DENTAL MANAGEMENT OF PATIENTS RECEIVING RADIATION THERAPY TO THE HEAD AND NECK

ALAN B. SHEINER, D.D.S.

Patients with cancer of the head and neck region are commonly treated by surgery, radiation therapy or a combination of these modalities. Radiation therapy may be utilized either prior to, or subsequent to, surgical resection of the malignancy. The goals of dental management for these patients are to minimize the side effects of radiation therapy, prevent deleterious complications from arising, and permit maximum oral health and function during and after treatment.

Almost everyone, today, has used a microwave oven. This device works by having the microwave radiation "excite" the food on a molecular level, resulting in the food getting hot. Radiation therapy works by having the higher energy ionizing radiation cause the cancer cells’ molecular structure to "break apart," as it were, resulting in cellular death. Unfortunately, the radiation energy cannot differentiate between the malignant cells and the normal healthy cells. Radiation therapy to the head and neck region, invariably results in destruction of adjacent healthy cells and, consequently, these tissues are irreversibly damaged.

The team of clinicians treating the head and neck cancer patient should include a dentist familiar with the special problems and situations which will arise. During the initial workup, prior to actual treatment, the patient’s oro-dental health should be assessed by the dentist. Efforts should be directed towards bringing the oral cavity dentition to a state of optimum health, before treatment begins. Surgical dental treatment, such as extractions, must be sufficiently healed before the start of radiation. This healing time must be factored in, when decisions are made relative to extractions or other oral surgery. An impacted lower third molar might require and unacceptably lengthy period of time to heal, and treatment considerations for the cancer might preclude otherwise optimum dental preparations. One very significant side effect of radiation therapy is diminished healing capacity in irradiated tissue. This is an irreversible alteration, and is due to a decreased blood supply in that tissue. Due to this decreased blood supply, the resistance to infection in this tissue will also be impaired.

Some of the major side effects and/or complications of radiation therapy to the head and neck, are xerostomia (dry mouth), post-radiation caries (rampant tooth decay), trismus (inability to open the mouth widely), difficulties with removable dentures, and necrosis of hard (bone) and soft (oral mucosa) tissues.

Salivary glands which are in the path of ionizing radiation, are subject to irreversible degenerative changes, which result in diminished quantity and quality of saliva produced. The parotid glands, (which are located on the side of the face in front of the lower portion of the ears) produce most of the serous, or watery, saliva. They are not infrequently in the path of the radiation beam. Without the serous saliva from the parotids, the remaining saliva is mucinous, or sticky, and is produced by the other groups of salivary glands in the oral cavity. Sometimes, these glands may also be in the field of radiation, and even this sticky saliva is absent. Since saliva is a crucial part of the defense against tooth decay, persons with xerostomia are subject to extremely high caries levels on a lifelong basis. This post-radiation caries, when seen, is very dramatic and devastating. The teeth decay so rapidly that they can become flexible and bendable. The decay can literally encircle and envelop the teeth. This problem is usually
The good news is that post radiation caries is completely, and simply, preventable. The dentist provides the soon to be treated patient with custom made flexible vinyl fluoride applicators. These devices, which look like and fit like sports mouth guards, are used to provide a neutral pH fluoride gel treatment on a daily basis. This treatment regimen should be continued as a lifelong habit. After brushing and flossing, the applicators are loaded with the viscous neutral pH fluoride gel, and placed in position over the teeth. This fluoride gel is a prescription item (e.g. Thera-Flur-N, FluoriShield, Karigel-N, PreviDent). These loaded applicators remain in position for five minutes. After this period they are removed, and any excess gel is spit out. It is important not to rinse, eat or drink for thirty minutes thereafter. The applicators themselves are rinsed clean and permitted to air dry.

I recommend that this regimen be a nighttime routine, for two reasons. If it is a regular ritual at a set time, it will not be forgotten, and unless you are a sleepwalker, most people don’t eat or drink while sleeping. The neutral pH is important, because it will not be irritating to the oral mucosa or teeth, and acidulated fluoride gel will etch or eat into, porcelain crowns, veneers, etc. and cause them to become rough and etching, the applicators are loaded with the viscous neutral pH fluoride gel, and placed in position over the teeth. This fluoride gel is a prescription item (e.g. Thera-Flur-N, FluoriShield, Karigel-N, PreviDent). These loaded applicators remain in position for five minutes. After this period they are removed, and any excess gel is spit out. It is important not to rinse, eat or drink for thirty minutes thereafter. The applicators themselves are rinsed clean and permitted to air dry.

