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Arthroscopic Diagnosis and Treatment in Type II Superior Labrum Anterior and Posterior (SLAP) Tear: A Case Report

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ABSTRACT

Superior labrum anterior and posterior lesions (SLAP) is one of shoulder pathologies caused by acute trauma or repetitive stress. Type II SLAP is the most common type at around 50% cases. In limited setting hospital where MRI isn't available, arthroscopy may diagnose and manage SLAP lesion in one procedure. This case report aims to discuss arthroscopy as diagnostic and management modality in type II SLAP tear. A 56-year-old man came with pain of the right shoulder after playing badminton. There was a "clicking" sensation when raising the shoulder and difficulty in shoulder flexion and abduction. There was no abnormality on x-ray examination. The patient was treated conservatively and given platelet rich plasma but the complaint persisted. MRI couldn't be performed due to limited facilities. The patient was then advised to undergo arthroscopy. During arthroscopy, the patient was diagnosed with type II SLAP tear. The tear was then repaired with suture anchor of the labrum to glenoid under arthroscopy direction. Arthroscopy as a modality for diagnosis and management of SLAP is a minimally invasive procedure that can provide direct visualization and evaluate other shoulder pathologies. Arthroscopy was said to provide good recovery results functionally or anatomically so that it could increase patient satisfaction. Suture anchors in arthroscopy had also been shown to provide more biomechanical stability. Diagnosis and management of type II SLAP tear with arthroscopy could provide many advantages. Arthroscopy could be considered as the primary modality in cases of SLAP lesions.

Keywords: arthroscopy, diagnosis, treatment, type II SLAP tear

INTRODUCTION

Superior labrum anterior and posterior lesions (SLAP) tear is one of the shoulder pathologies that is often caused by acute trauma or repetitive stress. Injury to the labrum genoid is also a major cause of shoulder pain, especially in athletes involved in repetitive overhead activities.[1] Not only be isolated, SLAP tears can also be accompanied by other shoulder problems such as instability, rotator cuff tears, or other biceps tendon disorders. This case will certainly limit the patient's daily living activities.[2] SLAP tears have been classified by Snyder from types I - IV with type II SLAP being the most commonly found type, which is around 50% of cases. Type II is also

interesting because it is characterized by labral and biceps anchor detachment from the glenoid rim.[3] SLAP tear cases have recently increased from 0.31 cases per 1000 people per year to 1.88 cases per 1000 people in a 7-year period. The study also showed that there was an average annual increase of more than 20% of cases.[4] The incidence of SLAP tears tends to occur at the age of 20 to 29 and 40 to 49, indicating that SLAP tears often occur at productive ages so that diagnosis and management must be appropriate to maintain patient productivity.[5]

There have been various clinical trials conducted to diagnose SLAP tears, but until now there has been no established gold standard. However, it is said that the central element for diagnosing SLAP tear cases is the implementation of radiological examinations such as Magnetic Resonance Imaging (MRI), Computed Tomography Angiography (CTA), or Magnetic Resonance Arthrography (MRA).[6] However, it is unfortunate that not all hospitals have these imaging modalities. In addition to establishing a diagnosis, there are currently various types of management modalities for various types of SLAP tear lesions. Current SLAP case management is also not only based on the type of lesion but also the functional level and age of the patient.[2] SLAP tear surgery can be performed non-operatively or operatively. If the patient is unsuccessful with non-operative management, then operative action will be continued. However, the establishment and management of SLAP tear cases operatively does not provide complete success. According to research, as many as 16% of SLAP tear repair cases can experience surgical failure and require revision. Seeing the failure in SLAP cases, effective diagnosis and management are needed.[7]

With the development of diagnosis and management, intervention of SLAP tears cases with arthroscopy are well recognized in recent times. There is an increasing number of SLAP tears cases diagnosed and treated simultaneously with arthroscopy. This is certainly a good consideration because until now the ideal diagnosis and treatment for SLAP tears therapy has not been explained.[8] The study stated that management with arthroscopy can provide satisfaction of up to 90%. In addition, as many as 87% of patients also rated the results they felt as good or very good. Management with arthroscopy can return 74% of patients to their pre-injury competition level, while 92% of patients said they were able to return to their previous sports with arthroscopy.[9] Although most patients have excellent clinical outcomes, identifying isolated SLAP tears with arthroscopy can be challenging due to the uncertain sensitivity and specificity of diagnostic tests, as well as the high rate of concomitant shoulder pathology.[3]

