

## Thomas G. Wharton Memorial Lecture

# Who Moved My Pump

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VICE PRESIDENT FRAZIER: I am honored next to bring to the podium a colleague I met some 20 years ago at our Academy meeting. A few years passed and his presence began to be noticed and felt by all of us. I have not known him in a personal way, but he has been nothing but kind, helpful, and professional to me. And to me, that is personal.

He grew up in New York and graduated from Quinnipiac perfusion training program in Hampton, Connecticut, in 1988. He worked at Columbia Presbyterian Hospital in New York until 1999 as a pediatric perfusionist. He then spent three years as a pediatric perfusionist at Nemours Cardiac Center here in Orlando, Florida.

He is now Director of Clinical Affairs at Berlin Heart.

Please join me in welcoming this year's Thomas G. Wharton Memorial Lecture speaker and our reigning President of the Academy, Robert Kroslowitz.

[Applause]

PRESIDENT ROBERT KROSLOWITZ: In July 1896, Stephen Paget's classic textbook, *Surgery Of The Chest*, was published. In this book, Paget who was an accomplished surgeon declared the heart to be off-limits to surgeons. He wrote, "Surgery of the heart has probably reached the limits set by nature, no new methods and no new discovery can overcome the natural difficulties that attend a wound of the heart." On the Continent, one of Stephen Paget's colleagues, Professor Billroth concurred stating: "A surgeon who tries to suture a heart wound deserves to lose the esteem of his colleagues." Paget and Billroth's pessimism notwithstanding, Ludwig Rehn of Frankfurt, a former German hussar turned surgeon, made the first successful suture of a human heart wound in September of the same year, 1896. This was the beginning of cardiac surgery, more than one century ago.<sup>1</sup>

Members of the Academy, guests, colleagues and friends, I am humbled to be here today and honored having been given the responsibility as the President of the American Academy of Cardiovascular Perfusion to deliver the Thomas G. Wharton Memorial Lecture, which I have titled "Who Moved My Pump". Not dating anyone here today, I am confident that there are not many in

attendance at this meeting who actually had what has been described in previous Wharton Memorial Lectures as the special privilege to have known Tom Wharton. In a 1983 eulogy<sup>2</sup>, Tom Wharton was remembered as the best friend that perfusion ever had. He believed in perfusionists and although a non-perfusionist, he believed in perfusion as a profession and a career. Those who knew Tom, and those of us who were unfortunate not to, still benefit from his efforts today as it was through Tom's persistence and financial support that The American Academy of Cardiovascular Perfusion was founded to provide what I consider the best annual academic meeting to serve the perfusion community.

Where then, does one start to prepare an address, given so eloquently by many of my predecessors, to honor a man that left such a legend? What could one possibly present that could make as great of an impact as Tom, on those of you here today? I concluded that this would be an impossible task and so unfortunately, all that I am able to share with you today are some current observations and my thoughts on the state of the profession in the hopes of achieving what Tom Wharton hoped to accomplish with the Academy, thoughtful discussion.

A remarkable little book was published in 1998 entitled "Who Moved My Cheese?" Written by a physician named Spencer Johnson, the book is an amusing and enlightening story of four characters that live in a maze and look for cheese to make them happy. Johnson who most certainly was not a cardiac surgeon notes in the forward:

The four imaginary characters depicted in this story, the mice Sniff and Scurry, and the little people, Hem and Haw, are intended to represent the simple and complex of ourselves, regardless of our age, gender, race, or nationality. Sometimes we may act like Sniff who sniffs out change early, or Scurry who scurries into action, or Hem who denies and resists change as he fears it will lead to something worse, or Haw who learns to adapt in time when he realizes that change leads to something better. How ever we deal with change in our individual circumstances, we all share something in

common, a need to find our way in the maze and succeed in changing times.

The most notable change in cardiac surgery occurred on May 6<sup>th</sup>, 1953 when Dr. John Gibbon, after many years of disruptive challenges, performed the first successful open heart surgical procedure with his heart lung machine. While it is true, as noted earlier, that the concept for open heart surgery dates back to the 1800s, the fact that Dr. Gibbon was able to utilize a heart lung machine created not only the means to develop new surgical techniques to repair defects of the heart, but his success also created a new profession that we all have embraced.

In the early years following this historical event we have documented incredible growth, advancement, and additional historical achievements in both the profession and the field of cardiac surgery. In more recent times, however, we faced disruptive challenges that I believe have distracted from any notable change and the advancement necessary to sustain the profession. In his 1992 presidential address to the Western Society of Thoracic Surgery, Dr. Richard Anderson described the 1960s as the decade of innovation, the 1970s as the decade of clinical expansion, and the 1980s as the decade of increasing constraints. In a later discussion, the 1990s were described as the decade of consolidation, and the first decade of the 21<sup>st</sup> century as the decade of change.<sup>3</sup>

In 2008, fifty-five years after the first successful use of the heart lung machine, the profession that we have embraced is facing disruptive challenges that I believe will require change, change in attitude, behavior, priorities, training, relationships, self-image, and rewards. We must adapt to these potentially disruptive challenges in a mature, constructive manner, embracing our core values yet setting new expectations and directions. The perfusion community must develop some sense of shared values and unity of vision because without such a common focus, we risk confusion, the lack of supportable operational plans, and certainly retraction, if not possible disintegration of our specialty. Probably more important than any other single factor necessary for our ultimate success is to understand not only the art but also the science of leadership. Without such an understanding of leadership, we have the same potential to fall into the similar quandary that beset many of the unfortunate technology start-up companies who did not adapt to change and ultimately failed. Our profession has relied heavily in recent years on technology development for clinical advancement, an approach that places heavy emphasis on partnering with industry for product development and clinical

advancement. Unfortunately, in this decade of change, industry may not look on us any longer as a growth industry, putting in jeopardy those long-term mutually beneficial relationships that we have relied on in the past.