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Living with a dry mouth is, at best, problematic. We can all remember that school speech, or other terribly stressful situation, when our mouths were so dry they seemed to be full of cotton. Now imagine that this is a constant state. That will give you some inkling of the situation with which an irradiated patient must deal. Efforts to live with xerostomia, include drinking plenty of water with food, eating foods high in moisture, such as pasta with mild sauces, keeping a bottle of water handy, or using sucking pastilles or chewing gum to try and coax any little bit of salivary function into production.

A prescription item Salagen®, which is a pilocarpine preparation, has been used to treat radiation induced xerostomia. This medication works via the parasympathetic division of the autonomic nervous system to stimulate production of whatever serous (watery) saliva function remains. A number of artificial saliva substitutes, available without prescription, are used with varying degrees of success. Among these are Oral Balance Gel, Salivart, MouthKote, Saliva Substitute and Optimoist.

A very important point to remember, above all else, is not to use sugared sucking pastilles. This is even worse than using sugared gum, which loses its sucrose in about five minutes. If you suck on sugar candies, the teeth are constantly bathed in sugar, which feeds the caries producing bacteria that are living on the teeth. There is no acid neutralizing saliva to wash these bacteria away, leaving them free to gorge on sugar and produce rampant caries. Sugar free pastilles and gums are fine. Biotene produces a chewing gum specifically for xerostomia, which seems to work. They also produce an artificial saliva substitute, alcohol free mouthwash and toothpaste, all designed for people suffering with xerostomia.

Some, or all of the muscles, which open the mouth, are invariably in the field of radiation. These muscles, which are on the sides of the face and in the neck, undergo irreversible inflammatory and fibrotic changes as a result of radiation. Once the fibrotic trismus occurs, the mouth cannot be opened to a normal level, which averages approximately 40mm, between the edges of the top and bottom front teeth (interincisal opening). Ramifications of severe trismus go far beyond inability to eat a thick sandwich. Oral hygiene is complicated, as well as dental care, especially for back teeth. If the patient has had a maxillectomy or a palatal resection in conjunction with radiation, a removable obturator prosthesis is usually required. This rather large and bulky prosthesis, is needed to permit intelligible speech and swallowing of water or food. Without the ability to open the mouth, an optimum prosthesis may not fit to position. Radiation induced trismus may be prevented or minimized with proper preventative exercises. The dentist should measure the interincisal distance before treatment. This distance is marked on a wooden tongue blade and given to the patient who can then check to be sure the interincisal opening is maintained. This is accomplished by simple exercises of opening the mouth widely a few times in about five or six sessions spaced out during the day, with the fingers acting as an aid to stretch out the muscles, in much the same way a runner stretches his legs. This way, if the patient can still match the marks on the tongue blade, assurance is obtained that trismus is kept at bay. Mechanical devices, such as Therabite®, are available to assist people who cannot use their fingers to exercise their oral opening. The cautionary tale with mechanical devices is that they are so mechanically efficient that teeth have been known to chip or break if the user is not careful.

Please see MANAGEMENT on page 3
MANAGEMENT from page 2

Removable dentures, both complete and partial are dependent upon saliva to act as a lubricant between the prosthesis and the mucosa. For complete dentures, the saliva also acts as sealant to help provide retention or “suction” for the top denture. In providing these functions, the quality, as well as quantity of saliva is critically important. If the parotid glands’ serous saliva is gone, and all that remains is the thick, sticky, mucinous saliva, retention of dentures in the mouth is a very serious problem. Complete lack of any saliva is a major difficulty as well. You must remember that irradiated oral mucosa is not as resilient as normal mucosa. Consequently, irradiated mucosa is more prone to ulcerations and tears, wounds that will take much longer to heal than common denture sores in a normal mouth. In an effort to provide relief and comfort to a denture wearing, irradiated patient, a dentist may mistakenly provide soft denture liners. These soft inner surfaces of dentures do not wet well. Water beads up on them, much the way water beads up on a freshly waxed car finish. Even though they are soft, these liners have a tendency to become rough and abrasive, and contribute to injury to the mucosa. Soft liners should not be used for irradiated mouths.

