

Dr. Zhouqiao Wu: the magic of change

Submitted Jan 03, 2019. Accepted for publication Apr 15, 2019.

doi: 10.21037/atm.2019.04.42

View this article at: <http://dx.doi.org/10.21037/atm.2019.04.42>

Expert introduction

Zhouqiao Wu, MD, PhD, Gastrointestinal Center, Ward I, Peking University Cancer Hospital.

In 2011, he studied in the Department of Surgery of Erasmus Medical Center, Netherlands, for his doctoral degrees, during which he established two rat models of anastomotic leaks after colorectal surgery for the first in the world. After returning home in 2015, he continued his clinical work and engaged in research on gastrointestinal complications, especially the pathogenesis of postoperative anastomotic leak and tumor recurrence. Meanwhile, he is committed to promoting the standardized technology and safety of gastrointestinal surgery. So far, he has published more than 50 articles in SCI-indexed journals, with a Google Scholar h-index of 14. He serves as the member of the Editorial Board of *World Journal of Gastrointestinal Surgery* and the member of the Youth Editorial Board of *Chinese Journal of General Practice*. Also, he is a member of European Society for Surgical Research, International Gastric Cancer Association, International Education and Training Branch of China International Exchange and Promotion Association for Medical and Healthcare, and China Science Writers Association. He reviews manuscripts for many top international journals including *Annals of Surgery*, *British Journal of Surgery*, and *JAMA Surgery*. He has given nearly 30 lectures at international academic conferences. He was/is the principal investigator of four research projects in the Netherlands and China. He is the winner of several honorable titles including “Peking University Character of the Year”, “International Gastric Cancer Congress Young Investigator Award”, and “Best Presentation of Korea International Gastric Cancer Week”.

Lead: a gear, no matter how small, has ability to make great impacts on people's lives

Zhouqiao Wu (Figure 1) was once left helpless on the hillside of the Alps after he learned skiing for only three days. “We will wait for you at the restaurant. It is not down at the foot of the hill, and cannot be reached by cable car.” Seeing



Figure 1 Dr. Zhouqiao Wu.

his Dutch colleagues go away without hesitation, Wu had no choice but to rush down the skiing trail and tumbled into the restaurant, finishing his first advanced slope.

In his career, Wu established the world's first rat model of anastomotic leaks and published some 50 SCI papers, with an accumulated impact factor of the published journal papers exceeding 100. He also attracted 200,000 Weibo followers via sharing scientific knowledge and joined the Glaucoma Band as a drummer.

For a successful man like him, such an imperfect moment is not rare in his life, but Wu has learned to accept it. “It is more important to do better next time.” Finally, he learned how to ski and turned it into a hobby.

Wu seems to be obsessed with change. He said, “I chose to be a doctor because the job can ‘change’ some people's lives, and sharing scientific knowledge is because the hobby can ‘change’ some people's views. I would be very happy if the world and the people around can get better, even a little!”

Change self: disillusion and rebirth

Wu had dreamed of being an obstetrician.



Figure 2 Dr. Zhouqiao Wu is performing a surgery.

This weird dream showed his pure love for life and medical science. *“I think the birth of a new life is delightful. I hope that I can do exciting things during my career.”* However, reality dealt a heavy blow to him.

During his internship, Wu participated in 11 induced labor operations one night. Among these mothers-to-be, some were highly risky due to complications, while some gave birth to dead fetuses. These 11 operations did not welcome 11 new lives but only witnessed pain and tears. To see some new lives, leave the world even without opening their eyes frustrated Wu. *“I found myself unable to bear the blow of so many failures, and at the time, I suddenly realized that I could not become a qualified obstetrician.”*

Wu described himself as naive. *“When I just started learning medicine, I thought all surgeries should be successful.”* However, some things should not be taken for granted. The reality told Wu the truth, *“Medicine is not perfect.”*

Luckily, many small and trivial things during the internship constantly stimulated Wu’s pleasure center: the first stitch, the discovery of bleeding outside of vision for the first time, the first cardio-pulmonary resuscitation. He gradually realized that as a clinician, his performance could have a direct impact on patients, so he strove to do better (Figure 2).

Now, his enthusiasm for change is stronger than ever before. *“There are still various clinical problems for us to explore and solve! And a little curiosity and effort are enough to address some problems. I think it is quite exciting!”*

Anastomotic leak is one of the most serious complications after colorectal surgery and a primary cause of perioperative death following gastrointestinal surgery. Simply speaking, the intestinal incision was sutured but failed to heal up, causing leaks from the intestine entering the abdominal cavity.

“I longed to understand how to perform surgeries to produce a

better outcome and how to reduce the incidence of an anastomotic leak.” Therefore, Wu gave up his career plan one year before receiving standard training and opted to study for a PhD in the Netherlands, spending four years on this topic.