Arthroscopy can be considered as a diagnostic and treatment modality in SLAP tear cases compared to MRI, MRA, or CTA. Currently, the concomitant diagnosis and treatment given in SLAP tear cases are not widely reported. Seeing the increasing cases of SLAP tears, especially type II, it is important to assess the best modality for patients. This case report aims to further review arthroscopic diagnosis and treatment in type II Superior Labrum Anterior and Posterior (SLAP) tears.

CASE PRESENTATION

A 56-year-old man came to the orthopedic clinic of Bhayangkara Hospital, Denpasar with complaints of pain in the right shoulder after playing badminton 1 week earlier. The pain occurred when the patient swung his arms while playing. The patient felt a "clicking" sensation when raising the shoulder. In addition, the patient also complained of difficulty in doing shoulder flexion and abduction. The patient denied having a history of certain diseases or allergies. Similar complaints were previously denied. From the physical examination, blood pressure, heart rate, respiratory rate, temperature, and oxygen saturation were found within normal limits. On local examination of the right shoulder, inspection did not find swelling, deformity, wound, or bruise. On palpation examination, tenderness

was found at the subacromial region without crepitation with a capillary refill time <2 seconds. While on move examination, active range of motion was found limited due to pain and there was a clicking sensation when raising the shoulder. The Labral Tension Test and O'brien's Test were positive. The patient then underwent a right shoulder x-ray examination with results as shown in Figure 1. There was no abnormality found on x-ray examination. Magnetic Resonance Imaging (MRI) couldn't be performed due to limited facilities at our hospital.

Figure 1. Results of the right shoulder x-ray examination

The patient was then treated conservatively with the painkiller Etoricoxib 90 mg once daily. In addition, the patient also received platelet rich plasma (PRP) for 3 months. However, improvement hadn't been achieved and the patient felt he could not play badminton anymore. The patient was then advised to undergo arthroscopy to confirm the diagnosis and treat his condition. During arthroscopy, it was found that both superior labrum and biceps anchor are detached from glenoid. The patient was diagnosed with type II SLAP tear. The tear was then repaired with suture anchor of the labrum to glenoid under arthroscopy direction. During the recovery phase, the patient underwent medical rehabilitation with physiotherapy. After a 1-month follow-up, the patient had shown improvement with reduced pain. The patient said he was satisfied and is currently intensively training his muscles to be able to play badminton again.

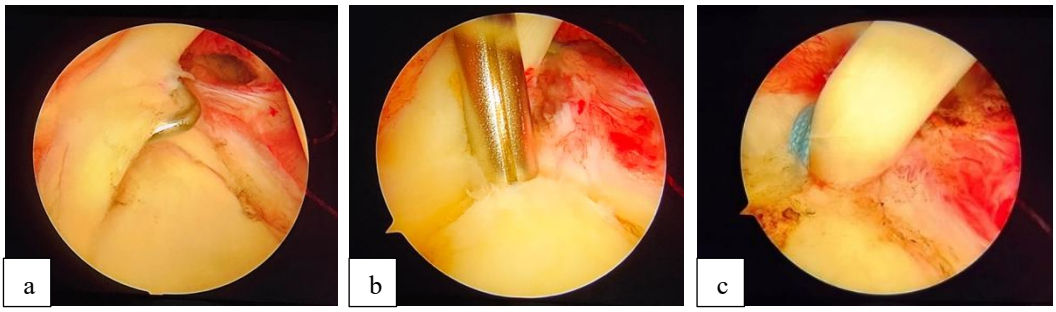

Figure 2. Arthroscopic Findings in Type II SLAP Tear: (a) Labral detachment confirmed by probe testing, (b) Anchor placement using sleeve (c) Suture made anchored by bioable screw

