Quick Reference Guide: Rotator Cuff

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Rotator Cuff Guide Highlights

Use this guide as a quick-reference resource. Here's a summary to learn how to:

- Identify rotator cuff injuries
- Improve treatment outcomes
- Market to rotator cuff patients

Common Causes of Rotator Cuff Injuries Include

- Repetitive overhead movements making rotator cuff injuries common across a diverse patient population.[1]
- Trauma such as falls, rapid humeral deceleration with throwers, or high resistive forces applied through the shoulder.[1]
- Individuals over the age of 60 are more prone to rotator cuff injury.[1]
- Subacromial bone spurs can contribute to impingement, leading to an increased likelihood of rotator cuff pathology.[5]
- Weakness or imbalance of muscles surrounding the shoulder joint.[1]

Treatment Strategies:

#1 Identify and address biomechanical dysfunction at shoulder and thoracic spine.
#2 Estimate phase of the tendinitis/ tendinosis
#3 Determine cause(s) of range of motion (ROM) restrictions.
#4 Institute appropriate tensile loading program based on the stage of tendon pathology
#5 Control pain and inflammation

Modalities for Shoulder Impingement:

- Transcutaneous Electrical Nerve Stimulation (TENS)
- Neuromuscular stimulation (NMES)
- High-intensity laser therapy
- Traction (for cervical impingement)
- Radial Pressure Wave Therapy

Charging for Treatment:

3-Treatment Package: $60 per visit ($180)

6-Treatment Package: $50 per visit ($300)

10-Treatment Package: $40 per visit ($400)

About the Rotator Cuff

The rotator cuff is a group of muscles and tendons around the shoulder joint that keep the upper arm bone in the shoulder socket.[1] Various levels of injury can occur to the rotator cuff and surrounding tissues, including tendonitis, chronic tendinopathy, partial tears, full-thickness tears, and bursitis. Tendonitis commonly occurs due to trauma or overuse and can progress to a chronic state of tendinopathy. Once in this chronic stage, the tissue integrity of the rotator cuff may become weak and can lead to further tearing.[2]

Rotator cuff tears are extremely common, affecting at least 10% of those over the age of 60 in the United States, which equates to over six million cases per year.[3] It has been shown that 23% of asymptomatic shoulders have tears with the percentages increasing each decade after 50 years of age.[4]

Cuff pathology is considered a progressive disorder. Twenty percent of asymptomatic tears are progressive, and do not get smaller with time.[3]

Industry estimates suggest rotator cuff surgeries are performed in the US on 75,000–250,000 patients per year and the failure rate for surgical repair of rotator cuff tears is between 25% and 90%.[3] Fortunately, patients with failed repairs report satisfaction levels and outcome scores that are nearly indistinguishable from those whose repairs are intact.[3]

A number of retrospective case series and one randomized controlled trial have suggested that nonoperative treatment of full thickness rotator cuff tears may be successful in some patients.[3]

Rotator Cuff Injury Symptoms

- A dull deep shoulder ache
- Discomfort with overhead movement and with moving the arm behind the back
- Pain that disturbs sleep
- Arm weakness

Treatment Strategies for Rotator Cuff and Tendon Pathology

Plans of care for patients dealing with shoulder pain can vary from weeks to months depending on the specific pathology and stage of the condition (pain acuity).

Additional factors that can impact outcomes and length of care can include the patient's age, general health, mental status, and level of desired functional return.[6]

Thoughtful consideration should be given to these factors when making a prognostic plan of care for any shoulder patient.

Pain reduction and restoring range of motion (ROM) are usually the top priorities for most shoulder conditions. Getting pain under control is paramount to improving ROM and function and is also a critical component of gaining patient trust and improving patient compliance.

How important is it? In today's climate of high deductibles and co-pays, approximately 20% of tendinopathy patients self-discharge within the first three visits, while 70% of patients fail to complete their full plan of care. A white paper from Marquette University states that a lack of immediate results is one of the leading causes of high attrition rates. Data suggest that high symptom severity and low functional ability increase the rate of self-discharge.[7]

Educating patients that conservative care can help most shoulder problems is as important as proving it. Clinicians' choices to address problems with pain, ROM, and functional deficits are based on various factors, including the specifics of the patient profile and diagnosis, as well as the technology they have at their disposal.

