Treatment of RIBP in the Presence of Lymphedema

This is the second part of Radiation-Induced Brachial Plexopathy (RIBP) and Lymphedema. The last blog entry covered the causes and symptoms. This entry covers the treatment and how it relates to the presence of lymphedema.

How is RIBP treated?

Although surgical procedures to decompress the brachial plexus and re-vascularize the nerves and surrounding tissues have been described in the literature, the results are often unsatisfactory. Unfortunately, RIBP is essentially an incurable condition and with the absence of satisfactory treatment, emphasis is placed on symptom control and therapeutic exercises specifically addressing the maintenance of movement in the paralyzed extremity for as long as possible. Physical and Occupational therapists work as part of a multi-professional team to address loss of function and flexibility, weakness, pain and lymphedema. Special adaptive equipment and techniques address basic functions of daily living and suggest ways to modify the home and workplace.

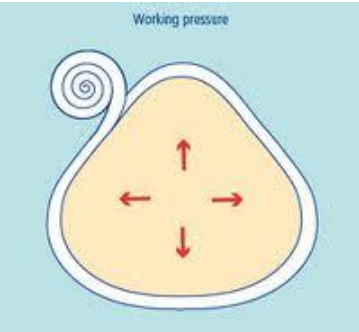
Special considerations to address RIBP in the presence of lymphedema:

Lymphedema management in patients with RIBP is more challenging, but absolutely necessary to help control pain and to decrease the volume of the extremity. Volume reduction lessens the impact of excess weight on the shoulder joint, prevents the build-up of additional fibrotic (scar) tissue and significantly lowers the risk of infections commonly associated with lymphedema. It is often necessary to adapt compression and exercise protocols to accommodate the special circumstances associated with RIBP.

Compression Bandaging: Many patients affected by RIBP experience impaired sensation on the skin and are often unable to provide accurate feedback related to their individual tolerance to pressure. Therapists applying compression bandages to the affected extremity during the initial sessions of Complete Decongestive Therapy should be very conservative with application pressure and use ample padding to avoid pressure sores; application pressure may be gradually increased in the absence of side effects.

Effective compression therapy for lymphedema partially depends on the extent of the interaction between the bandage layers and the musculature working against the resistance of the bandages;

this is also known as the working pressure. With partial or complete loss of muscle activity, the working pressure of the bandage is reduced, making the bandage less effective. However, even if compression bandages are applied with less pressure and the day-to-day results of these bandages are not as noticeable, they are still effective in promoting lymphatic return by increasing the pressure in the tissues.



It is also important to consider that some RIBP patients wear arm slings to reduce the degree of subluxation and discomfort of the shoulder joint. In these cases, the elbow should be kept in 90 degrees of flexion during the application of compression bandages.

The possible presence of joint contractures caused by muscular atrophy and immobilization should be addressed with special bandage application techniques.

Compression Garments: The wearing of compression garments is essential to prevent lymphatic fluid from accumulating in the tissues and conserves the results achieved with Manual Lymphatic Drainage.

Compression sleeves and gauntlets are available in a number of compression classes. The level of compression within the different classes is determined by the value of pressure the garments produce on the skin; these pressure values are measured in units of millimeters of mercury (mmHg). For a compression garment to work effectively, the pressure needs to gradually decrease from the wrist to the shoulder. This gradient is necessary to avoid tourniquet effects and subsequent obstruction of lymph flow.

In general, compression levels provided by class 2 garments (30-40 mm/Hg) will be sufficient to prevent swelling in most patients affected by lymphedema of the upper extremity. However, if lymphedema is combined with RIBP and partial or complete immobility with subsequent loss of normal muscle tone, a lower compression may be required in order to avoid tourniquet effects. Patients need to be thoroughly educated in the use of donning devices for compression sleeves and alternatives for night bandaging (Solaris, CircAid, etc).

Donning Device

Exercises: Immobility is detrimental to the lymphatic return. In addition to support the return of lymph fluid, the main goal of the exercise protocol is to focus on mobility. Modifications to the usual decongestive exercise program may be necessary to address impaired motor function.

Arm Bike

Exercise protocols for RIBP with partial or complete loss of mobility are geared towards the development of strategies that compensate for lost muscle function by using those muscles that still have function. Specific exercises also help to maintain and develop any strength and control that remain in the affected musculature. This also helps to prevent further shortening of muscle fibers (contracture) and to maintain and regain range of motion in the arm. Elevating the arm as often as possible to promote lymphatic return is even more important in patients affected by RIBP.

Therapists and doctors may also suggest adaptive equipment that helps the patient to maintain a normal life. For a very comprehensive list if adaptive devices and coping tips, I would like to refer you to the RIBP page of the "Step Up – Speak Out" website.

Additional Resources:
BreastCancer.org Discussion Forum
Step Up – Speak Out
Medscape
Lymphedema People