Change scientific research: from impossible to possible

Upon his arrival in the Netherlands, Wu faced a challenge; there were no tools available for his study.

These tools refer to animal models, which is indispensable for studying the pathogenesis of anastomotic leak and working out solutions. Before Wu, many researchers tried to establish rat models of the anastomotic leak but all failed. The reason was that there was no leak after intestinal surgeries performed on rats. *“My tutor, Professor Lange, told me that it only takes three days for rats to heal up, so anastomotic leak rat model was unlikely.”*

Wu had doubts over the view. He laughed that he was fearless back then, just as a Chinese proverb goes *“Newborn calves are not afraid of tigers.”* *“In my opinion, during the healing of intestines, the inflammatory reactions in the first three days should be similar among most animals, so the absence of an anastomotic leak in rats must be attributable to operational techniques.”*

Wu could not offer evidence to support his view. He soon surrendered in the face of his tutor’s bombardment of arguments. His tutor did not deny his proposal outright but asked him to search the literature for discussion next week. *“I took his advice and prepared for the next debate with him, yet, I did not expect him to raise so many questions which I could not answer.”*

The debate lasted for half a year. Wu read through almost all literature in this field. Finally, he identified the cause of the problem. In all the previous models, the suturing was performed after transection of large intestine rather than large bowel resection. *“This was quite different from that in humans. In common intestinal surgeries, it is impossible to suture an incision immediately after transection; in fact, one part of the intestine must be resected. So a resection rather than transection may work in rats.”* Wu then proposed a hypothesis; if one part of rat intestine is resected like in surgeries on human beings, will it lead to better results?

The most important thing was the evidence. By reviewing nutrition studies in the 1960s, 1970s, and 1990s, Wu found evidence to support his hypothesis. After intestinal resection, rats went through weight reduction, and their nutrition and metabolism changed as well. To put



Figure 3 A collection of Dr. Zhouqiao Wu's theses—"An integrated approach to colorectal anastomotic leak". The Chinese title cited a Chinese idiom, which means "study the nature of things to gain knowledge."

it simply, they got weak. There was a lot of other evidence, which he offered during discussions with his tutor. At last, his tutor agreed, "Well then, let's try to establish this model."

Wu complained privately, "If my tutor agreed earlier, the experiment would have already been done!" However, when the experiment got started, he was grateful to each debate with his tutor. "Many uncertain details became clear due to each debate."

Three months later, the world's first anastomotic leak rat model was established. It became a necessary animal model for studying anastomotic leak and laid the foundation for Wu's subsequent studies in this regard.

Recalling the whole process, Wu said, "If you do not express your views, others will never know. And you will never have the chance to prove your views and solve clinical problems." (Figure 3).

Change concept: the span and quality of life

The man cried. He was discharged from the hospital not for being cured but losing the best opportunity of surgery.

He was in his early forties. At first sight, he seemed to be unfriendly due to his bald head, single-fold eyelid, dark skin, and slits between front teeth. He was always cheerful when speaking and looked a bit shy with right hand scratching the head from time to time. He bowed to Wu earnestly, held his hands, and wanted to say "thanks" but failed due to a lump in his throat. The unsaid words were, "Thank you for your honesty to dispel my illusions and let me know how to plan for my rest life." The message was sent to Wu via WeChat after the patient's departure.

When approaching the end of life, how should one face it? Wu has been thinking about and observing the issue, even if the answer is not for sure. Once, a patient was concealed from his conditions by family members, and the last words of the patient turned out to be "Turn off the tap". This impressed Wu. "For some patients, concealment may lead to a greater loss."

Wu lamented over the story. "I think oncologists should not only treat diseases but more importantly help patients realize their social and life values. For instance, whether they can return to work? Whether they can continue to shoulder family duties? I hope to communicate more with the patient to understand what he wants and what he receives treatment for."

During his hospitalization, Wu had several talks with the man, who said he was the only bread earner in the family after his wife left, and he had to support his young daughter and parents. Poor income and limited time left no chance for squandering. After learning about the situation, Wu decided to tell the man the truth. "There is no opportunity in surgery," he added, "If you like, I can help you contact the Department of Internal Medicine to try some new cancer drugs. You may also join clinical trials to get free drugs and save much money. In the coming days, you can continue to take care of your daughter and parents. Don't worry."

The man didn't give up after knowing the truth. On the contrary, he started to share travel photos of him and his daughter via WeChat; he shared good effects of drugs with Wu; he helped others share charitable fundraising information. His last WeChat Moments post was the update of his fundraising information.

"Maybe, we are not afraid of death but failed to lead the desired life."

