The development of endovascular intervention as a robust and effective treatment for erectile dysfunction (ED) will require input from a dedicated team of urologists, andrologists, radiologists and cardiologists, delegates will hear this lunchtime in a session dedicated to adjunctive therapies. The challenges, current evidence and future perspectives for ED treatment will be presented by Giuseppe Sangiorgi (Department of Internal Medicine – Cardiac Cath Lab, University of Rome Tor Vergata, Istituto Clinico Cardiologico, Italy), who spoke to JIM Today to share some of his insights.

Dr Sangiorgi began by stressing that the potential of endovascular treatments for ED are often overlooked, especially from urological peers. "They do not talk about vascular genic causes. They move from pills to vacuum pumps, to permanent device implants into the penis," he said.

Crucially, there is a much larger portion of ED related to venous or arterial disease than many would think, which has a large impact on treatment choice. "This group encompasses almost 40% of the entire erectile dysfunction causes [Figure 1]," said Dr Sangiorgi, adding that 10% will stem from venous problem – e.g. vein leakage, and 30% from arterial problems, with atherosclerosis.

As Dr Sangiorgi recalled, relaying this information to a urological colleague was met with surprise, especially when he also relayed the outcomes from 100 ED patients treated in his centre. "Of these, 34 of them were submitted to PTA with a drug-eluting balloon, and the success rate was 95%," he said.

Indeed, it is the screening and identification of the underlying cause of the ED that Dr Sangiorgi is also keen to emphasise. As his urological colleagues do routinely, dynamic Doppler imaging is a particularly useful tool. "Basically they evaluate the basal flow, and then they inject prostaglandin to induce an erection, and evaluate the flow afterwards," said Dr Sangiorgi.

He continued: "We started to evaluate not only with dynamic Doppler, which of course is the first-line diagnostic test that you can do, but also with CT scans. CT scans have very important value, related to the possibility of choosing the best projection when you do the reconstruction. In terms of time and contrast media that you can save, after you have done the CT scan – when you have to bring the patient in the cath lab – the value is enormous due to the fact that there is a very complex anatomy of the pudendal system."

"The drawback of the field is that there are no dedicated devices: we are talking about vessels that can be smaller than 1.5 or 1.0 mm."

Giuseppe Sangiorgi

"In 70% of cases, the pudendal artery originates directly from the internal iliac artery. In 20% of cases there is an accessory artery, and in another 10% of the cases the blood supply is given by an obturator artery which, during angiography, makes things very complex to understand, because you lose completely where the origin is, and what is the normal pattern. So what we do now for screening is, after there is a positive dynamic Doppler that suggests an arteriogenic cause, we submit the patient to CT scan, which on one hand confirms the suspicion, and on the other hand gives us enormous information regarding how to approach these vessels."

Dr Sangiorgi went on to note that while ED is a complex phenomenon that involves nerves, hormones, veins, arteries, and psychological issues (etc.) screening in this way benefits from a cardiologist's existing experience, as he described. "When you do very precise and detailed screening, especially of course in our patients who already have coronary artery disease or heart failure, or they are taking statins etc. – all of the causes that may relate to erectile dysfunction – you start to screen them very precisely."

Delving into the interventional tools that can be employed to actually treat the venous or arterial causes of ED, Dr Sangiorgi spoke of the trials that have led to the present day, beginning with ZEN trial, published in 2012, which employed a zotarolimus-eluting stent in 30 patients. "The results were not good," commented Dr Sangiorgi, noting patient selection as a key concern – particularly the 93% screening failure (only 30 out of 383 patients screened were entered into the trial) – as well as the difficulty in stenting such small vessels.

Better results were seen in 2014's PERFECT-1 trial, which demonstrated, for the first time, that penile artery angioplasty is safe and can achieve clinically significant improvement in ED (60% of patients). "They used a drug-eluting balloon, which I think is more interesting, and is of course probably more effective in this particular very small district," said Dr Sangiorgi. "It had a success rate that was, in the long term, significantly higher than the ZEN trial."

PERFECT-1 paved the way for PERFECT-2, which had the objective of assessing the angiographic durability of catheter-based therapy for penile