Over the past few years many of you, in both the academic and private arenas have seen an overall decrease of clinical volumes. This is particularly true for coronary artery bypass grafting and congenital heart surgery. Reasons for this decline include alternative technologies, a decentralization of cases, and an overall healthier population. The rapid evolution of percutaneous technologies, such as transluminal angioplasty, intravascular stents, and drug-eluting stents has been impressive. The initial work with trans-catheter valve replacement has not been as promising, but as history repeats itself, this technology will improve and is becoming a reality. This type of technology evolves rapidly, changes frequently, and therefore tends to emphasize short term innovation to the point of obscuring the long term clinical and economic outcomes. In the surgical suite, minimally invasive off-pump bypass surgery, with and without robotic assistance has continued to develop and improve. The benefits of these technologies, real or perceived, have not yet been fully realized but I believe will further impact the decline in clinical volumes in the future and should remain a concern. But this concern is nothing new. Twenty four years ago while delivering the Wharton Memorial Lecture<sup>4</sup>, and discussing the direction of open heart surgery and cardiopulmonary bypass, Charlie Reed stated "recently we have been bombarded with alternatives for the treatment of coronary artery disease". Charlie went on to state that with all the alternatives to surgery and with what appears to be a minimum 25% decline in open heart cases over the past two years, one wonders about the future of the perfusionist. Fast forward to a posting on a public perfusion forum this past December, with doom and gloom in the subject line. The author referred to discussions on the impact of OPCABs, interventional cardiology, and percutaneous implants on the primary component of our profession, cardiopulmonary bypass, noting there are perfusionists that have lost their jobs and certification due to reductions in heart surgery.

Are we in real trouble as a profession? Probably not. Are there constructive methods to adapt to these disruptive challenges? There are many. Will we need to change? Yes. Cardiopulmonary bypass has always been considered a necessary evil and has been the focus of attention for improvement and now elimination. But the results of open heart surgery with cardiopulmonary bypass are durable in almost all comparisons. Most importantly, on any relative

value scale, what we do every day has to be considered special, rewarding, and important. The role of bypass surgery will, however, change. Interventionalists will not completely overcome vascular biologic adaptation to injury when the intima and media of arteries are disturbed. Stents, whether drug-eluting or not, may not be optimal for diffuse, smaller vessel disease in diabetics or patients with left main coronary artery disease, or certainly, when bypass surgery is combined with other treatment modalities. We must continue to emphasize the durability of our solutions and the quality and scientific scrutiny that the surgical specialty we support has endured. But also, we must read the handwriting on the wall and prepare for the disruptive challenges that we as a profession currently face and will face in the coming years. I would encourage each of you to explore and embrace the technologies that were presented this morning as modern and future responsibilities of the perfusionist. Look to the future. Move your pump to the emergency room for ECPR. Are you ready for the expansion of adult ECMO? Move your pump to the ICU. Each of you deal with failing hearts on a daily basis; explore the opportunities that exist in the latest treatments for heart failure. Imagine being involved with advances in cancer therapy. Move your pump.

The questions that I would ask you today are will you move your pump into the future? Or will you one day realize that someone has moved it for you? Who Moved My Pump? Will you, like Hem in Johnsons little book, deny and resist change fearing that it will lead to something worse? Will you, like the mice Sniff and Scurry, seek out change early and then scurry into action? Or will you, like Haw, learn to adapt in time when you realize that your pump has been moved and someone else is now using it.

Do we lack a unity of purpose in dealing with the challenges in front of us? If you have sat at the top of the heap for a long time, either in prestige or remuneration, why would you want to change? Change, for change sake, is not acceptable, and change for meaningful advancement is desirable and necessary, but change simply due to threat will not be

as durable as change imbedded in culture. Again, if we think back to the not to distant past, very smart philosophers and physicians thought that the human heart was an organ that would never be amenable to surgical intervention. After a short span of approximately 50 years, there are very few congenital or acquired cardiac pathologies that cannot be improved or cured with surgical approaches that have required the pump and the perfusionist.

By understanding the process of change and the need to adapt to disruptive challenges, our profession will continue to grow and flourish. We must know that change happens, and will continue to happen. Interventional technologies will improve and continue to be developed. We must anticipate change and be ready for these technologies and their impact on our profession. We must monitor change and evaluate the success of developing technologies. We must adapt to change quickly, and look for ways to bring our knowledge and experience into other disciplines. We must change, enjoy change, and be ready to change quickly and enjoy it again & again as Johnson would say, the cheese keeps moving.

In closing, with the current political environment, I thought that it would be appropriate to leave you with a quote from one of the more popular Presidents of the United States, John F. Kennedy:

“Change is the law of life. And those who look only to the past or present are certain to miss the future.”

Thank you.

### References

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4. Reed CC. Perfusion reflections and perspectives. *Proc Am Acad Cardiovasc Perfusion* 1984; **5**: 7-9.