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By Michael Alper

MICHAEL ALPER* SHARES FEEDBACK on the hot technology areas that Chinese doctors are looking into and the factors that impact the technology's adoption within the clinical community

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Recently, I had the opportunity to attend the annual meeting for the Society of Interventional Radiology (SIR) in Atlanta, Georgia. This is the largest meeting in the interventional radiology space and attracted people from all over the world including over thirty physicians from China.

Among the several new exciting areas of research presented at this year's SIR, I was particularly interested in the work done by Louisiana State University, Shreveport, on 3D printing of antibiotic and chemotherapeutic eluting catheters and constructs.

3D printing is an emerging technology that has been applied increasingly to the medical device field over the past few years. It has so far been used mainly in constructing customized dental implants and orthopedic devices, such as implants for the spine, hip and cranium. In China, 3D-printed spinal devices have already been implanted as part of a company's clinical trial to gain regulatory approval from the China FDA.

The research which came out of Shreveport was particularly novel in that it was 3D-printing bioactive and resorbable catheters and stents.

When I spoke with some Chinese physicians at SIR about this research, they agreed it was interesting but in terms of its applicability to the Chinese market, they had concerns about the additional cost associated with this new technology and whether it justified the added benefits it brings. They agreed that 3D printing technology was of great value in the orthopedic space, but questioned whether the ability to print bioactive catheters and stents would warrant significantly higher costs in the Chinese market.

On microspheres and BPH treatment

Interestingly, the group brought up another technology – microspheres – for which they held a different perception of its price: value ratio and its suitability to the Chinese market. Microspheres have many different uses in the interventional space. They can be used for embolization, drug delivery (for more localized chemotherapy), as well as localized radiation therapy.

Non-spherical particles can also be used for these therapies, though at a significantly lower cost. While the Chinese physicians I spoke to seemed to think that the additional clinical benefits which microspheres would bring to embolization and drug delivery did not justify their much higher costs, they felt that using microspheres for radiation therapy (which is not yet approved in the Chinese market) had a very clear clinical value and was worth a significant premium over the alternatives. Their judgement may have been swayed in part by the significant amount of research supporting microsphere-based radiation therapy that has recently been published, including several papers presented at the SIR meeting.

One other hot area that caught the interest of the Chinese doctors was a new interventional procedure called prostate artery embolization (PAE) for treating benign prostate hyperplasia (BPH), which affects a huge proportion of men worldwide.

At SIR in Atlanta, Dr Sandeep Bagla from Alexandria Hospital in Virginia presented the results of his study which showed that BPH patients treated with PAE had a significant reduction in side-effects. Though BPH is less prevalent in China than in the US, there are still tens of millions of Chinese men

suffering from this disease, which causes difficulties with the bladder and urination and, in its severe form, can lead to blockage and infection.

Navigating the prostate artery is quite challenging and requires significant skill; Dr Bagla is known to use the Magellan (a robotic system from Hansen Medical, designed to support interventional procedures) to assist him in these procedures. If PAE would require the use of robotic surgical systems to be successful in China, than this would significantly increase the cost of the procedure. As BPH is considered a quality-of-life disease rather than a life-threatening condition, the question of price/value would be harder to justify from a physician perspective.

On the other hand, the disease affects a large proportion of the Chinese male population, including a significant percentage that can afford and are used to idea of paying for expensive medical technology out of pocket. The fact that some of the complications of traditional methods to treat BPH include urinary incontinence and impotence (a condition that has a significant impact on those affected, judging by the popularity of Viagra in China) makes me think that there might be potential for PAE, even if it requires the use of an expensive medical robot. Indeed, PAE could, in turn, be a driver for the adoption of robot technology in the interventional space in China.

In conclusion, when looking at new medical technology for the China market, the value of the product in relation to its cost – as well as how effectively that value is communicated and accepted by Chinese physicians – is paramount to the technology's success in China. Though Chinese physicians tend to get very excited about new technologies and are willing to try them out, they are sensitive to the needs of their patients and the overall economic environment in China when it comes to actual adoption.

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