A major consideration for irradiated patients with denture sores, is healing. Remember, irradiated tissues have decreased blood supply, which translates to difficulties with healing and decreased resistance to infection. Bacteria are always present in the mouth normally, and open oral wounds can lead to exposed bone, resultant bone infection and bone death, called osteoradionecrosis, or ORN. This is a very serious problem which is difficult to resolve. Not uncommonly, ORN resolution requires use of hyperbaric oxygen and/or aggressive surgical intervention. ORN can also result from dental extraction or other invasive surgery, such as periodontal or endodontic surgery after the patient has undergone radiation therapy. You should be careful to tell your dentist that you have undergone radiation therapy to the head and neck. If any surgical treatments are contemplated in areas of radiation, it is important to see an oral surgeon experienced in treating irradiated patients. Hyperbaric oxygen therapy may be incorporated in the treatment regimen to hopefully prevent ORN from occurring.

During radiation therapy, mucositis, or inflammation of the oral mucosa, will develop during the course of treatment. This can be quite painful, making oral hygiene difficult. Bacterial plaque is a very fertile source for infection. Soft sponges on sticks (Toothettes) are helpful, as are frequent irrigation. Very soft toothbrushes such as Sensodyne or Biotene brushes work well. Topical anesthetics such as lidocaine viscous or dyclonine are helpful for temporary symptomatic relief as is a suspension of Benadryl and Kapectate swished and spit out. The Benadryl acts as a local anesthetic, and the Kapectate vehicle coats the oral mucosa to keep the Benadryl in contact with the tissue. Sometimes, a candida infection results from the disturbance of the normal oral flora balance, secondary to radiation therapy. Nystatin has been proven to be an effective treatment, however, vaginal suppositories used orally as opposed to oral pastilles or troches, may be advisable. The suppositories do not contain any sugar and they are less costly. Obviously, they are less tasty.

Dental management for patients receiving radiation therapy to the head and neck begins, ideally, prior to the actual start of therapy and continues as a permanent mode of oral/dental care. It is a healthier and better mind set, which when properly followed, can actually lead to enjoyment of a new standard of dental health.

Editor’s Note: Alan B. Sheiner, DDS is a Clinical Assistant Professor at Mt. Sinai School of Medicine where he is also an Assistant Attending Dentist and Chief of Maxillofacial Prosthetics and Implant Dentistry. Dr. Sheiner is a board certified prosthodontist practicing in New York City. He has extensive experience in oro-dental management for cancer patients undergoing radiation therapy, chemotherapy, maxillofacial resection or reconstruction surgery, and/or bone marrow transplant therapy.

BOOK REVIEW

UNDERSTANDING CANCER
A Patient’s Guide to Diagnosis, Prognosis and Treatment

By C. Norman Coleman, M.D.
The Johns Hopkins University Press
January, 1999
Reviewed by Edward F. McCartan

Dr. Coleman’s book is a mini-encyclopedia, covering concisely and precisely all aspects of a single topic. Its 170 pages contain a Foreword by Ellen L. Stovall, Executive Director of the National Coalition for Cancer Survivorship; an Introduction; a remarkably clear explanatory text; an Afterword, Appendices on Genes, Cost-Effectiveness, and Patient’s Checklist; a Bibliography and an Index. It also has useful charts and illustrations. Its value goes far beyond guidance to patients; it offers overall knowledge and specific information to everyone who has been touched by cancer or who simply wants to know more about it.

For those of us who are survivors, the obvious thought on seeing this book could well be, “I wish I had this information years ago.” The first half of the book, dealing with diagnostic tests, staging studies, sources of cancer, and conventional treatments, provides an update on current thinking and a review of what we didn’t know or have forgotten about our own experiences. The second part may be even more important in that it covers matters such as adjuvant therapy and explains clinical trials. There are also four clinical case studies from which we might take comfort in comparing the decisions and treatments with our own. The Appendix on Genes brings the latest information on karyotype analysis (method of studying chromosomes) and the role of DNA in cell functioning, all of which is useful in determining potential risk of cancer in individuals or families. In his “Afterword”, Dr. Coleman takes the unusual step of asking the reader for feedback and providing an address for correspondence.

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A TIME FOR SHARING

It all began in the Summer of 1997 with a sore throat which wouldn’t go away. After a few weeks, I visited a walk-in clinic, tested positive for strep, and began a course of antibiotics. After a few more weeks, another strep test was negative, but I still had a sore throat. It was time to see an ENT specialist.

At the first examination in mid-August, the ENT specialist said he could see no surface lesion with the nasal endoscope but that he did see significant swelling in the throat and could feel swelling in my lymph nodes. Following a CT Scan, a surgical biopsy was necessary for the pathologist to make a definitive determination.

