

Dr. Run Wang: penile implant as the first line treatment for severe erectile dysfunction

Submitted Dec 28, 2017. Accepted for publication Jan 05, 2018.

doi: 10.21037/tau.2018.01.09

View this article at: <http://dx.doi.org/10.21037/tau.2018.01.09>

Editor's note

The 2017 Annual Meeting of China Anti-Cancer Association-Genitourinary Cancer Committee and the 7th Shanghai Genitourinary Oncology International Symposium was held in Shanghai from 9–10 December 2017. The two-day symposium welcomed esteemed urology experts who gave thought-provoking and informative keynote speeches and lectures. It brought together a pool of renowned specialists from all around the world, allowing a space for the discussion and exchange of innovative ideas.

We were honored to have invited Dr. Run Wang, president of the Sexual Medicine Society of North America to an interview with us, where he talked about the pros and cons of penile implants, the future of stem cell therapy in treating erectile dysfunction (ED), and stories in his career as an urologist (*Figure 1*). His lecture at the conference was titled “Penile Implant Post-Prostatectomy: An Experience in the U.S”.

Expert's introduction

Dr. Run Wang is a leading expert in male urology, men's health and ED. He is currently serving as president of the Sexual Medicine Society of North America.

Dr. Wang has published extensively in the fields of urology, andrology, men's health and sexual medicine. He is a coeditor, guest editor, associate editor, editorial member and reviewer for numerous journals and served as a panelist for the International Consultation on Sexual Medicine in 2009 and 2015.

Dr. Wang holds honorary, concurrent and visiting professorships at national and international universities. Also, he has a joint appointment as the Professor and Cecil M. Grigler, MD Chair in Urology, the director of sexual medicine at the University of Texas McGovern Medical School and MD Anderson Cancer Center.

He credits his research work in medical school for guiding him to the field of sexual medicine. During his



Figure 1 Dr. Run Wang, AME Editor Cora W. Xu and AME Editor Silvia L. Zhou.

initial urological education in the mid-1980s, he was involved in research regarding varicocele and infertility. This research not only stimulated his interest in urological andrology, but also provided him the opportunity to connect with the best urological andrologists, Dr. Wayne Hellstrom and Dr. Ronald Lewis, who motivated him to explore the field of sexual medicine.

Interview

TAU: *Currently, penile prosthesis implantation is considered the third line treatment option for some severe ED patients, and they are reported to be a successful treatment method with high patient and partner satisfaction rates. In your opinion, what is the most advanced penile prosthesis today?*

Dr. Wang: There are a couple of things we need to talk about. Firstly, the penile implant is probably the most effective therapy for ED itself, disregarding the degree of ED severity. Of course, most of the time we use this therapy for patients with severe ED because they don't respond to medication or other therapies. On the other hand, many people don't want to take medication even though it works

for them, some others cannot take medication because of contraindication, or the medication may not work for them, and other therapies such as injections or vacuum therapies may not a good option for the patient's lifestyle. For those patients, penile implant can still be considered as a first line option, even though the standard is that penile implant is a third line treatment. In my practice, many people who receive cancer therapy suffer from ED, and majority of the time, their EDs are severe. In my patient population, 90% of patients who have severe ED and get penile implant after cancer treatment. If you ask me what is the best penile implant at this stage, it is the three-piece penile implant, which consist of two cylinders, one reservoir and one pump. That is considered the best penile implant at this stage. I'm sure there are some other implants that will come out in the next few years, but in particular the three-piece penile implant with antibiotic coating is the best one available at this time.

TAU: *How long can they be used, and do they need to be replaced regularly?*

Dr. Wang: That's a very good question. There is a wrong perception that penile implants need to be replaced regularly, but the fact is that it does not. The implant can last for a long time and majority of the time 5 years after the penile implant, the patient will have an 85% chance of still having a functional device in their body. Ten years, this number is about 70%. In other words, 70% of people after penile implant will still have a working implant in them 10 years later. There are many of my patients who still have working implants after 20 years, so you don't need to replace it regularly. It depends on age. If you get a penile implant when you're 18, you're obviously going to have to replace it a couple of times in your life. But with my patient population, their average ages are about 60–70, so when they get a penile implant, they only need it once.

