The future of our specialty

Orthopedics and its Trojan horse

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Augusto Sarmiento

Past-president of the American Academy of Orthopaedic Surgeons
The Arthritis and Joint Replacement Institute, HEALTHSOUTH
Medical Building, 1150 Campo Sano Avenue, Suite 301,
Coral Gables, FL 33146, USA

Ladies and gentlemen,

I thank you for the opportunity and honor to participate in this congress and to address you as your president's guess speaker. I am not only a good friend and admirer of Professor Jarvinen, but also a person who for many years has looked at Nordic medicine as a bastion of intellectual integrity.

I do not wish to burden you with the often-performed ritual of reciting the many developments that changed the shape and face of orthopaedics during the second half of the 20th century. Allow me then to dwell on personal observations, from the American perspective, on the possible downside of alleged progress.

I have chosen to entitle my remarks "Orthopedics and its Trojan Horse", in an attempt to identify the subtle way in which several of the changes that our profession has experienced came about.

Most of the progress we have witnessed has been of a mechanical, technical nature. A number of those developments, however, were not the product of innovative ideas that came from orthopedic research laboratories. People outside our profession, for example, invented the CT scan and MRI. Along with others in medicine, we have, nonetheless, reaped the benefits of their contributions.

The resulting increased dependency of the orthopedist on technology for the diagnosis and care of musculoskeletal conditions has resulted in a parallel loss of interest among its practitioners in the basic understanding of the biological foundations of our profession. This loss of interest is accepted by many as being inconsequential and it is often compared to changes that modern society has undergone.

I have previously referred to an unforgettable experience I had with an orthopedic resident a few years ago. For me that experience put into focus for the first time the depth of the change that technology had made in the psyche of the new generations of orthopedic surgeons. During a lecture I was delivering to a group of residents on the effects of the environment on fracture healing, this particular resident was sitting in the back of the auditorium reading the business pages of the local newspaper. Upon completion of my lecture, I approached him and said that his action was not only disrespectful but also difficult for me to understand. I could not grasp his failure to appreciate the scientific value of the subject at hand and its practical applications. With incredible candor he replied: "Doctor Sarmiento, frankly I don't care to know how fractures heal, I simply want to know how to fix them". At first, I did not grasp the true meaning of his words and instinctively tried to dismiss his comment as coming from a person who should be considered an aberration. "Nobody else in his class feels the way he does", I said to myself. How wrong I was! Some additional thinking brought me to conclude that the young man was, in fact, an articulate spokesman for his generation who had clearly depicted the ethos of the times. He was simply the only one in the group, courageous enough to voice aloud his mind and that of his contemporaries.

Was this resident, representing a large segment of the orthopedic community today, wrong? Shall

we worry about the trend? Or shall we accept it as being an example of the inevitably changing course of history? Perhaps the latter. But if we are to give that reply we must consider its implications and possible unanticipated consequences.

If technology, such as MRI and arthroscopy, totally replace the clinical examination in the case of a painful joint; if all fractures are treated surgically with nails, plates or screws; if low-back pain is evaluated entirely with MRI tests and treated by means of percutaneously-performed fusion; if all arthritic joints are managed with arthroplasty, then should the treating orthopedist require the long period of didactic education to which he is now subjected? I submit to you that in that case a shorter period of training should suffice. The time now devoted to basic sciences could be virtually eliminated, since the knowledge acquired in this area will not be, according to the new surgeon, necessary for the appropriate discharge of his responsibilities.

Society does not require the automobile mechanic to gain an education that encompasses extensive training in physics, chemistry or calculus. Why then should the technician/surgeon be treated differently? If manual technical expertise is all that is necessary for the appropriate discharge of his duties, we could conclude that the education of the orthopedist could be limited to mastering, as much as possible, those skills.

Orthopedic residents, in many training programs, are currently completing their education not knowing how to examine a painful joint properly. In the presence of a patient complaining of knee, shoulder or wrist pain, an MRI is immediately obtained and many of the treatments instituted are based on the alleged pathology reported by the radiologist reading the MRI. They do not know how to reduce a fracture by closed means. At the sight of a fracture, surgery is immediately planned and executed. Any deviation from the normal, as depicted on the pre-operative x-ray films, no matter how insignificant it might be, calls for surgery. They seem to believe that in the absence of perfect anatomical reduction of their fractures, all patients will inevitably suffer disastrous consequences. The Colles fracture is a good example. At this time, open reduction and internal fixation of these fractures is virtually mandatory. It does not matter that since time immemorial the majority of patients who sustained these fractures did well in the presence of an even imperfect reduction and mild residual incongruity; and that surgery was appropriate only in a minority of instances. Today, the restoration of anatomy, as far as they are concerned, guarantees the prevention of imagined painful and severely disabling arthritic changes. The existence of the technology that makes possible the reapproximating of fractured fragments has become a mandate to use the technology. Orthopedists are rapidly becoming cosmetic surgeons of the skeleton.

