

Paradigms in Head and Neck Oncology

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Innovations and new thoughts are not without problems. For a short time today, I would like you to look at things differently with me. I would like to talk to you about paradigms and how they affect us as head and neck surgeons.

"Patients should have their incisional area shaved the night before surgery." "Postthyroidectomy patients should have pressure dressings around their necks to prevent bleeding." "Carotid body tumors should not be resected." All of these are beliefs or habits that some, or most, head and neck surgeons at one time followed with respect to their patients. When a set of rules or regulations are used to first establish boundaries and then to help solve specific problems within those boundaries, they are called paradigms. Some years ago, it was discovered that scientists used their paradigms very effectively to filter new data on a specific subject. Their paradigms allowed them to very easily recognize and assimilate information that agreed with their paradigms, but anything that contradicted, or didn't fit, a paradigm was not understood and, therefore, not accepted and sometimes was even invisible to the scientist.

The phenomenon of these patterns called paradigms holds true to all our interactions and our professional and social life. Twenty years ago, it was our paradigm that if we went to university and studied hard, when we finished, regardless of our degree, we could get a job and then afford to get married, have a family, and eventually retire with an acceptable monthly income. We made our plans for ourselves and our children on the basis of that paradigm. But that paradigm is no longer true. A paradigm shift has occurred, and the new paradigm is that we, as parents now, will have to support and possibly house our offspring regardless of their education because there aren't available jobs anymore. In Europe, more than 50,000 physicians are presently classified as unemployed. In daily life, we use our paradigms to deal with new situations and problems and to help predict the future. The problem is that new ideas don't fit our paradigms and become difficult to accept. The longer a paradigm has been present, the more difficult it is to change. Because paradigms are usually strongly held and we rely on them, we end up resisting change and, in fact, hope that there will not be any change. We, thereby, often miss valuable new ideas that would improve the way we do things.

Fifty years ago in Western society, it was a paradigm that women should remain in bed for a week after having a child, as my mother was made to do. The belief at that

time was that postoperative bleeding and other complications of the puerperium would be avoided by this maneuver. The doctors of the 1940s believed that the paradigm was correct and were unable to recognize that keeping a woman in bed was the worst thing that could be done with regard to deep vein thrombosis and emboli. The paradigm had blinded the physicians to the dangers of what they were recommending.

Until very recently, it was a medical paradigm that patients who lost significant blood during surgery should undergo a transfusion. This paradigm prevented many doctors from accepting members of the Jehovah's Witnesses for major surgery since the beliefs of that religious group prevented them from accepting blood. This paradigm conflict has now largely been resolved because the increased presence of hepatitis-C and human immunodeficiency virus contamination of blood has resulted in a dramatic paradigm shift, so that patients rarely undergo transfusion at major surgery unless the hemoglobin level decreases to less than 9 g/dL. We have learned that our original paradigm, although useful 20 years ago, had actually become detrimental to our patients by increasing their risk of exposure to hepatitis and acquired immunodeficiency syndrome.

For more than 50 years, doctors have been prescribing antibiotics for the common cold because it is our patient's paradigm that that is what is necessary despite the fact that we know, in 99% of the cases, antibiotic is not only not useful, but also contraindicated. It is estimated that in the Province of Ontario alone, 200 million dollars (Canadian) was spent last year on drugs to treat colds, which, in all probability, would have been better treated by bed rest, aspirin, and chicken soup.

What is the importance of knowing our own paradigms?

In 1968, Switzerland had been recognized for more than 100 years as the watchmaking center of the world. The Swiss made 65% of all new watches and received 80% of the profits of watchmaking. Within 10 years, less than 10% of watches were made by the Swiss. What occurred in 1968 to cause this change was a paradigm shift. Swiss research laboratories had developed the quartz watch but, when it was presented to the executives of the watchmaking companies, these executives failed to recognize its value because it didn't have bearings, it didn't have gears, and it didn't have a main-spring. You couldn't wind it. Their rigid paradigms prevented them recognizing the value of the quartz watch, and they didn't even protect it with a patent. That year at the annual watch congress, Seiko of Japan saw the invention and the history of watchmaking was changed. The quartz watch didn't fit the set rules and regulations that the Swiss watchmakers were so good at adhering to, and, 10 years later, the Swiss were making less than 10% of the watches in the world, and 50,000 of 65,000 Swiss watchmakers employed in 1968 had been laid off.

