

Surge of Arthroscopic assisted and endoscopic surgical Universe in Arthroscopic Shoulder Metaverse

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Abstract

There has been an expansion of the arthroscopic metaverse with the inclusion of multiple extra-articular and periarticular procedures being done, especially in shoulder. Many shoulder surgeries which were previously done open or in a minimally invasive way have become amenable by arthroscopic and endoscopic extensions. The recent 5 years (2019–2023) research and developments have been incorporated in the following literature.

Keywords: Arthroscopic assisted shoulder surgeries, Shoulder endoscopy.

Extra-articular Remplissage

Advances in remplissage techniques done along with bankart repair have been on rise. The capsulotenodesis of infraspinatus has witnessed multiple extra-articular techniques like all suture knotless fixation. [1,2], double pulley [3] fixation, and trans-tendon fixation using PASTA repair kit. [4]. Few factors which are yet to be standardised include optimum distance between the two anchors and distance from the articular surface.

The tendon quality and pliability also plays an important intra-operative decisive factor apart from tendon bridge which profoundly affects the external rotation and thus the final outcome. The studies which delve into the mechanist principles and its interplay with neuromuscular components and hyperlaxity are the futuristic field to be researched. [4]. The subacromial burso-scopy gives an objective clear knot tying confidence during remplissage. [5]. A Level III systematic study concludes that

remplissage in addition to arthroscopic bankart repair in subcritical glenoid bone loss reduces the complication rates and has fewer complications as compared to latarjet stabilisation.

Extra-articular Shoulder Procedure of Latarjet and Coracoid Transfer

Surgeons have become more aggressive in treating shoulder instability. The previous indication of latarjet for failed bankart repair has been a thing of the past and advanced radiological evaluation and defined criterias have made coracoid transfer and Eden Hybinette procedure more common. [7-9]. The arthroscopic technique of latarjet introduced by la fosse has been a benchmark and many surgeons have added to the modifications to it with respect to both technique and instrumentation. The all all-biceps latarjet and tape fixation of bony block to glenoidal surface have been invented with a surge of extra-articular scope passage and more better arthroscopic orientations. [10-12]. The

key factor remains the associated learning curve with these endoscopic procedures and skills to manoeuvre a traumatic instruments near neurovascular bundles. [12].

Biceps / SLAP- Rrelated Procedures

Arthroscopic- assisted biceps tenodesis yields better results as compared to SLAP repairs. This has been on rise as SLAP repairs and arthroscopic biceps tenodesis have experienced an increased incidence of stiffness in early post-operative phase. [13,14]. Thus, it is becoming imperative to discuss with athlete population that arthroscopic assisted biceps procedures can be needed in overhead athletes and shoulder instability patients undergoing arthroscopy surgeries. [15,16].

Acromioclavicular Joint Repair / Reconstruction

There has been a flux of arthroscopic procedures with acromio-clavicular injuries. The arthroscopic- assisted procedures were described with dog-bone and later surgeons have incorporated all suture implants and or tendon grafts, especially for ACJ injuries Rockwood type 3 and beyond to decrease the implant-related complications in a subcutaneous bone-like clavicle. [17,18]. Even the distal

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Submitted Date: 10 Jul 2023, Review Date: 07 Oct 2023, Accepted Date: 11 Nov 2023 & Published Date: 30 December 2023

© Authors | Journal of Clinical Orthopaedics | Available on www.jcorth.com | Publisher Orthopaedic Research Group | DOI:10.13107/jcorth.2023.v08i02.598

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clavicle fractures which were treated with open procedures and plates fixations have been slowly replaced with arthroscopic assisted distal clavicle fixations with soft tissue or dogbone-like implants. [19]. This has drastically reduced the implant-related morbidity and need for second surgery for implant removal. The arthroscopic assisted procedures have proven early recovery as compared to open procedures. They have improved with arthroscopic assisted double row repair AC joint injuries trying to stabilize the vertical and horizontal stability and replicate the coracoclavicular ligament function. [20, 21].

