and has had a substantial effect on the clinical management of these pathologies. In addition, the research has been presented at numerous national and international meetings.

Ultimately, Dr. Athwal’s research has led to an improved understanding of the advantages and disadvantages of the advanced surgical techniques used to manage complex shoulder instability, and has addressed the gaps in the biomechanical literature on complex shoulder instability reconstructive surgeries.