My wife and I got the biopsy results on September 3, 1997. I was 53 and had just been diagnosed with a moderately differentiated squamous cell carcinoma in the left tonsil region classified as Stage IV T3N3 due to the size of the tumor and bilateral lymph node involvement in the submandible. The ENT gave a graphic description of what he called the conventional treatment: extensive surgery to remove the tumors, radiation therapy, a series of reconstructive surgeries to replace the sections of tongue, throat, jawbone, etc., insertion of a stomach tube for nutrition; difficulty or inability to swallow. I was too stunned to do anything but listen. But then a ray of hope! He said that he had taken the liberty of calling The National Institutes of Health (NIH) to see if they were doing any clinical trials that might be appropriate. Two days later I was undergoing extensive examinations at NIH.

The study in which I participated is under the leadership of the Director of the Radiation Oncology Clinic at the NIH Warren Magnuson Clinical Center. I met with her and a medical oncologist colleague who explained that one of their objectives is to find new treatments which will result in less loss of function to head and neck cancer patients. Initially, they sought to find an alternative to surgery. They were careful to explain that their program is experimental and that some surgery could still be required but that it would probably be much less extensive than originally described.

I received 39 sessions of radiation with concurrent continuous infusion of taxol during the first, fourth, and seventh weeks of radiation treatment. The treatments took place over eight weeks, but there was shrinkage of the tumors within the first week and they were gone by the fifth week. After that point, the medical team could only feel what they described as a “slight fullness” which they said could be tumors but was probably scar tissue. Biopsies (14 samples) which were taken on January 31, 1997 at and around the primary site were negative. Despite the shrinkage and negative biopsies, the NIH team of oncologists and head and neck surgeons recommended neck dissections to further reduce the probability of recurrence. I had left and right neck dissections in February and March of 1998. The dissected material was all negative.

I experienced many of the side effects that most head and neck cancer survivors encounter: inability to swallow, heavy mucous production, mouth pain, extraordinary fatigue. But currently, my only complications are osteoradionecrosis (ORN) of the jawbone on my right side, and trismus (difficulty opening my mouth very wide), and some continuing problems with swallowing. Osteoradionecrosis is the death of bone due to radiation and is not that unusual after high doses of radiation. I underwent the standard treatment of hyperbaric oxygen from mid-April to mid-May, 1998. Initially the hyperbaric oxygen therapy appeared to work exactly like a textbook case.

During my treatments, I had not been able to swallow and had to rely on a stomach tube (PEG) for nutrition. In July, 1998, nine months after starting treatment, I started to swallow again and have slowly improved each week to the point that I had the tube removed in October. Unfortunately, when I started swallowing again the stress of chewing and working my jaw apparently caused another outbreak of exposed bone. I may possibly need more hyperbaric oxygen therapy. If that doesn’t work, a bone graft may be necessary, but only as a last resort.

So, other than some mouth and jaw pain, difficulty with solid food, and neck stiffness, I’m almost back to normal. I still rely on liquid supplements for nutrition but am gradually cutting back. I’m pretty much signed to the fact that I’m always going to be a slow eater and will have to work hard at eating for the rest of my life. But taste is pretty much restored. I only have trouble tolerating certain strong flavors but that is improving. If that’s the price I have to pay to beat cancer, I’ll take it.

I’m convinced that an important but sometimes neglected part of the treatment plan for head and neck cancer patients involves fluid management. A fellow patient who was twenty years younger than I and was one month ahead of me in treatment was always exhausted. It turned out that she was dehydrated. Because of her case, the doctors started monitoring hydration more closely. I was usually borderline dehydrated. A couple of times the doctors insisted on an IV solution to improve hydration and I felt like a different person after that liter of liquid. Radiation and chemotherapy will unquestionably wear you down especially toward the end of treatment but dehydration will make it much, much worse. Even now, I will sometimes get tired and realize that I haven’t been taking in enough fluid.