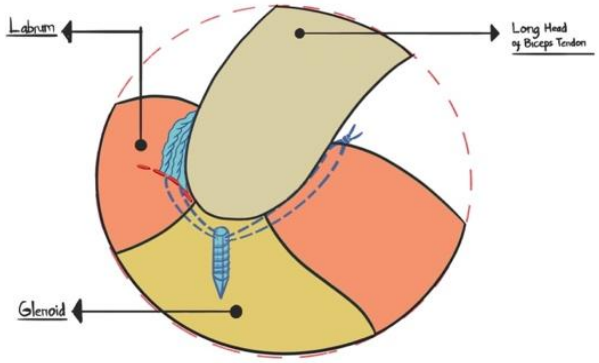

Figure 3. Illustration of Suture Anchor Technique in SLAP Repair

DISCUSSION

Superior labrum anterior and posterior lesions (SLAP) tears are one manifestation of shoulder pain that is often caused by acute trauma or repetitive stress.[1] Kim et al explained that superior glenoid labrum tears

are associated with the long head of the biceps.[10] Snyder et al then created the first grouping system and initiated a further understanding of the pathological anatomy of SLAP. Based on its classification, SLAP was initially divided into types I – IV. Type II is the most frequently found type with a prevalence reaching 50% of all total SLAP cases.[3] Type I is characterized by degenerative damage to the free edge of superior labrum with intact peripheral attachment and stable biceps tendon anchor. Type II is also characterized by degenerative damage, but with detachment of the superior labrum and biceps from the glenoid causing an unstable labral-biceps anchor. Type III is characterized by a bucket-hander tear of the superior labrum with intact biceps tendon anchor. Meanwhile, type IV includes displaced bucket-handle labral tears that expand to the biceps tendon root.[11]

The diagnosis of SLAP tears is a challenging procedure because there are no special clinical findings correlated with this type of tears. SLAP tears are often correlated with other shoulder pathologies such as rotator cuff tears, impingement, and other soft tissue injuries.[2] Patients often complain of mechanical symptoms such as shoulder pain accompanied by a clicking or popping sound especially during the cocking phase of throwing. This lesion can be related with other shoulder pathologies that cause complaints such as weakness and instability.[1] This is consistent with cases where patients complain of shoulder pain accompanied by a "clicking" sensation when raising the shoulder.

The physical examination begins with an examination of glenohumeral and scapulothorax motion. The shoulder's external rotation capacity may be increased while internal rotation capacity of the shoulder may be decreased. This manifestation is called glenohumeral internal rotation deficit (GIRD), which should be examined with the patient lying down with the shoulder positioned at 90 degrees of abduction followed by flexion of the respective elbows while the scapula is stabilized to eliminate scapulothorax motion. Each glenohumeral motion will be assessed to assess the instability of the joint.[1] Specifically in cases of SLAP tears, there are several specific physical examinations that are usually sensitive but not specific. Several examinations such as active compression/O'Briens's test, O'Driscoll's dynamic labral shear test, biceps load test II, labral tension test, and speed's test can be positive in cases of SLAP tears. From these examinations, only biceps load test II can identify patients with SLAP lesions alone without other accompanying pathologies.[12,13] In this case report, special tests such as O'Briens's test and labral tension test were found positive, thus strengthening the suspicion of SLAP diagnosis.

The patient has undergone an x-ray examination and was found to be within normal limits. Unfortunately, the patient did not undergo an MRI examination to detect SLAP tears due to limited hospital facilities. As is known, Magnetic Resonance Imaging (MRI), Computed Tomography Angiography (CTA), or Magnetic Resonance Arthrography (MRA) are the main modalities for detecting SLAP tears.[6] Due to limited support, the patient was planned to undergo an arthroscopy procedure. The patient had undergone conservative therapy with analgesics and platelet rich plasma (PRP) therapy for 3 months. PRP is an autologous derivative of whole blood that is rich in growth factors so that it can induce healing of tendons, ligaments, bones, and muscles.[14] However, it is unfortunate that the patient did not experience improvement in symptoms after the initial therapy given. Therefore, arthroscopy in patients is not only expected as a diagnostic tool but also as a direct therapy.