When addressing rotator cuff pathology, clinicians should be mindful of five basic components.[8]

#1 Identify and address biomechanical dysfunction at shoulder and thoracic spine

- Ensure there are no restrictions at the shoulder girdle and glenohumeral joint that may be contributing to impingement.
- Review radiographs and MRIs to identify external, bone spurs and soft tissue abnormalities.
- Carefully assess the cervical and thoracic spine for pain generators, hypomobility, and radicular complaints.
- During the postural screen be aware of poor scapular position and/ or glenohumeral positioning that may contribute to impingement.

#2 Estimate phase of the tendinitis/ tendinosis

An accurate description of early tendon pain is important. Acute injuries can be framed in one of three phases.

- **Early phase** involves pain only after activity without significant loss of range. Pain usually resolves when activity stops. If mechanics and or tendon loading activities are not corrected, tendon irritation can progress.
- **Moderate** pathology presents with extreme exertion and lasts one-two hours after activity. As it progresses, pain may be present with moderate activity and last four-six hours after exercise.
- **Severe** pathology will present with pain during any activity that rapidly increases with continued activity. Pain can last 8-24 hours after exercise. Eventually all daily activities become painful.

Chronic tendon pain lasting more than six months falls into the tendinosis category.

This is a state where a tendon physically starts to change. These changes may include hypoechoic areas as well as general thickening of the tendon evident on ultrasound.[9] This pathology requires a careful loading program that focuses on high load, long duration resistive activities.

#3 Determine appropriate focus of treatment

This will be based on how the patient is presenting. Acute pain will require rest, education, and treatments to address inflammation. More chronic conditions will require progressive loading programs.

#4 Institute appropriate tensile loading program based on the stage of tendon pathology.

#5 Control pain and inflammation

Any number of modalities could be used to help in this area. A recent meta analysis of 177 trials that reviewed 20 treatment options for addressing subacromial dysfunction concluded that six modalities/ treatments had a high probability of being most effective, in the short term, for pain and function.

THESE INCLUDED:[29]

- Microcurrent (MENS) (TENS)
- Acupuncture
- Manual therapy
- Exercise
- Exercise plus manual therapy
- Laser therapy

Multi-modal solutions for your practice

High-intensity laser and extracorporeal shockwave technologies both have the ability to change pain quickly and restore range of motion, albeit via different mechanisms.[13,14] These devices should help restore ROM and reduce pain more effectively than exercise alone. A meta-analysis by Steuri et al. concluded that shoulder exercises should be part of the treatment program but that adding laser or shockwave therapy can provide an additional benefit to patients.[15]

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Thoracic Pain/ Hypomobility

Poor posture has the potential to negatively impact scapular mechanics.[12] Pain and stiffness in the thoracic spine and/ or muscles around the scapula can be components of postural dysfunction. Therefore, modalities that help address pain in this area may help improve underlying components of non-traumatic shoulder pain.

The Intelect® RPW 2 shockwave therapy system has Spine Actor attachments that are specially designed to address painful muscles around the spine. For those muscles around the scapula, the Periactors are ideal for treating hard to reach soft tissue interfaces around the edges of the scapula.

Both groups of these attachments can have the frequency and intensity of the treatment adjusted to meet individual patient needs.

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High-intensity laser therapy is useful in helping to relieve pain in this area as well. Use of high-intensity lasers has the ability to impact pain quickly which may be beneficial when addressing pain in the thoracic spine area.[11] Since most LightForce treatments only require a few minutes, it is an ideal adjunct to most manual therapies.

Yu et al. recommends a multimodal approach to control pain that can include treatments like TENS and superficial hot and cold applications.[16]

The Multi-Modal Treatment Playbook for Rotator Cuff Pathology

Neck pathology

All shoulder patients should be screened for neck pain or nerve involvement to rule out other conditions or nerve involvement that may be contributing to shoulder dysfunction. Traction, transcutaneous electrical nerve stimulation (TENS), and high-intensity lasers may be beneficial in relieving pain from nerve impingement and cervical conditions.