Although working at a cancer hospital, Wu always shares positive information with patients. "For example, I would tell patients with early gastric cancer that standard treatment can result in a five-year survival rate of more than 95%, which is no doubt good news for most patients and their family members. Some patients with advanced cancer would think that there is not much time left, but I tell them modern medicine can do better, and the survival rate is higher than they expect, which gives the patients hope. Even for terminally ill patients, we can still do something for them to bring some changes and improvements."

Among all the songs of the Glaucoma Band, Wu loves *Cancer* most.

*Your telomeres are getting shorter and shorter
While I have endless youth
Will you still look up to the stars with me
You ask me what I see*



Figure 4 The Glaucoma Band.

*When I look into your eyes
I see the most beautiful sunset I've ever seen
There is nothing more beautiful than the setting sun's rays
The warmth and comfort before the dark
Sunset's bliss is like a belated present
Waiting for the right moment to appear
Let us enjoy the vitality of spring
Let us embrace the wonderful summer nights
Watch as yellow leaves linger through the fall
And winter's frost whitewashes it all*

"The lyrics describe exactly what oncologists want to say. Cancer is not the end of life and is not just associated with sunsets. Cancer patients can still accompany their loved ones year after year. This is what I want to convey to patients. Life is not just about length but also quality. Aside from treatment, I will be happy if patients can savor life as much as possible."

Change in cooperation habits: making the sum of teamwork greater than the input

"Before going to the Netherlands, I deemed that cooperation was more about labor division. Each member played their role and then summed up the parts of all members, which is $1+1=2$. The experience in the Netherlands taught me that cooperation should be $1+1>2$. Cooperation between various talents makes each member stronger."

Wu was one of the first doctors to popularize medical science in China. From late 2010 to early 2011 when the publicity of medical knowledge was still in the infant stage, Wu has started to translate and edit foreign scientific

reports at bazhuawang.com. Later, he was invited to join the Songshuhui Association of Science Communicators. Meanwhile, he posted articles regularly on his blog.

He wrote an article about why most Asians flush after drinking alcohol. In the past, most people took it as a sign of being good at drinking. In effect, flush in the face is due to the lack of acetaldehyde dehydrogenase in Asians, which is also a risk factor of esophageal cancer. More than 100,000 users reposted the article on the social media platform.

"This let me realize the value of sharing scientific knowledge. It can change the world by correcting some wrong views and habits."

To further increase influence, eight young people decided to promote scientific knowledge via songs. In 2014, the Glaucoma Band was established, producing folk songs about glaucoma, hyperthyreosis, general anesthesia, and many other medical conditions/techniques. *"We hope to convey more health ideas rather than love stories in the form of music."* (Figure 4).

Wu has friends from various circles, such as medicine, scientific research, science popularization, and media. *"I wanted to enlarge my circle to make more interesting friends, have more cooperation, and improve my capability. It may leave others an impression of stepping out of bounds, but in fact, I do all these for medicine. Conducting scientific studies, writing scientific articles, and playing music are all related to medicine."* Music and writing are his hobbies. *"Everyone's life is diversified. In terms of playing music, my Dutch tutors are far better than us!"*

In Wu's opinion, the solutions to many medical problems are not confined to the medical sector. *"Many breakthroughs of surgical technologies depend on the development of engineering and materials. To better prevent some diseases, media friends can give us advice on promoting health knowledge efficiently and widely."*

At a book signing for his new book, Wu gave the first piece of cake to Shisan Ji, CEO of guokr.com. *"When I had difficulties in writing articles about medical science, he and friends from Guokr and Songshuhui offered me much help."*

Changed and unchanged: do not care too much about gain and loss

Wu was born in Suzhou, a city of water known for large numbers of boats and bridges. His first name "Zhouqiao" means boat and bridge literally. *"I like this name, and it is compatible with my personality."*

When one door shuts, another opens. *"Zhouqiao,*



Figure 5 Big fish.

Zhouqiao. When there is no road, there is still a bridge to cross a river; when there is no bridge, there is still a boat. One can finally find solutions to difficulties.”

Wu’s personality was largely affected by his grandfather. Since he was nine years old, he began to go fishing with his grandfather at the side of Taihu Lake. *“Fishing helped improve my patience and let me keep calm about results.”*

“My grandfather experienced those tumultuous years. Though not being wealthy, he has always been friendly with others. He often teaches me how to face possible problems positively.”

