KOC
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Reverse Total Shoulder Protocol

Pathology and Treatment: The reverse TSA is a relatively new prosthesis which is used in cases of rotator cuff tear arthropathy or in revision cases where the RC is deficient or non-functional. The use of this prosthesis in the USA started in 2004 and has dramatically expanded in its indication and scope. Rotator cuff tear arthropathy is defined as an irreparable RCT associated with arthrosis of the glenohumeral joint. These patients will often present with a painful pseudoparalytic shoulder secondary to static or dynamic superior instability. The reverse TSA is also used in revision situations, when there are bone loss issues, and in some fractures.

It is called a reverse TSA because the "ball" is secured to the glenoid and the "cup" is on the stem. The biomechanics are completely different from an anatomic TSA. In an anatomic TSA the rotator cuff is intact and the mechanics/kinematics of the joint remain unchanged. The goal in an anatomic TSA is recreate the normal anatomy. However in a reverse TSA (a non-anatomic prosthesis), the loss of rotator cuff function is compensated for by the biomechanics of the prosthesis. The reverse TSA provides a stable center of rotation about the glenosphere and an increased ability of the deltoid to function.

Goals and Guidelines: Therapy for a reverse TSA is very similar to an anatomic TSA. The first phase of therapy is **6 weeks** and is focused on **active assisted ROM** exercises only**.** During this time, the patient may work on scapular protraction and retraction for strengthening but no strengthening exercises for deltoid or remaining rotator cuff (RC). The patient is allowed to use the operative arm for waist level and midline activities such as personal hygiene care but is to do no lifting, pushing or pulling with the arm. Shoulder immobilizer only needs to be worn when outside the home for the first six weeks. If the patient feels more comfortable with the sling, then he/she may wear it at home as well but it is not necessary. For the first couple weeks, most patients are more comfortable sleeping in their sling and a recliner but they may move to a bed when comfortable. While sleeping in bed the patient is to place a pillow or a stack of blankets under the elbow and arm of the operative extremity in order to have the arm/shoulder in the plane of the body (extension of the shoulder is both painful and stresses the repair). Therapists should teach patient how to perform proper axillary hygiene by bending over at the waist (like doing pendulum exercises). The second phase of therapy is about 2 months and focuses on continued stretching (unlike anatomic TSA's, stretching should not be aggressive with a reverse TSA as the procedure is non-anatomic and reverse TSA patients tend to be more osteoporotic) and strengthening. The strengthening starts slowly and progresses to functional exercises. In many cases, the anterior cuff (subscapularis) and posterior cuff (teres minor) remain intact and can be strengthened to improve internal and external rotation function. Whether using bands or weights, the strengthening should not be painful and focus on a resistance with which the patient can perform 10-15 reps comfortably.

Most patients are able to play a round of golf at 4 months postop and are released to more aggressive activities at that point but improvements in strength and function continue for up to 2 years.

0-6 weeks
-Immediately start Pendulums, Supine Active Assisted Forward Elevation (SAAFE), and External Rotation With Stick. It is imperative that the patient understands the exercises and are able to demonstrate that they can perform the exercises, as they are responsible for performing these at home. Stretching exercises should be performed 2 times per day.
-Also start internal rotation in the supine position. In the supine position, position the arm in about 30^0 of abduction. External and internal rotation can be performed in this position.
-All ranges of motion should be taken to tolerance and focus on long slow stretches with appreciable gains being realized each week.

6-8 weeks
-Continue stretching but can be more aggressive. Start External Rotation Stretching in Doorway, Pulley assisted ROM,
-Start IR, ER and abduction isometric strengthening exercises. Start very slowly on the IR isometrics.
-Start Supine Active Forward Elevation (SAFE) exercises.
-Start Functional Internal Rotation using a towel or belt to pull the operative arm up behind the back.
-DC sling at 6 weeks

8-12 weeks
-Should strive to optimize the ROM. Both the therapist and patient should understand that the reverse TSA is non-anatomic procedure and as such, the ROM can be more limited. It is important to work on scapular motion so that the acromion can be moved out of the way to achieve greater degrees of ROM.
-Start Wall Slide into Scaption, Start Standing Overhead Reach and 4 Way Shoulder Rubber-Band strengthening and Active Range of Motion in upright position. Make sure that the patient is not developing substitution patterns with active ROM. If the patient is developing these patterns then try Wedge Assisted Active Forward Elevation (WAFE). WAFE and stretching exercises should be performed on a daily basis and strengthening only every other day at most.

12-16 weeks
-Teach continued home program for deltoid Active Range of Motion and RC strength maintenance
-Other strengthening exercises can be started such as bench press and lat pulls and military press with dumbbells or with machines as long as form is good. There should be no pain with strengthening. When bench pressing do not let the elbows extend below the plain of the body.
-Work on neuromuscular control

-Teach specific exercises and proper mechanics for specific sport such as golf, racket sports, fishing or a vocation. Throwing exercises such as concentric and eccentric resisted throwing with bands and throwers ten exercises can be started now.

16 Weeks

-Return to unrestricted activity. Impress upon the patient that heavy lifting and other weight bearing activities can lead to loosening and accelerated polyethylene/ glenoid wear and thus should be avoided.