It is generally believed that a longer time in residency training is now necessary, because the body of knowledge in orthopedics has allegedly increased dramatically in recent years. I question the accuracy of that perception and I suspect that from the technical point of view, the body of orthopedic knowledge the orthopedist needs today for the appropriate practice of the profession is not greater than it was a few decades ago. It may be even smaller. Technical knowledge is not necessarily cumulative. New knowledge replaces old.

Examples to support my views abound. In my surgical practice I have dealt exclusively with total hip arthroplasty for nearly three decades. Therefore the medical establishment classifies me as a hip specialist. Prior to limiting my work to total hip replacement, I performed osteotomies, fusions, neurectomies, core decompressions and tendon releases around the hip. I took care of children with congenital, developmental and traumatic conditions of the hip. I reduced and nailed slipped epiphyses, applied cast and braces for patients with Perthes disease, drained infected hips, applied traction of various types and stabilized all types of hip fractures. I performed mold arthroplasties and endoprosthetic replacements. In addition, I carried out a general orthopedic practice. Since I was primarily interested in hip surgery, I think I was then a hip specialist to a greater degree then than I am today. Today, I am simply a total hip specialist.

Accurately assessing the genesis of the transformation of our specialty is difficult because the issue is complex and multifactorial. It is not inappropriate, however, to speculate and to draw conclusions. In that manner progress can be made.

In an attempt to control the escalating cost of medical care, prompted allegedly by the cost of new technology, governmental and other third party payers have reduced financial reimbursement for physicians' services in a rather Draconian way. Anxious to maintain the high income to which they had grown accustomed, physicians tried to offset the financially-imposed loss by increasing the volume of services rendered. For surgeons, the most effective means to accomplish that goal was the performance of more surgery. After all, the surgical treatment of musculoskeletal conditions has always paid a great deal more than the conservative one. Consequently, the criteria for indications for surgery were rapidly expanded.

The number of unnecessary surgical procedures performed at this time in the United States staggers one's imagination. The abuse of arthroscopy, MRI examinations, spinal instrumentation, arthroplasty and internal fixation of fractures is obscene. It is very difficult to deny that greed motivates those who so flagrantly have abused the system. I have asked myself a number of times what would happen if the reimbursement for the treatment of musculoskeletal conditions, rather than being higher for the surgical approach as it is today, were to be reversed. We could predictably anticipate a sudden diminution in the number of patients treaded surgically and the establishment of a system where a rational balance between the various methods of treatment would be possible. The brain of a rocket scientist is not required to guess the reaction from the manufacturers of surgical implants.

The misguided proliferation of subspecialty societies in orthopedics has encouraged abuse, because subspecialties, almost without exception, are defined by technical procedures. The public assumes that the subspecialist in orthopedics is a physician who always treats problems by surgical means. The subspecialists, in turn, claim that they are entitled to higher remuneration for their services. This artificially-created hierarchy places the non-specialists, though at times probably as knowledgeable as the specialists are, in an inferior social and economic category.

The teaching faculty in orthopedic university teaching programs is composed entirely of subspecialists. It is difficult to argue against the advantages of this pattern. Each one of them is assigned residents in order for the students to benefit from the advanced knowledge and expertise of the mentors. But since the number of subspecialty sections has grown significantly, the residents' rotations through each one of them have become shorter. This has prompted a large percentage of residents to seek additional fellowship education upon completion of the required 5-year residency training. They feel insecure about their overall competency and partially assuage the perceived deficiency by spending additional time in the protective environment of academia. As a result, the glut of fellowship training programs has reached new heights and the number of fellowship-trained orthopedists has grown exponentially. One must wonder if the plethora of such superspecialized orthopedists is necessary or desirable.

It is my view that the image of Orthopedics in the eyes of the rest of medicine has changed. There was a time, not long ago, when orthopedics was clearly perceived as a discipline that, before it could be practiced, required a long period of sophisticated education and experience. Only those who went through that long and rigorous period of training could effectively diagnose and manage the care of patients with musculoskeletal conditions. The scope of orthopedics was clear to all. Orthopedic surgical procedures were forbidden territory to all other surgeons. Our fortress, we assumed, was impenetrable. There were no barbarians at the gate; and if any of them were to appear, we were certain to be able to repel them summarily.

However, things changed dramatically within a very short time. The change happened almost overnight. The fortress was assailed without resistance and with minimal difficulty. Some managed to get into the citadel with the ease of a Trojan horse. As in the case of the Greek Homeric legend, the warnings of Cassandra, as predicted by Apollo's curse, were ignored. The voices warning the imminent invasion went unheeded.