This phenomenon of paradigm shift and paradigm rigidity is true for any business, profession, or individual who

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tinue to be successful in the future. We must beware that our successful past does not block our vision for the future, in particular when paradigms shift rapidly. We must be alert to new ideas as they occur and be prepared to take advantage of them. Unfortunately, paradigms have their affect on our judgment and decision-making by influencing our ability to evaluate all new information. The surest way to be able to take advantage of new opportunities is to recognize exactly what our present paradigms are and be prepared to go beyond them, because no matter how good you are at using an old paradigm, when a new one appears you start over at the bottom. The past success with the old paradigm guarantees you nothing with a new one.

The best recent medical example of this relates to laparoscopic surgery. For 30 years, gynecologists have been using the laparoscope for diagnosis and minor therapeutic procedures, such as tubal ligations. Five years ago, the few surgeons who suggested that gallbladders could be removed laparoscopically were widely condemned and ridiculed by their colleagues. The very rigid paradigms of most general surgeons prevented them from seeing the possibilities of endoscopic surgery. Now open cholecystectomy is rare, and we have seen a major medical paradigm shift. One of the characteristics of paradigms is that in a cohort of experts, those individuals who are least experienced have the least rigid paradigms and are, therefore, most likely to profit when paradigms shift. That is because older individuals recognize the change last.

Most of you, I am sure, have seen your senior general surgical colleagues scrambling to take courses in laparoscopic surgery to keep up with the recent graduates who are rapidly acquiring the skills to perform all the cholecystectomies that need to be done. Now colon resections, splenectomies, adrenalectomies, nephrectomies, and pancreatectomies are all being done laparoscopically. Whether we, as individuals, agree with a new paradigm or not, its presence affects all decision and treatment on which it impinges until a new paradigm replaces it. We must be careful to not reject, out of hand, an alternative or new paradigm when it appears or we will become victims of paradigm paralysis, which is a terminal disease. There is a saying that goes "those who say it cannot be done should get out of the way of those who are doing it." What seems impossible today may be the norm tomorrow, and our challenge is to either cause the change to happen or to take advantage of it when it does.

We all have minor head and neck paradigms we use on a daily basis to assess and treat patients. For many years, one of my paradigms was that it was necessary to sacrifice the great auricular nerve when doing a parotidectomy. Some years ago while attending the video session at one of these meetings, I saw a video demonstrating the preservation of this nerve. It is now my paradigm that the great auricular nerve can, and should, routinely be saved during a parotidectomy.

Almost 2 decades ago, when I began to explore the use of needle aspiration biopsy to make a diagnosis in palpable abnormalities, I was trying to change the paradigm that then existed among most surgeons in North America. At that time, there seemed to be a knee-jerk response to remove a discovered lump without the appropriate investi-

gation we all know is required. The introduction and subsequent popularity of needle aspiration has helped change that paradigm. Most surgeons in most centers of the world now consider needle aspiration biopsy as one of the first investigative procedures for a lump in the head and neck, or virtually anywhere in fact. When that paradigm shift occurred, the individuals at each center who were promoting needle aspiration rapidly began to see most of the patients with lumps in the neck. When paradigms shift, everyone starts over equal, and those who recognize the shift earliest have a head start on even the most experienced individuals prior to the shift.

From the 1930s to the 1970s, the *sine qua non* of metastatic neck disease was a radical neck dissection. Even as late as 10 years ago at meetings of this Society, anything less than a radical neck dissection for nodal disease was condemned by the senior members of this Society as inadequate. Now, for patients with minimal squamous cell carcinoma nodal disease, and certainly for most patients with melanoma, some with salivary tumor, and almost all with thyroid carcinoma, a modified neck dissection, tailored to the pathology and extent of nodal disease, allows sparing of many structures routinely resected 10 years ago. When the paradigm for nodal neck dissection shifted to some form of selective neck dissection, the surgeon who had performed 1,000 radical neck dissections was recognized as no more expert at functional neck dissections than was the surgeon who had just finished his head and neck fellowship. The new leaders in head and neck surgery a decade ago became those who were expert selective neck dissectionists, and those head and neck surgeons whose paradigms were rigid fell behind when the paradigm with respect to neck dissection changed.