Arthroscopy can provide a direct method for visualizing shoulder structures and other pathologies. Compared with MRI or MRA, arthroscopy can confirm type II SLAP lesions with direct visualization and assessment of labral pathology.[15] Most importantly, arthroscopic diagnosis allows for the evaluation and concomitant treatment

of concomitant shoulder pathologies, such as rotator cuff tears, which often occur with type II SLAP injuries. This diagnostic capability will improve pain management and reduce overall shoulder dysfunction. Based on the results of arthroscopy examination, it was found that the patient was classified as a type II SLAP lesion with the characteristics of both superior labrum and biceps anchor are detached from glenoid.[3]

The treatment of type II SLAP lesions is currently controversial and depends on patient characteristics. In young age patients with high demands for overhead lifting, repair of type II lesions is suggested to prevent the instability of glenohumeral. While in middle-aged patients, management of type II SLAP lesions with other shoulder pathologies is expected to provide good functional outcomes and patient satisfaction.[16] The management of type II SLAP with arthroscopy has become an increasingly used and popular treatment for patients with symptomatic type II SLAP tears who fail the non-operative treatment. SLAP repair, debridement, arthroscopic biceps tenodesis or tenotomy have been done for the treatment of SLAP tears. Numerous techniques have also been developed in arthroscopic techniques. SLAP repair remains a very good choice especially for isolated SLAP tears with good results.[3]

The latest technique of arthroscopy as an operative procedure has been widely developed for the restoration of the anatomy of the biceps anchor and superior labrum to reduce complications and improve patient outcomes. The technique used should be able to effectively fix the arthroscopy to avoid excessive tension on the biceps anchor, which has the potential to improve clinical outcomes.[17] Post-operative recovery of arthroscopy in type II SLAP lesions has a different recovery time for each individual. Studies have shown that many patients may still experience pain and limitations for several months after surgery.[18] However, the rate of return-to-sport with arthroscopy techniques in type II SLAP tears can be favorable according to age, rehabilitation, and activity level.[19]

Arthroscopic management of type II SLAP lesions provides relevant advantages to optimize the results of shoulder surgery in patients. Considering the previous explanation, the main advantage of the arthroscopic approach is its ability to directly visualize the shoulder joint, allowing precise identification of labral tears and associated pathologies. Visualization is directly beneficial for targeted repair, thus significantly improving the overall clinical outcome.[18,20] In addition to the diagnosis and concomitant management, arthroscopy is also a minimally invasive procedure. Compared with open surgery, soft tissue trauma is more minimal so that the level of postoperative pain is lower with a faster recovery time. Patients with type II SLAP tears with arthroscopy also have a high level of satisfaction. Arthroscopy can allow the treatment of other shoulder pathologies such as rotator cuff tears, which can improve the functional recovery of patients.[19]

The patient in this case used arthroscopy technique with suture anchors. Suture anchors have been shown to provide more biomechanical stability compared to traditional methods. Suture anchors can facilitate secure attachment of the labrum to the glenoid and restore its anatomical position and function. This is certainly important especially in patients who like sports where the integrity of the labrum is very important for shoulder stability.[21] From an anatomical perspective, arthroscopy technique allows proper alignment and restoration of the biceps and superior labrum anchors for joint stability.[20] Suture anchors are expected to allow for a rapid return to activity after rehabilitation.[19] This patient has undergone a 1-month follow-up of treatment and has undergone rehabilitation. Based on the examination, the patient experienced improvement in condition with reduced pain. The patient also had a fairly good level of satisfaction with a high desire to return to sport.

CONCLUSION

Type II SLAP tear is the most commonly found type of SLAP. Diagnosis and management of type II SLAP tear with arthroscopy can provide many advantages such as direct visualization, can evaluate other shoulder pathologies, minimally invasive procedures, and good functional and anatomical recovery so as to increase patient satisfaction. The arthroscopy technique as a concomitant diagnosis and management is expected to be used as a primary modality in cases of type II SLAP tear.

Declaration by Authors

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