On the contrary, when treatment ends, the problem may be not enough fluid, but too much. Edema is a swelling due to the collection of fluid. Radiation can damage lymph nodes so they don’t function as well. After the neck dissections and removal of jugular veins and lymph nodes in the neck, there was no place for the fluid in my neck to drain. My cheeks were typically puffed way out after my two neck dissections. One of my finest of many fine experiences at NIH was with their physical rehabilitation department. My physical therapist has written an article for this issue of SPOHNC which discusses manual lymph drainage massage as used to reduce lymphedema in head and neck cancer patients. I started massage therapy about two weeks after the second dissection on a daily basis and it gradually tapered down to monthly over a seven month period. The treatment was intended to develop an alternative pathway for lymph drainage by using a technique of external massage. What a difference it made! I understand that I was the first head and neck cancer patient to receive this treatment at NIH. Even the ENTs were impressed with how rapidly the swelling re-
duced. For me, it has made an enormous contribution to my recovery.

Frankly, I feel guilty about listing any complaints after reading some of the experiences of other people. Except for periods of hospitalization. I worked almost every day (albeit part-time) during my treatment and the three or four difficult months following treatment. Some of this is due to otherwise good health, some to luck, but most is due to the extraordinary care I received at NIH.

There are three factors which contributed to my—so far—successful recovery. First was my care at NIH. The second was having a supportive family and business partner. I’ve been married for 26 years. We had a strong marriage before; it’s even stronger now. I have often said that I think the cancer was harder on my wife than on me. Whatever, I think that we all tend to get comfortable and take people for granted. It takes adversity to realize how lucky we are. If you’re really lucky, like I was, adversity brings out the best in people. My two teenage children were bewildered by the whole experience but they were there when I needed them, too. My business partner and I founded our company almost eight years ago. I couldn’t have gotten through this without knowing that my loyal, trusted, and totally unselfish friend was there doing both of our jobs. I feel that the third factor contributing to my recovery was continuing to work. Fighting cancer is hard work and everyone comments on how fatiguing it is. But mental attitude is also important. I resolved that I would never get well moping around feeling sorry for myself. So, I continued to work, probably to excess. On the other hand, staying active helped with physical rehabilitation and also made be feel that I was not letting the cancer take over my life. Instead I was facing it head-on and winning.

At this point, fourteen months after completion of treatment, I am free of any evidence of cancer with a monthly follow-up scheduled for mid-January 1999. I have been told that the probability of recurrence goes down each month. Two years is a big milestone and five years free of disease is considered a cure. Who knows? Next week they may discover a recurrence. I don’t think so. But, if they do, I’ll face it one day at a time, one hour at a time, just like I did the last sixteen months.

George J. Tyson
Arlington, Virginia

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The team of scientists who discovered that angiostatin could dramatically boost the effects of radiation therapy has now shown that only brief exposure to angiostatin is required to get most of the drug’s radiation-boosting anti-tumor effects. Without concomitant radiation therapy, additional exposure to low doses of this highly touted, costly and hard-to-obtain protein did not enhance treatment.

This latest report, by researchers from the University of Chicago Medical Center, Harvard Medical School and Northwestern University in the December 15 issue of Cancer Research, adds to the mounting enthusiasm about combining angiostatin with other forms of cancer therapy.

“The limited angiostatin supplies may be most effectively and efficiently used in combination with cytotoxic therapies such as ionizing radiation,” note the authors. “These results suggest a new approach to the design of clinical trials with angiostatin and other anti-angiogenic agents.”

The research team, led by Ralph Weichselbaum, M.D., professor and chairman of radiation oncology at the University of Chicago, tested the anti-tumor effects of angiostatin and radiation alone and in various combinations. They used large (500mm3), rapidly growing human tumors transplanted into mice.

As expected, the most effective therapy was the combination of simultaneous angiostatin and radiation therapy. What was not anticipated was how little angiostatin was required to make a big difference, or how limited the benefits would be from continuing to give low-dose angiostatin after completing a short course of radiation.

The study wasn’t designed to assess the effects of angiostatin, used here in very small doses, but to determine the most effective and efficient ways to combine it with radiation therapy.

The research involved six groups of mice. One group received no treatment, one got angiostatin alone, and one group received radiation therapy.

Mice in the other three groups received different combinations of angiostatin and radiation. One group received angiostatin and radiation together for two days. One group received radiation for two days followed by angiostatin on days 2-14. One group both radiation and angiostatin for the first two days, followed by angiostatin on days 2-14.

When their tumors were measured at day 9 and again at day 14, the mice that received both angiostatin and radiation together had the smallest tumors. Angiostatin dramatically improved the effects of radiation therapy if given at the same time, but at these low doses had little effect when given without same-day radiation therapy.