Thoracic Outlet Syndrome and Suprascapular Nerve Release

Isolated suprascapular nerve lesions are common in spinoglenoid notch or suprascapular notch. Compression caused by cystic lesions of ganglions can be done easily arthroscopically and the release of suprascapular nerve release concomitantly with rotator cuff release has shown to yield better results. [22-24]. This endoscopic release has been reported via through endoscopic route below the supraspinatus muscle or via through the coracoid route tracing the brachial plexus [25]. Surgical decompression of brachial plexus is increasingly becoming common with an increase in diagnosis of thoracic outlet syndrome. [26]. Endoscopic decompression of brachial plexus is also indicated in plexopathy and with a decrease in retropectoralis minor space with scapular dyskinesia due to contracted pectoralis minor muscle. This endoscopic release of pectoralis minor tendon along with suprascapular and musculocutaneous nerve release has

been employed currently. [27]. The subclavius and scalene release has been gaining popularity with neurogenic thoracic outlet being diagnosed more often with improved clinical and radiologic investigations. [28]. Plexopathy caused due to clavicle fracture non-unions and hypertrophic callus is amenable to endoscopic brachial plexus decompression. Endoscopic approach provides specific decompression of medial or lateral cord depending upon pathology as well. [29,30].

Arthroscopic- Tendon Transfer of Latissimus Dorsi and Lower Trapezius

Chronic rotator cuff tears with fatty infiltration of muscle mass in supraspinatus and infraspinatus have been associated with poor functional recovery even with anatomical repair. This atrophied muscle nevertheless will not function even with repair as the degeneration is irreversible. Multiple tendon transfers have been described for rotator cuff tears. The latissimus dorsi tendon. [31,32]. Pectoralis minor tendon transfer and lower trapezius transfer [33] have been shown good results in anterosuperior and posterosuperior cuff tears. The open approach has been replaced with arthroscopic assisted procedures of tendon transfers thereby improving the functionality and morbidity of these open approaches. (Fig. 1).

Snapping Scapula Scapula Syndrome

Snapping scapula encompasses through a variable spectrum of symptoms ranging from mild intermittent pain and crepitus to debilitating pain and restriction of shoulder movements. Lushka's

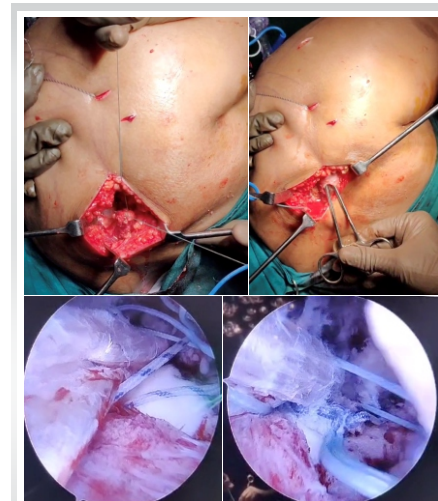


Figure 1: Lower trapezius preparation (a). Tunneling over infraspinatus for graft extension for lower trapezius transfer (b) and arthroscopic view of graft passage for humeral fixation (c and d) PL: peroneus longus, HH: Humeral head.

tubercle's, osteochondromas, fractures of scapula, and various bursitis can also present with snapping scapula syndrome. Open or endoscopic surgical treatment is indicated if the conservative management fails. Morbid open approaches can put spinal accessory nerve at risk during trapezius dissection for scapular superomedial tubercle excision. [34]. Endoscopic approach for scapulothoracic bursitis has provided significant mid-term and long-term relief. There have been modifications of adding pectoralis minor release along with superomedial scapular excision to treat snapping scapula syndrome. [35].

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

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Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Vishwakarma N, Biraris S. Surge of Arthroscopic assisted and endoscopic surgical Universe in Arthroscopic Shoulder Metaverse. *Journal of Clinical Orthopaedics July-December 2023;8(2):54-56.*