TAU: *Penile prosthesis has been used for treating patients with severe ED, but this method may be far from perfect, such as higher costs, complications, and doctors need to be trained and skilled. Could you share with us some of the progress or possible new techniques that will be coming in the future for the treatment of severe ED?*

Dr. Wang: Again, there is something right and something not right in these questions. Right now, the penile implant is already very close to perfect, and it's reached the point

where if the patient doesn't tell his wife or girlfriend about the penile implant, they would never know that it's there, so it's already very good. There is still a lot of space for improvement, but first, let's talk about the high cost. It is definitely costly, and we know that medicine is increasingly more expensive everywhere, in China, in America, in Europe, and while many people complain about penile implants being expensive, no one complains about the cost of MRIs, robotic machines, bladder InterStim stimulation, knee and hip replacements, cardiac catheters. They are all expensive, so I think cost is a long-term problem, and we really need the government and society to solve that problem. In terms of high complications, there is a wrong perception of there being many complications in penile implants as the number is actually very low, much lower than knee or hip replacements. The chance of getting an infection is less than 1%, so the complication rate is not high at all. Out of my patients, 1 out of 200 of them will have a chance of complication, so it is very uncommon. It is true that it will require a good training for physicians or you'll have trouble. While this is not a big surgery, it requires skills, so a physician who wants to do this surgery must have a good training for this.

TAU: *As we know, stem cell therapy for ED has made great progress in the basic research field, how do you feel about the prospect of this treatment?*

Dr. Wang: Stem cell therapy is going to be the future not only for ED but also for many other diseases. A lot of basic research has happened and is happening right now, but the problem is that we don't understand very much about the basic science. There are many mechanisms proposed to explain how stem cells work. Many times when you give stem cells to the penis, the stem cells will go away, but it still does have an effect. Many people believe that there may be some kind of systemic effect, or paracrine mechanism. But my personal belief is that, if you're going to use stem cell therapy, you have to make sure that the stem cell manages to stay in the penis, because that's what the stem cells are supposed to do. Last year we published a paper where we used special technology to fix the stem cells inside the penis after injection so that they don't go somewhere else. A lot of research is still required to be done, because we need to understand what is going on, but that being said, stem cell therapy has been applied in the clinical setting in the US already, even though it is unethical because there is no good randomized controlled trial done in the US. There

are about 8 publications of clinical trials conducted for stem cells, and most of them are Phase I and Phase II studies, but that's not good enough. Many profit-driven clinics use stem cells to treat ED patients and charge their patients a lot of money, and from a scientific stand of point and as the president of the Sexual Medicine Society of North America, we believe that's unethical. We are preparing a position statement; we want to have more clinical trials before we recommend this therapy to our patients.

TAU: *In recent years, scientists have been highly interested in microenergy medicine for the treatment of ED. What is your opinion on the potential effect of low-energy shockwave therapy or low-intensity pulsed ultrasound therapy for ED treatment?*

Dr. Wang: This is a hot topic and is studied mainly by the industry supports. I personally think that there is a future for microenergy medicine in ED. However, I don't believe that this therapy is sufficiently mature at this time as there is still much we don't understand, the mechanism is still unclear, and there are not many well-designed clinical trials out there. In addition, we don't really know what is the best standard protocol: how many treatments are you supposed to give, how to treat it, how many places are you supposed to focus on, what are the energy levels, how often do the patients need to be treated with this therapy? These questions have not yet been answered. It's a hot topic, and we need to do a lot of research in this area, but at the same time, I do think it may be the future for mild or minimal ED, but not for severe ED, which will still require a penile implant.

TAU: *We are confused about the relationship between the cavernous nerve and dorsal nerve. Could you briefly introduce the differences between them?*

Dr. Wang: This confusion comes from recent studies. There was previously no confusion about this. We know that the cavernous nerve is an autonomic nerve, basically consists of sympathetic and parasympathetic nerves. The dorsal nerve is the terminal branch of the pudendal nerve. The pudendal nerve is a somatic nerve, in other words, it's a sensory nerve, so they are completely different nerves. But where did the confusion come from? From recent studies, when people do their basic research, they cannot clearly identify the cavernous nerve, so they study the dorsal nerve, and then they try to work on the cavernous nerve. So what happened was that in an animal, which may be a little