A year and a half ago, at the Head and Neck Workshop at the American College of Surgeons, I was amazed to hear a panel member say that his usual investigation for a patient with an upper aerodigestive tract primary included a rigid esophagoscopy. That individual had not recognized that 20 years ago a paradigm shift had occurred to the use of flexible endoscopy instruments; and a new paradigm shift has recently occurred to the use of video instruments with instantaneous feedback to patients, residents, and fellows, with permanent records for the chart that may be passed on to radiation oncologists.

Forty years ago, many head and neck surgeons had a rigid paradigm with respect to the surgical treatment of carotid body tumors. Dr. Hayes Martin called them the "Noli Me Tangere," and, in his 1957 book, commented that to operate on carotid body tumors was not only useless but actually harmful, and unjustifiably dangerous to life. At the time, that was a useful paradigm, since many patients ended up paraplegic or dead following an attempted operation on these very vascular tumors, in particular if the surgery was performed by an inexperienced surgeon. However, in time, skilled head and neck surgeons became expert at removing these tumors with, or without, replacement of the internal carotid artery when necessary, but not without major blood loss. A further major paradigm shift has occurred in the past 5 years with the tremendous change in the ability and availability of angiographers who can embolize these tumors, rendering them essentially avascular and easily re-

movable. Two weeks ago, I removed one of these tumors, following embolization, from a 67-year-old woman who was in hospital for a total of 36 hours, and whose operation took 1½ hours with a loss of about 25 mL of blood. Failure to recognize the paradigm shifts that have occurred in the management of this tumor clearly would put patients at unnecessary and increased risk.

How do we use and adjust our paradigms—old and new—in head and neck oncology? Certainly, we can evaluate new techniques or procedures with protocols and randomized double-blind trials. Clearly, this is most easily done by young, newly trained individuals whose paradigms with respect to a given disease, process, or problem are not fixed. Our paradigms are also adjusted or shifted when we observe practice changes in the individuals with whom we associate or admire, and this, of course, is what occurs at meetings such as this when new ideas are presented by people we know and whose opinion we value. Our very membership in this organization means we are prepared to have our paradigms challenged and adjusted on a yearly basis.

Probably the greatest paradigm shift that is occurring in head and neck oncology, at the present time, relates to the increased cost of medical care, with a simultaneous decrease in the available money to pay for it. Obviously, this varies from country to country in the world, but every oncologist in this audience has undoubtedly experienced the effect of cost containment by government, insurance companies, and administrators. Most of us are now working more and getting less, and that is a paradigm we are going to have to learn to live with because the ability of individuals and governments to pay endlessly for medical care is at an end.

We can, of course, minimize the effect of this change on our lives, and our patients, by altering some of our other paradigms. For decades, it has been our paradigm that we admit patients to hospital for workup before major surgical procedures and keep them in hospital until they are appropriately convalesced. That paradigm has changed. There is no reason that virtually any patient cannot be admitted to hospital the day of their operation and discharged home earlier than they are at the present time. This can be facilitated by having patients visit the hospital as outpatients a week, or more, in advance to have blood work, consultations, cardiograms, and roentgenograms performed on an outpatient basis, and by getting home-care practitioners involved in the patient assessment that will make way for the patients' early discharge even before they are admitted to hospital. I have, in fact, been doing this with all my major head and neck cases, with rare exception, for the past 2 years, and not only does it work, but the patients like it. Certainly if I were going to have any major operation, I would prefer to sleep at home the night before the operation and have access to my own bathroom, my own shower, and the comfort of my family rather than being in a noisy, unfamiliar hospital bed. Similarly, most patients with major head and neck resections, in our hospital, are sent home earlier than they were even a year ago, often with a nasogastric or percutaneous endoscopic gastrostomy tube in place, sometimes with tracheostomy tube still present, and often with drains still in. I know that, in many centers, insurance companies are now insisting that this be done, and I would suggest to you that it is far

better that we take the initiative in that regard. In our institution, we have actually closed surgical beds and, at the same time, increased the available operating time with the money we have saved by these closures. If we do not use the money that is available as economically as possible, I predict that very soon we will be in the situation in which we will be required to ration health services and decide whom we can afford to treat.

