SHOULDER IMPINGEMENT SYNDROME

Ever experienced your shoulder starting to lose its "strength", especially when trying to reach out to a top shelf in the kitchen or closet? Or rather you felt the resistance and pain during overhead movement and not the actual loss of strength. Worse still, you wake up in the morning with a "paralyzed" shoulder that will take a few minutes until you are able to brush your teeth using your good hand.

Acute and chronic shoulder pain

These are the common and hardening experiences I had dealing with my right shoulder impingement syndrome. Statistically, shoulder pain is the third most common complaint in orthopaedics clinics; back pain is the first, followed by knee pain. When seeing a patient with shoulder pain for the first time, doctors will ascertain whether the pain is acute or chronic. Acute pain is defined as pain that suddenly happens a few days ago, while chronic pain happens for more than a few weeks or months, which gets worse. Common causes of acute shoulder pain are usually precluded by trauma to the shoulders, thus causing dislocation of the shoulder joint or fracture. Shoulder impingement syndrome falls in the category of chronic shoulder pain together with frozen shoulder and arthritis of the shoulder joint.

Presentation and symptoms of shoulder impingement

A full detailed history will be asked to determine when and how the injury happens and how it affects the motion and mobility of the patient. A classic nature of shoulder impingement syndrome often begins with the patient feeling slight pain of the shoulder and having difficulty to lift the shoulder above or to do overhead motion. Some will feel the pain going away after a while and others feel the pain and difficulty progressively worsen and slowly affect their daily chores such as attempting to take plates to your kitchen cabinet. Over time, the pain becomes more frequent even when sitting up or lying to the side of the painful shoulder at night. Eventually, the pain comes even when you are maneuvering the steering wheel or even writing or typing in front of your working desk. Attempting to carry a heavy load

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(which you were always able to do easily in the past) became difficult as the shoulder pain prevents you from doing it. Patients often describe the pain as numbing, pulsating pain; some shooting pain (pain radiating either to the neck above or the elbow and forearm below). I often described it as a harmless, innocent pain that eventually left unchecked, became part of me and disrupted my daily chores and work.

What causes it?

There are many causes of shoulder impingement syndrome. To understand it better, a simplified anatomy of the affected shoulder part would be explained here:

1. The subacromial space is the below the acromion bone
2. Rotator cuff muscles of the shoulder. Muscles are responsible for the motion of the shoulder joint and are contents of the subacromial space
3. The roof of the space consists of bone; namely the acromion, the acromioclavicular joint and the clavicle
4. Subacromial bursae; thin like membrane that functions as a layered lubricant for the rotator cuff tendons to glide easily
5. The definition of impingement is encroachment, the collision of fixed structures in a space resulting from movement.

From the understanding above, we can divide the causes of the impingement syndrome into two:

1. reduced subacromial space or
2. the contents of subacromial space had increased in size

Examples of reduced subacromial space are:

1. old fractures of acromion or clavicle
2. acromioclavicular joint (ACJ) arthritis
3. Hook-shaped acromion

Whereas in increased size of the subacromial contents:

1. rotator cuff tear;
2. tendinopathy (inflamed tendons)
3. bursitis (inflamed tendon sheath)

Diagnosing Impingement syndrome

Diagnosing impingement syndrome is rather straightforward but identifying the cause needs experienced hands. After getting the history and nature of the pain, we will do three initial series of tests

1. **LOOKing** both shoulders for any scars or bumps (that may indicate old fracture) and deltoid muscle wasting
2. **FEELing** the bony prominences of the shoulder joint to locate the tender areas that caused the impingement.
3. **MOVE** both shoulders at the same time to compare the range of motion and identify which motion causes the greatest restriction. A classic painful arc can sometimes be seen; initial lifting of the hand is not painful, but when it reaches about 60 degrees to 120 degrees, the patient will have difficulty doing it but feel relief after surpassing the 120 degrees mark.

After the initial tests, there would be two series of special tests; one is to confirm that the patient is suffering from impingement syndrome, and the other is to identify which structures of the shoulder caused the impingement. By this time, the diagnosis and the cause of the impingement can be identified. The next step would be dependent on the discussion between the patient and the treating doctor.

Imaging studies

Now we have ascertained the diagnosis of impingement syndrome, the next step is to know what causes it. There are few imaging modalities to help us:

1. **X-ray:** X-rays of the shoulder can show hooked acromion bone, degenerative changes of acromioclavicular joint and calcific (calcified) tendinitis
2. **MRI (with or without contrast):** the best imaging modalities that can show subacromial space soft tissues injuries (tendons; bursae) together with any joint and bony changes.
3. **Ultrasound:** in good and experienced hands, ultrasound can detect soft tissue changes (tendon tears) even in a clinic setting and supplement it with images from an x-ray shoulder.

Treatment options

After going through the history, presentation and the necessary imaging studies, we have reached the diagnosis and the root cause of the problem. The next step in management needs a frank and thorough discussion between you and your physician/ surgeon.

The good news is majority can be managed non-operatively by

- activity modification
- stretching & strengthening exercises

- **painkillers (NSAIDS; paracetamol; opioids)**
- **subacromial corticosteroid injection**
- **PRP (platelet rich plasma)**

Physiotherapy plays an important role in all aspects of managing impingement syndrome. Whereas most patients would be fine with painkillers, physio will further enhance the recovery with stretching and strengthening exercises. Application of hot/cold packs, TENS (transcutaneous electrical neuro stimulation) and even laser is also part of physiotherapy that most of us are unaware of.

Subacromial corticosteroid injection

Some patients, unfortunately, come with acute pain that requires immediate pain relief; that is when the role of subacromial injection comes in. I usually reserve injections when painkillers and physiotherapy do improve patients but he/she feels unsatisfactory with it. The most common injected cocktails are the local anesthetic (lignocaine 1%) and steroid (Triamcinolone acetate). Despite having immediate relief, patients must be wary that steroids would only take effect after three days and some will even have increased pain due to steroid flares that will go off after a few days. It is advisable to minimize the usage of the affected shoulder/upper limb for two weeks to obtain the maximal effect of the injection.

Once all the above treatments fail or are unsatisfactory, the patient may opt for protein-rich plasma (PRP) injection or even surgery.

PRP

Initially an experimental procedure, PRP is gaining traction in treating shoulder injuries, especially rotator cuff tears. PRP has a rich amount of platelets and even growth factors that help to alleviate the inflammation of the surrounding tissue and elevate the healing of the injured tendons/muscles. A little warning though as the procedure and the post-injection period can be a painful experience, so some and the shoulder must be on arm sling for a total of 4 to 6 weeks.

Arthroscopic subacromial decompression (ASAD) and proceed

ASAD is reserved for patients who do not respond to conservative treatments and injections, while "proceed" means that the surgeon may need to repair the torn cuff during surgery. Do note that this surgery is minimally invasive using a scope and general anaesthesia, and postoperatively, patients must adhere to the strict physiotherapy regime to ensure excellent results. Personally, I reserved this treatment only if patients have massive rotator cuff tears or he/she is an athlete that needs to have a complete recovery to go back to their professional competitive games. Not many of us can have the pleasure of time and discipline to undergo surgery and follow the strict personal physiotherapy regime.

In summary, shoulder impingement syndrome is a common problem that can be easily diagnosed and mostly can be treated conservatively. A minimally invasive surgery should only be the last option if all other methods fail.