different from that in a human being, recent studies showed that there was nitric oxide synthase in the dorsal nerve in animal models that is mostly found in the cavernous nerve. There is a certain degree of similarity in the dorsal nerve and the cavernous nerve, because of nitric oxide synthase was identified, but in the clinical setting, there is no such confusion. They are two completely different nerves, and because the dorsal nerve is a sensory nerve; and the cavernous nerve is an autonomic nerve that controls erectile function, the dorsal nerve in the human body has really not much to do with the erection, but has to do with the reflex. The cavernous nerve is coming from the spinal level T10–L2 and S2–S4, and the sympathetic fibers are from T10–L2 levels. On the other hand, the parasympathetic nerves are from S2 and S4, which is also spinal center for pudendal nerve. In another words, the upper stream of the dorsal nerve is also from S2 and S4, because they share the same spinal cord level. There may be some kind of interaction, which may be why there is some kind of confusion there, but there is no confusion in the clinical setting.

TAU: *Why does the injury of the cavernous nerve affect the dorsal nerve?*

Dr. Wang: In animal studies, they show that injuring the cavernous nerve will result in some changes in the dorsal nerve. I think it's because they share the same level in the spinal cord from S2 and S4. That might be the reason. In human study, however, we don't really see very much about that. That's most in animal studies not in the clinical setting. It doesn't happen in a prostatectomy where if we injure the cavernous nerve that affects the penile sensation.

TAU: *Would you like to share with us any stories that keep you going as a urologist? What encouraged you to choose it as your career?*

Dr. Wang: I have many stories that I'd be happy to share, but I don't think we have the time for it. I just wanted to share one of them. A few years ago, I had a patient who was more than 80 years old, and when I saw him, he asked me where I was from, and I told him I was from China, and he said, "*oh the Chinese are great*", and I asked him what he meant. He said, "*I'm telling you, Dr. Wang, I was in the Korean War, and back then, we almost defeated the North Koreans and almost reached the Yalu River. We were thinking about winning the war and going back to the US to celebrate*

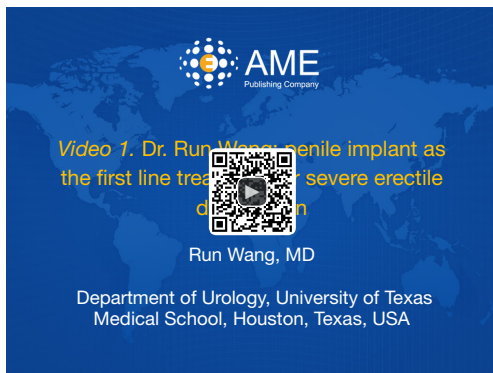


Figure 2 Dr. Run Wang: penile implant as the first line treatment for severe erectile dysfunction (1).

Available online: <http://www.asvide.com/article/view/23347>

Christmas. Suddenly, the Chinese army flocked into North Korea and beat us up, and we run like rats.” He told me that the war experience made him suffer from sexual dysfunction, and for 40 years, he’s been trying to look for a good doctor who can cure his problem, but nobody did, and eventually his problem was cured by a Chinese. He was probably kidding, but as a urologist you have a lot of fun, and urology surgeons are probably the easiest surgeons to work with in the hospital. You can ask nurses and other staff, and they’ll tell you that urologists are funny, crack jokes, work hard and are smart, so that’s why I like urology. But I can tell you, these days I encourage people to do urology because we are an ageing society, and in China, the life expectancy of the Chinese is about 70 years old for males, and it’s about 80 in Shanghai. So there is an increasing number of ageing

Cite this article as: Poon B, Wu M, Xu CW, Zhou SL. Dr. Run Wang: penile implant as the first line treatment for severe erectile dysfunction. *Transl Androl Urol* 2018;7(Suppl 1):S147-S150. doi: 10.21037/tau.2018.01.09

males and more urological problems. For example, if you’re more than 65, you have a 71% chance of having BPH, 65% chance of having ED, and 16% chance of having prostate cancer. We need many urologists, and that’s why this is a good profession.

TAU: Thank you!

For more details, please check out the interview video below (*Figure 2*).

Acknowledgements

On behalf of the editorial office of *Translational Andrology and Urology (TAU)*, we would like to extend our gratitude to Dr. Wang for sharing his opinions with us.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Poon B, Wu M, Xu CW, et al. Dr. Run Wang: penile implant as the first line treatment for severe erectile dysfunction. *Asvide* 2018;5:071. Available online: <http://www.asvide.com/article/view/23347>

(Science Editors: Bella Poon, Mira Wu, Cora W. Xu, Silvia L. Zhou, TAU, tau@amepc.org)