Obviously, the more patients we can treat on an outpatient rather than inpatient basis, the more money we save the system. To that end, I recently analyzed our patients undergoing nontotal thyroidectomy surgery during the past 10 years, and have found that, on an average, 10 years ago, patients were being admitted to hospital for almost 4 days. Two years ago, we dropped that number to 1.7 days with increased use of same-day admissions, then subsequently to 1.2 days, and this year, by initiating a policy of outpatient thyroidectomy, have dropped the average stay of these patients in hospital to 6 hours. This has all been achieved without any increase in complication rate, without any increase in the re-admission rate, and with patient acceptance and compliance. Similarly, all my parotidectomies, with rare exception, are now performed on an outpatient basis. The secret of the success to this plan, of course, is to change the patients' paradigms. The patients must know, from the very beginning, that their procedure will be performed on an outpatient basis, and that a nurse will visit them at home the day after their surgery, if necessary. A home-care visit costs \$35 (Canadian), and a hospital bed costs \$1,200 per day.

If we, in our individual countries, are going to maintain the kind of health care system we all believe in, we are going to have to become a part of the solution to the problem rather than the main cause of the problem ourselves. To that end, the current paradigm that every patient needs a maximum amount of investigation has to be changed. Numerous studies have shown that routine investigation of healthy patients wastes money, patients' time, and physicians' time. Routine hospital blood work and investigation has to be stopped now. We, as individuals, have to become involved in the setting of the guidelines for the residents and fellows we teach, and make them question the usefulness of every investigation and procedure they plan.

Doctors are responsible for between 70% to 80% of health care spending because of the procedures we perform, the drugs we prescribe, the tests we order, and the hospital stays we initiate, and I would suggest to you that we often do not make these decisions very well. We do it the way we always have because our paradigms say we should. We have, in many cases, a knee-jerk response to patient disease. For example, thyroid nodules are still being investigated with scans and ultrasound tests that are essentially useless in establishing malignancy. Patients now undergo not only a computed tomographic (CAT) scan if they have an abnormality, but also magnetic resonance imaging (MRI), if available, not because there is evidence that the further investigation helps, but because the machine is there and we have always used expensive investigations when they become available.

I believe we have to change the way we do things. We cannot afford to admit patients as we routinely have in

the past to "work them up." We have to look very carefully at how we use, and order, antibiotics and other medications, because if we don't police what we do, and find the most reasonable and economic way of doing it, government will. We and our house staff order useless and unnecessary tests, such as the measurement of three-times-a-day hemoglobin level, or daily electrolytes for a week, often without assessing whether, in fact, these are indicated. If we maintain our present inertia and continue to order routine tests, such as cholesterol tests despite the constant questions about their value, we are literally pouring money down the drain, money that will then not be available to transplant the kidney in a 15-year-old patient or reconstruct the jaw of a 50-year-old patient. We can no longer consider only an individual patient's wishes, but must also assess society's needs as well. There is no medical care system in the world that would not be improved by changing some of the paradigms of the physician caregiver.

Because we can now perform heart, lung, and liver transplants, should they be available to everyone, and if so, who is to bear the cost? Should every patient have an MRI for every questionable abnormality? The changes that have occurred in medical care in the past decades have resulted in increasing costs of medical care, both to the individual and to the health care system. There is no question that there are going to be tough economic decisions made in the next few years, let alone in the next few decades. Fiscal restraint is playing an increasing role in the health care of every country. It is strange to think that we must take into account the hospital accountant's balance sheet when we are deciding what is best for a patient, but that is the reality of the 1990s. It is the new paradigm. In the United States, health care costs more than \$800 billion a year, or over \$2,300 per person. The U.S. health care system is now the fifth largest economy in the world and has more user fees, more regulations, and more security than any other system. At the same time, there are 37 million people without insurance, 30 million people are underinsured, and health care remains the most common cause of personal bankruptcy.