“This study extends our previous finding that angiostatin becomes much more effective when used to enhance the effects of radiation,” said Weichselbaum, “and that radiation, already a standard of cancer therapy, could become more effective with a boost from short courses of concomitant low-dose angiostatin. This combination may be the most efficient, most beneficial use of this agent, which is in extremely short supply.”

Angiogenesis inhibitors could make radiation much more effective at providing local control of cancer, Weichselbaum suggests. “Local control is a crucial part of treatment for many tumors, including prostate, brain, head and neck and other cancers,” he added. “It could even expand the use of radiation therapy to some forms of metastatic disease without requiring high doses.”

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F.Y.I.

BEST USE OF ANGIOSTATIN MAY BE TO ENHANCE RADIATION THERAPY

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SPOHNC P.O. Box 53 Locust Valley, NY 11560-0053 (516) 759-5333
Manual Lymph Drainage Massage

Elizabeth Augustine, MS, PT

The management of lymphedema that develops after medical intervention for breast cancer is well documented in the medical literature. In the 1950’s Dr. Keith Stillwell at the Mayo Clinic recommended multiple modalities for the treatment of breast cancer related lymphedema. Modalities included elevation, compression pump, massage, bandaging, exercises, and compression garments. In subsequent decades, the treatment of arm lymphedema focused mainly on the use of the compression pump and elevation, followed by use of a custom made compression garment. Europe has a long history of using conservative techniques for lymphedema management, such as massage (manual lymph drainage), bandaging, exercise, and compression garments. In Europe the combination of these techniques is called Complex Decongestive Physiotherapy (CPT), and in the United States it is called Decongestive Lymphatic Therapy (DLT).

As medical technology improved, the use of the electron microscope and radiiso- tope studies improved our understanding of the lymphatic system and the effect that these conservative techniques had on the lymphatic system in order to reduce the limb volume from lymphedema. The use of DLT is becoming more accepted in the United States and more clinicians are seeking the 2 to 4 week training courses to acquire the knowledge and skills to effectively manage lymphedema. I am one of those clinicians who sought training in lymphedema management from Drs. Casley-Smith in Australia, whose research in the lymphatic system and lymphedema management spans over 30 year. Training is also available in the United States. The National Lymphedema Network in San Francisco can provide you with a list of qualified clinicians and treatment centers (1-800-541-3259 or www.lymphnet.org).

If you go to your local library and request an anatomy textbook, and then look at the chapter on the lymphatic system, especially the neck, you will see dozens and dozens of lymph nodes. The lymphatic system is very important in the reabsorption of interstitial fluid. Just imagine the lymph vessels and nodes as free flowing rivers of fluid. If those lymph vessels and/or nodes are surgically removed or damaged by radiation, then a dam is formed that interferes with the reabsorption of interstitial fluid. This results in lymphedema.

I manage facial and neck lymphedema by manual lymph drainage massage. This gentle massage technique facilitates the opening of collateral vessels (and in this case, the lymphatic vessels located on the back of the neck and shoulders) to increase drainage from the obstructed areas into the unobstructed areas. From my limited experience, it appears that patients obtain the greatest benefit, if they begin manual lymph drainage massage soon after their medical treatment for head and neck cancer has concluded. If the patient has received radiation therapy, it is very important to begin the massage before radiation induced fibrosis of the soft tissues occurs. Fibrosis interferes with the opening of collateral vessels. It is also very important for the clinician to teach the patient self-massage, so that the patient can manage his/her lymphedema at home.

This article is based upon my limited experience of treating patients with facial and neck lymphedema following medical intervention for oral, head and neck cancer. The opinions reflected in this article are the views of the author and not necessarily those of the National Institutes of Health or the Office of Public Health and Science or the Department of Health and Human Services.

Editor’s Note: Elizabeth Augustine, MS is a Physical Therapist at the National Institutes of Health, Clinical Center. Rehabilitation Medicine Department, Physical Therapy Section, Bethesda, MD 20892.

References

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**February 16, 1999**

**Post-Treatment Resource Program**

**Will meet on the second Thursday of the month - 2:30 P.M.**

**February 16, 1999**

**Rockefeller Research Laboratories, 420 East 67th Street, New York, NY**

**For Head and Neck and Oral Cancers**

**A Resource Program for People Treated**

**MOVING FORWARD**

**Support for People with Oral and Head and Neck Cancer**

For more information and directions, please call S•P•O•H•N•C at (516) 759-3333.

**February 11, 1999**

**Syosset Public Library**

**225 South Oyster Bay Road**

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