I suspect that the successful invasion of our castle was primarily the result of the spreading perception among others, that orthopedics was no longer a well-defined discipline. It consisted simply in the performance of a handful of technical

procedures, which in their opinion could be performed by any one with a modicum of surgical skills. This explains why neurosurgeons, who never thought of surgically stabilizing fractured or degenerated vertebral bodies, now care for a very large percentage of patients suffering from skeletally-produced disability. Plastic surgeons perform surgical stabilization of fractures of the entire upper extremity and correct arthritic conditions by means of osteotomy and arthroplasty. Many of them have only a very limited knowledge of the pathophysiology of bone repair and metabolism, since such knowledge is not part of their educational background. General surgeons, in an increasingly large number of institutions, stabilize fractured bones when associated vascular pathology is present. They also apply external fixators, in the case of pelvic fractures, to control bleeding. Podiatrists have become, in the eyes of the community, the true foot specialists. They no longer limit the scope of their practice to the care of disorders of toenails, the trimming of corns and the prescription of arch supports. Within a generation the scope of their practice underwent a radical change. Currently they perform thousands of surgical procedures such as correction of hallux valgus, osteotomies, internal fixation of fractures of the foot, ankle and leg, total ankle prosthetic replacement and of course, the ubiquitous arthroscopic debridement of joints. In several of their hospitals, they perform total knee and soon, I anticipate, will perform total hip replacements. I suspect that one day they will argue that the hand should be their territory because its anatomy is so similar to that of the foot.

How was it possible for some of these changes to have taken place so quickly in front of our helpless eyes? To a great extent we created the monster and invited the onslaught by encouraging others to take the actions that we now resent. We dismissed as demeaning the care of conditions we considered not amenable to surgery, and decided to concentrate on more glamorous and financially rewarding areas of elective orthopedics. Other times we invited them to attend our continuing educational activities under the foolish assumption that the newly acquired knowledge would result not in their performing the procedures but in the referral of new patients to us. Obviously, as soon as they learned the surgical techniques, they contacted the manufacturers of surgical implants and arthroscopes and requested manual bio-skill laboratory experience. Industry gladly agreed to the request as it anticipated, and rightly so, new and huge market opportunities.

At this time there is a great deal of enthusiasm in the lay and scientific and clinical communities over the use of various growth factors in the care of a multitude of musculoskeletal disorders. As far as I am concerned, the proven successful clinical application of the promising new technology still lies in the future. This has not precluded the sale of an avalanche of products that, with only minimal evidence of success, are claimed to accelerate fracture healing and restore to normal degenerated articular cartilage.

If and when the application of these technologies becomes a reality, who will be the individuals to use them clinically? Will it be the orthopedist and the orthopedist exclusively? I doubt it. Many others will claim the right to be a part of a new economic bonanza. Anyone with the most basic manual skills should be able to inject into a joint or a fracture site the paste or glue that will cure arthritis and make fractures heal faster than human nature, left alone for millions of years, was not able to accomplish.

The percutaneous injection of “bone cement” in the treatment of vertebral fractures will soon reach epidemic proportions. It should be noted that this promising procedure is not being performed by orthopedic surgeons but by interventional neuroradiologists. Though it is claimed that the use of the technique is limited to severely osteoporotic bones, it can be safely anticipated that many other vertebral fractures will soon become candidates for the procedure and the definition of osteoporosis will be broadened. Investigators claiming unprecedented success will then publish papers. In some instances, however, they will be individuals holding stocks in the sponsoring company and obviously interested in the financial success of the venture. Based on past experiences, it is very likely that we will first learn about the alleged successes from reading, not peer review journals but tabloid orthopedic journals. Publications that are gaining a wider readership than peer review journals.

This phenomenon will be a repetition of the already well-established pattern surrounding the marketing of prosthetic implants. It is said that there are at this moment more than 300 different hip prostheses on the market. It is alleged that extensive research went into their development. When one fails, the orthopedic community is not informed as to why it failed. We are simply told that intensive research made possible the production of a better one. Is there anyone naïve enough to believe seriously that "extensive" research has gone into the production of the 300 different implants, when a cursory look at them easily shows that the alleged improvements are, in most instances, nothing but minor changes in the geometry or texture of the original ones? This has not precluded recent claims that changes made in the materials that form the articulating surfaces of total hip prostheses can be "guaranteed for life", and have made possible the performance of the operation in patients of all ages.

Not very many orthopedic surgeons have recognized that the destiny of our profession has been in the hands of the manufacturing industry for quite some time. In a very subtle but effective way, Industry has managed to take significant control of orthopedic research and the education of the orthopedist.

Open the many major American orthopedic journals and you will see that the pages devoted to advertisements often outnumber the ones dedicated to the presentation of scientific material. And with increasing frequency you will also notice the number of authors who are either full-time employees of the supporting manufacturing companies or recipients from them of handsome benefits.