In the province of Ontario in which I live, a third of the budget goes to health care. What this means is that this money is then not available for schools, for roads, and for other vital services. I would suggest to you that at least part of this increasing health care cost is not only directly attributable to us but is preventable. Every time you order an unnecessary test, or the most expensive antibiotic when a cheaper one will do, or when you admit a patient to hospital who could be managed on an outpatient basis, you increase the waste on the health care system and help contribute to the eventual deterioration in health care. We must remember that money lost to the health care system now is money that won't be available to the system for our children and grandchildren.

An additional challenge facing all of us involved in health care today is not merely one of rising costs and limited funding, but also of redefining our paradigms of how health care is defined and provided. We need to spend less time and money on disease treatment, and must try to refocus on preventive care and education, which requires changing not only our, but also our patients' paradigms.

These are interesting times and I think we all have the opportunity to make the paradigm shifts that will change the way health care is delivered to our patients, and thereby provide better care for them now and in the near future.

How have paradigms affected this Society? Certainly paradigm rigidity can affect any organization to its detriment.

It used to be a head and neck surgical paradigm that plastic surgeons operated on "nothing deeper than skin, and on no vessel larger than a capillary." The rapid paradigm shift that occurred with the introduction of musculocutaneous flaps and microvascular anastomoses has changed not only the head and neck surgeon's opinion of his or her plastic surgeon colleague, but also the very makeup of this Society—to the betterment both of our patients and the Society. Similarly, 40 years ago, when this Society was formed, it was thought that head and neck surgery should be performed only by general surgeons. The rigidity of that paradigm caused a rift between general head and neck surgeons and otolaryngology-trained head and neck surgeons that has only lessened in the past decade. That paradigm rigidity caused considerable bad feeling among individuals who should otherwise have worked together to solve common problems. Happily, that paradigm has now shifted but is in danger of being replaced by one that implies that head and neck surgery can only be done by individuals trained in otolaryngology programs, a paradigm that I think would be equally detrimental to patient care.

Twenty-five to 30 years ago, a paradigm shift occurred in head and neck surgery, from single oncologic assessment and treatment to combined evaluation and protocols. Those head and neck surgeons who aligned themselves with radiation oncologists rapidly became recognized as the leaders in head and neck malignancy. That shift has resulted in better care for all patients with head and neck cancer. The multidisciplinary clinic for tumors now involves the input of surgical, radiation, medical, and nursing oncologists, and many other individuals, including anatomical pathologists, speech and language pathologists, and nutritionists. Those individuals in this room who were the first to be involved in the establishment of these clinics have set the paradigm that we have all followed for over 2 decades. The contribution of nonsurgical oncologists has steadily increased in the past decades, and now we certainly could not manage our patients properly without them, and it seems to me we should not continue to run this organization without their membership and their representation at all levels of our organization. If our paradigm in this Society remains rigid that head and neck cancer must be dominated by head and neck surgeons, then as the paradigm shift occurs, we will be left behind just as the Swiss watchmakers were.

For 40 years, this Society has been primarily a surgical one and, although there is no question that we have recognized the contribution of radiation and medical oncologists and have attracted the leaders in these areas as both active and consulting members, it seems to me the time has come to recognize the importance of the multidisciplinary nature of our Society, not only in fact, but also in name. I think if we are going to attract nonsurgical oncologists to this Society in a significant number, we have to commit ourselves to recognizing them as

equal partners in the running of the organization, and in the name of the Society itself. I think it is time we changed our name from The Society of Head and Neck Surgeons to The Society of Head and Neck Oncologists or some similar generic name. Oncology means "the study of tumors" or "the sum of knowledge concerning tumors"; I think we should look to the future as a society comprised of all individuals involved in the evaluation and treatment of tumors of the head and neck. I don't think this name change has to be done now, but soon. If we maintain the rigid paradigm that we must keep the name we started with, I think we may have dif-

ficulty in growing and expanding the way we all hope will occur over the next decade.

Certainly as a head and neck surgeon, I would be less likely to join an organization called The Society of Head and Neck Radiotherapy. Similarly, I think the leaders in radiation and medical oncology, pathology, physics, and epidemiology are more likely to join our Society if its name reflects all areas of oncology training and interest.

I would ask all of you to decide where you would like to see this Society in the next 10 years, and consider this proposed paradigm shift as something that will be of benefit to the Society, to all of us, and to our patients.