



Risotto Palmar Bursitis: A Rare Complication Following Triangular Fibrocartilage Complex (TFCC) Repair.

KEYWORDS

Rice, bursitis, Triangular Fibrocartilage, synovitis

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ABSTRACT

Risotto Palmar Bursitis is synonymous of rice body formation complicating chronic palmar bursitis which is a rare phenomenon usually associated with infective or inflammatory arthropathies. It is regarded as a chronic inflammatory response to infective commonly Mycobacterial or inflammatory arthropathies like Rheumatoid arthritis. However, rice body formation in response to bioabsorbable suture material used in arthroscopic repair surgeries is a rare event in itself. We report a case of young female presenting with palmar swelling, pain & fever; following history of arthroscopic surgery for wrist injury. She underwent ultrasound & contrast MRI of wrist joint which revealed palmar bursitis with multiple loose bodies and synovial thickening. Previous operative details showed the use of bioabsorbable suture anchor in the repair procedure. Surgical debridement of the loose bodies was done which followed by pathological study showed inflammatory rice bodies of acidophilic centre surrounded with lymphocytic infiltrates.

Rice body bursitis is a rare chronic inflammatory synovial disorder with varying etiologies most commonly rheumatoid arthritis and mycobacterial infection. Risotto sign has been used as a synonym to rice body, named after a north Italian rice dish cooked in a broth of vegetables or meat. So here also the MRI features show floating loose bodies in fluid simulating cooked rice in broth. It can be a manifestation of response towards bioabsorbable suture material as in the case described here.

Case Report:-

A 25 years of age young female came to the department of orthopaedics with complaint of swelling over her right palm with pain and fever. There was restriction in complete finger flexion with mild tenderness on palpation. The swelling was growing insidiously since last 2 months and she had been taking on & off antibiotics as well as pain killers on *sit opus sit* (SOS) basis, upon consultation from a local physician. Past history of any trauma or intervention revealed background of wrist surgery for chronic wrist pain 1year back. Her operative details pointed towards arthroscopic repair of Triangular Fibrocartilage on the same wrist, with anchor suture using bioabsorbable material that is PLLA (Poly-L Lactic Acid). Biochemical markers like Rheumatoid factor, C-Reactive protein and Erythrocyte sedimentation rate & white blood cell count were within normal limits.

Preliminary radiograph of the patient was inconclusive and showed mild soft tissue swelling without any obvious bony involvement. Ultrasound was done using high frequency 7 to 14 MHz linear transducer (Accuson S2000, Siemens, Erlangen, Germany). It showed distension of both radial & ulnar bursae with oblong shaped floating soft tissue structures along with synovial thickening (Figure 1A). Cortical surfaces of the underlying bones were irregular due to inflammatory synovitis (Figure 1B). The fluid content was diagnostically aspirated under ultrasound guidance and sent for culture of Acid fast bacillus which was found to be negative.

Case was further investigated with a contrast enhanced MRI of the wrist for anatomical and signal based characterization of the lesions that were seen floating in the palmar burasae. MRI was done using 1.5T MRI (Siemens Avanto, Erlangen Germany), which correlated, both anatomically as well as morphologically with ultrasound, showing distended palmar bursae with multiple intermediate signal intensity capsule like structures surrounded by high signal fluid which were mimicking rice in liquid broth 'Risotto Sign', hence called by the name risotto bursitis. There was complete post contrast enhancement (Figure 2).

Surgical debridement of the palmar bursa was done and macroscopic appearance of the rice bodies resembled shiny rice grains variable in size from 2 to 12 mm (Figure 3). Microscopic study suggested these rice bodies made up of inner core of acidophilic material surrounded by lymphocytic infiltrates (Figure 4). Post debridement progressive relief to the patient was seen in the form of resolution of the complete flexion of palm and fingers with absent tenderness.

Discussion:

There has been a dramatic change in suture anchor material with a shift from metallic to bioabsorbable material for tendon to bone fixation. With increasing utility, there are incremental case reports of arthroscopic repairs using bioabsorbable sutures and decreasing rates of complications/failures. These sutures are either natural or synthetic materials which are compatible with body tissues and not expected to produce an inflammatory/ foreign body response. [1] The polymerized sutures are complex chains of monomeric units which are joined together by covalent bonds between repeats of same monomer or using different monomers. [2] Examples of these are Polyglactin; Vicryl (polymer of 90% glycolide & 10% L-lactide), Poly-L-Lactic acid suture (polymer of L-lactic acid) and Polyglycolic acid sutures (PGA; Dexon). Molecular weight and crystallinity determines the mechanical properties of absorbable suture materials. [1] Degradation of the suture materials have

been studied by in vitro & in vivo studies which revealed the hydrolysis of ester bond as the major chemical event in degradation. [3][4][5] Hydrolysis is initiated by water, but due to initial undissolved macromolecules, there is building up of acidic environment, increasing the rate of hydrolysis. [3][6] This cycle leads to implant structural instability and the monomers are phagocytised by local immune response comprising macrophages and polymorphonuclear cells. [2]

Poly-L Lactic acid suture is used in suture anchor manufacture for multiple arthroscopic surgeries involving rotator cuff repair, anterior cruciate ligament repair and TFCC repair surgeries because of its slower biodegradation property that is 10 to 30 months as compared to PGA & Polyglactin sutures which are dissolving in 3 to 4 months. [7] These suture material are known to cause chondral defects, osteolysis, synovitis and granulomatous reactions due to severe immune response. [6] Some authors have suggested that PLLA may activate the immune as well as the complement pathway leading to such complications. However, rice body formation in palmar bursitis as a response to PLLA suture implant is a rare event.