Although there is no doubt that a great deal of good research has been done and is being done under the sponsorship of pharmaceutical and manufacturing Industries, one must question the credibility of the conclusions reached by investigators having strong ties with the sponsoring companies, who therefore have vested interest in the financial success of the product under study.

The vast majority of continuing education courses are held with the acknowledged or unacknowledged support of Industry and their content has been designed, in varying degrees, to satisfy their commercial needs.

I came to recognize this phenomenon unequivocally when I planned, some 10 years ago, the presentation of an international continuing education course dealing with total joint arthroplasty. I invited a number of the best-recognized joint replacement orthopedists at that time to serve on the faculty of the course. I also issued an invitation to manufacturers of prosthetic implants to display their products in the exhibit hall of the hotel. I required from them a fee for the opportunity to participate. These moneys were to be used to subsidize the cost of traveling and lodging the foreign faculty. They all accepted the invitation. However, three of the signers of the letters of acceptance inquired, using almost identical words, about how many speakers they were entitled to appoint to the faculty of the course.

There was then no doubt in my mind that Industry no longer was afraid to publicly acknowledge their power and degree of control of orthopedic education. One simply needs to look at some of the most popular and successful courses held in America to see the hand of Industry dictating the content and faculty of those courses. Many courses resemble Middle Eastern bazaars where the vendors, in this case orthopedic surgeons, advertise their products and openly argue and compete with their rivals. Some of them, usually the one whose names are household ones, hold a major financial interest in the products they so vigorously defend.

Orthopedics and Industry have worked together for many years. That relationship must be preserved but only if a proper balance is maintained and Industry does not compromise the professional autonomy that medicine requires for the success of its mission.

The views I have expressed today are the product of years of observation of the relationship between medicine and industry. Observations made during a long academic career, during which time I, personally, and the departments of orthopedics over which I presided, dealt with manufacturing companies. The departments benefited from the financial support and allowed us to carry out additional research studies of various types. We, at times, received royalties from products we developed. Personally, on two occasions I also benefit-

ed financially from royalties obtained from the sale of the implants I had conceived. I now regret having benefited financially, even though I tried in earnest to avoid any hint of impropriety. In spite of that, I never felt comfortable and soon chose to abandon the practice.

I have lectured at hundreds of institutions around the world. I have several times received an honorarium from industrial concerns for such lectures when they sponsored the event. Even though the topics I discussed were of a basic science nature and never attempted to sponsor any one particular manufacturer, I feel uneasy about my willingness to accept financial compensation.

For this and other reasons I have previously suggested that a system could be structured between medical schools, orthopedic investigators and industry where royalties derived from a product, now given to the surgeon, be deposited in the Orthopedic Research and Education Foundation (OREF). This organization, in turn, would disburse the funds in a manner that benefits not only the investigator and the institution he represents but other institutions as well. This policy would eliminate possible conflicts of interest while increasing the subsidy for meaningful research.

I suspect that many of the changes we have observed in the practice of our profession are a reflection of changes that have altered society as a whole. Society in America, and I do not really know to what extent in Europe, seems to have embraced an extreme capitalist position where the only thing that matters is profit. The proponents and practitioners of this philosophy live by the precept that "the only thing in life more important than money is more money". Since making greater and greater profit is the name of the game, anything is OK, suggesting therefore that there is nothing morally wrong. To many, Ethics is not a set of universal principles of conduct but something that can be casually modified to accommodate individual desires and perceived needs. This practice has corrupted the health-related medical field to unprecedented and never before anticipated degrees.

These observations have led me to conclude that the true crisis facing medicine today is the fast growing loss of professionalism in its ranks. The resulting loss of professionalism is the reason behind the economic disarray so widely known. It permeates and undermines the foundations of virtually all the health-care related issues that we are desperately trying to solve.

I do not believe the changes necessary to improve matters will take place overnight. As a matter of fact a resolution may not be possible. The large group of people with ties to the powerful for-profit hospitals and pharmaceutical and manufacturing industries will oppose any change. In spite of the pessimism that I have expressed, I see a greater number of people, in many walks of life, beginning to appreciate the magnitude of the problem and committing themselves eventually to do something about it. Maybe the time for liberation from outside pervasive forces and the restoration of professionalism in medicine has come and, as in the case of Pandora's box, hope remains. The crisis has reached a point where inaction is no longer a wise or viable option.

Mr. President, ladies and gentlemen, I have discussed with you subjects that may have no relevance to the Nordic orthopedist community at this time. I suspect, however, that sooner or later, the situation that American medicine faces today, you will face tomorrow. I wish you greater wisdom than the one we have been able to muster up to now.

Thank you again for the honor to be with you.