Wu’s pen name “Linzhuxiaoxiao” is from one of Dongpo Su’s tune poems *Calming the Waves*. He loves the author’s generous mentality expressed by the poem: Listen not to the rain beating against the trees, I had better walk slowly while chanting at ease. Better than a saddle I like sandals and cane. I’d fain, in a straw cloak, spend my life in the mist and rain. Drunken, I am sobered by the vernal wind shrill, and rather chilly. In front, I see the slanting sun atop the hill; turning my head, I see the dreary beaten track. Let me go back! Impervious to rain or shine, I’ll have my own will. *“Maybe because I, or maybe many Chinese, share some experiences with Dongpo Su, sometimes I’m in tears when reading his biography.”*

Every time before going fishing, Wu said to himself, *“I will get a big fish today by following certain steps...”* However, in most time, he failed but was never frustrated. *“I will catch a bigger fish eventually in the future.”* (Figure 5).

According to the history of medical sciences, on January 29, 1881, Billroth of University of Vienna finished the first successful gastrectomy for gastric cancer.

Wu also has a small dream, to leave words in medical

history as follows, *“I will work hard regardless of the results. I am just an ordinary, diligent man. I would be glad as long as I can make a difference to the world.”*

Interview

ATM: *What’s the first idea on your mind when you get up from the bed every day?*

Prof. Wu: Remove my retainer (I have never thought that I did not begin to fix my dental problems until I was 30).

ATM: *What is the first thing you do in the morning?*

Prof. Wu: Check the time on my phone.

ATM: *When do you get up in the morning?*

Prof. Wu: 5:45 A.M., sometimes even earlier, to avoid a traffic jam in the morning.

ATM: *What’s your happiest moment in a day?*

Prof. Wu: After a bath in the morning, because I feel refreshed after that.

ATM: *Do you care much about how are you dressed?*

Prof. Wu: At least I hope not to look grimy.

ATM: *What’s the message behind a well-dressed man?*

Prof. Wu: A doctor has to meet patients in the hospital, so I will try to be properly dressed in the workplace because it can help me earn trust and respect from patients.

ATM: *Have you ever received dating messages from patients or their family members?*

Prof. Wu: Yes, but I have politely declined their request.

ATM: *When is the most miserable moment in a day?*

Prof. Wu: When I’m unable to get sleep in the evening.

ATM: *Why?*

Prof. Wu: I drink a lot of coffee to get ready for a lot of

work, but the work has been finished soon.

ATM: *Do you drink coffee every day?*

Prof. Wu: About four or five cups of freshly brewed coffee.

ATM: *You need coffee physically or mentally?*

Prof. Wu: I think both.

ATM: *What is the best day is like in your mind?*

Prof. Wu: When I get up from the bed, I can enjoy well-flavored coffee. After I get to the hospital, my patients are showing no abnormal conditions, and the surgeries are performed as well as initially expected. When I leave the operating room, I receive an email saying that my article has been accepted and will be published. Then I find a bottle of Coca Cola in the office's refrigerator, and I drink the beverage and find that another article is about to be completed. When I return home, I find that my favorite entertainment program has an update. I watch the TV program and then take a bath, and I quickly fall asleep after my head hits the pillow.

ATM: *How do you spend a day?*

Prof. Wu: When I get up from the bed and brew a new kind of coffee, I usually find it's not as good as I thought. In the hospital, some patients have developed complications, and the surgery always takes a longer time than initially planned. When I leave the operating room, I always receive an email saying that my article has been rejected. In the office, I find there is only a half-bottle of Coca Cola. When I open the TV at home, I find that my favorite entertainment program has not been updated. That is how I spend a day.

ATM: *How do you see the huge difference between what's in your mind and what happens?*

Prof. Wu: Because there are some differences between ideal and reality every day, so when something pleasant happens to me, I would cherish it very much.

ATM: *How do you overcome the most tiring period of marathobn?*

Prof. Wu: Cussing.

ATM: *You are pushing yourself to the limit, physically?*

Prof. Wu: No, actually I'm exhausted more mentally. It's annoying to repeat the same step again and again.

ATM: *Do you cuss very often?*

Prof. Wu: No.

ATM: *When would you get annoyed?*

Prof. Wu: I was very upset when a chapter in a textbook I coauthored went missing, and the chapter contained almost 10,000 characters.

ATM: *As an optimist, how do you deal with the irritable mood?*

Prof. Wu: Go to sleep, and resume work after I wake-up.

ATM: *If you had a time machine, do you want to go back to the past or come to the future?*

Prof. Wu: I want to take a look at how surgeries are performed 50 years later.

ATM: *Have you ever imagined yourself 50 years later?*

Prof. Wu: I wish to be a happy surgeon who can bring some changes and help to patients and their families.

Acknowledgements

None.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

(English Language Editor: Jeremy Dean Chapnick, AME Publishing Company)
(Science Editor: Chen Gao, ATM, editor@atmjournals.org)

Cite this article as: Gao C. Dr. Zhouqiao Wu: the magic of change. *Ann Transl Med* 2019;7(9):208. doi: 10.21037/atm.2019.04.42