Rice body formation is usually associated with rheumatoid, seronegative arthritis, septic arthritis or tubercular arthritis. [8] Sivan et al have shown a case of rice body formation after PLLA suture anchor in rotator cuff repair complicating subacromial and subdeltoid bursitis. [9] Etiology behind intra-articular rice body formation is obscured. It is believed that they are related to synovial microinfarction leading to synovial shredding, sloughing and encasement by synovial fluid derived fibrin causing its polished rice appearance. [10] These loose bodies were of intermediate signal intensity on both T1 & T2 weighted MRI with no post contrast enhancement. Surrounding enhancement was seen suggestive of synovial inflammation and abscess formation. Honey combing pattern of bursitis was seen on Proton density & T2 weighted sequences because of intermediate intensity rice bodies and surrounding bursal fluid.

Conclusion:

There has been a paradigm shift in joint instability arthroscopic surgeries employing metallic sutures towards the use of bioabsorbable suture anchor materials. There are many case reports of suture related complications presenting as pain or stiffness which is of high index of suspicion regarding suture anchor failure. However, it is a first case report of rice body synovitis following TFCC repair. The operating surgeon should take adequate care towards proper insertion of anchors to limit such complications.



Figure 1 A, B

Figure 1. High Resolution ultrasound of the wrist joint. (A). done using 9MHz frequency probe, showing distended radial (white arrow) & ulnar bursae (asterisk) with floating oval shaped synovium "Rice bodies" within. (B). USG done with 14 MHz frequency probe showing mild cortical irregularity of the lunate (white arrow) and triquetral bones.

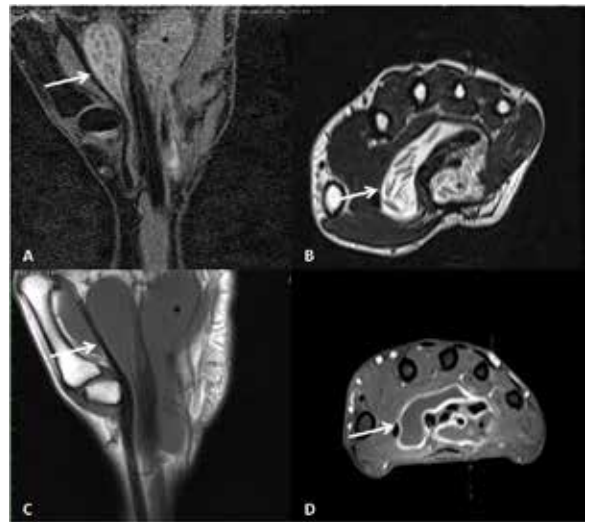


Figure 2 A,B,C,D

Figure 2. MRI showing distended radial (white arrow) & ulnar bursae (asterisk). (A). Coronal T2-GRE and (B). Axial T2-FSE sequences showing well defined capsule shaped intermediate signal intensity loose bodies surrounded by fluid. (C). Coronal T1-w image showing intermediate intensity distended palmar bursae, with peripheral post contrast enhancement seen in Axial T1-w post contrast MRI (D).

Figure 3



Figure 3. Gross operative specimen, post debridement; showing conglomerated shiny 2-12 mm rice bodies.

Figure 4

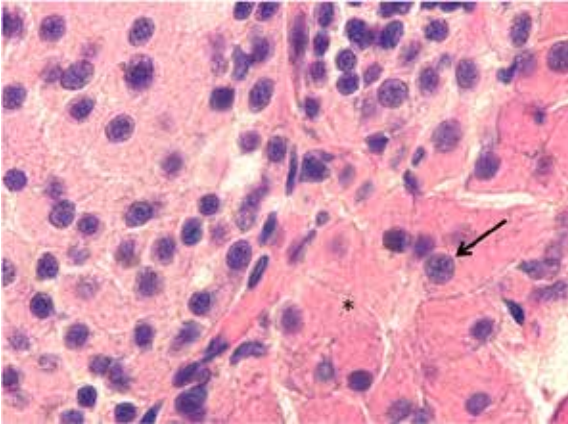


Figure 4. H & E stain photomicrograph (25 μ magnification), showing background of acidophilic material (asterisk) with scattered lymphocytic infiltrates (white arrows).

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