Traction

Patients suffering from nerve impingement and disc related radicular complaints can benefit from traction to help normalize intradiscal pressures, improve space in the foramina, and improve blood flow and EMG activity in affected muscles.[17-19]

Both mechanically driven traction and home cervical traction units have been shown to benefit patients with radicular complaints.

Adding mechanical or home traction to an exercise program compared to exercise alone, has been shown to significantly impact NDI (Neck Disability Index) scores and reduce neck and arm pain, especially at long-term follow up.[20]

Two traction devices that can help are the **Triton DTS™** system for clinic use and the Saunders® cervical and lumbar home traction unit for remote applications. The Triton system is highly customizable and can provide cervical traction in a variety of intermittent and static pull patterns.

The Saunders Cervical unit is a pneumatic device that is easy to use at home and can provide up to 50 pounds of pull in a comfortable supine position. Tension on the device is adjusted via a simple hand pump to create desired levels of traction, as opposed to over-the-door units that often require adding or subtracting water to a bag to adjust traction levels.

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While not new, TENS and interferential treatments have a proven track record for reducing musculoskeletal pain during and immediately after treatment.[21] Since TENS acts via non-specific therapeutic neuromodulation, it can address pain that is generated from different tissues, making it a useful preparatory treatment before exercise or manual therapies in the mid-back and shoulder.

Research supporting use of different modalities to address pain and function for rotator cuff tendinopathy.

- Elsodany and colleagues demonstrated that high-intensity laser therapy combined with exercise therapy is more effective at improving pain and function in patients with rotator cuff tendinopathy when compared to sham laser and exercise.[13]
- The Cochrane Review by Page et al concludes that both ultrasound and high intensity laser therapy may have short-term benefits in patients with rotator cuff disease compared to placebo.[26]
- A study by Dedes and colleagues showed that using RPW to treat rotator cuff tendinopathy resulted in improved pain, function, and quality of life when compared to control groups.[14]
- A review by Haslerud et al. reported that high intensity laser therapy, whether used alone or in conjunction with other physiotherapy treatments, can provide shoulder tendinopathy patients clinically significant pain relief.[23]

Recommended Additional Reading

Take a deep dive on the treatment of tendinopathy, including rotator cuff tendinopathy with this new white paper.

https://20276866.fs1.hubspotusercontent-na1.net/hubfs/20276866/REC_SCI/REC_SCI_Pdfs/MKT00-13691%20Rev%20A%20-%20Tendinopathy%20KOL%20White%20Paper.pdf

Charging for rotator cuff treatment

Cash-based modalities, such as high-intensity laser therapy, are rising in popularity among patients and practitioners alike because of their ability to relieve pain, enable more effective therapy sessions, and, in some cases, delaying or eliminating the need for surgery. Marketing directly to this patient group can increase your clinic's cash-pay services.

Rotator cuff cases typically require several treatment sessions to start seeing outcomes. Therefore, package pricing models are a good way to drive patient compliance and revenue.

For patients receiving laser or shockwave therapy, typically, more than one session is needed for optimal results. Selling treatments in a package can increase patient compliance with the recommended plan of care.

Packages with different numbers of visits can be presented to the patient with their specific condition in mind.

Clinics report selling packages ranging from 3 to 20 visits, the higher number for more chronic conditions.

There are normally price incentives for higher volume packages.

Many clinics use the 3, 6, 10 model to address the spectrum of minor to more chronic conditions, with six visits being the most common package. If patients desire additional visits, they can purchase a new package. Six-visit packages are popular because they allow 2-3 treatments over a 2-3 week period, which is usually sufficient to positively impact patient symptoms.

Charging for Treatment:

3-Treatment Package: $60 per visit ($180)

6-Treatment Package: $50 per visit ($300)

10-Treatment Package: $40 per visit ($400)

**The calculations and other data presented herein are for illustrative purposes only and are not to be relied upon for budgeting, planning, internal reporting, or other purposes. Actual benefits / consequences resulting from the use at your practice of the program presented herein may vary materially from the data presented above. Calculations and calculation methodology available upon request.*

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