There is no doubt that mechanical circulatory support, especially by left ventricular assist devices, prolongs life and improves its quality.

Since last year, two competitive LVADs have been commercially available in the USA and Canada. In Europe and other countries across the globe, several other LVADs are approved for clinical use, but these two LVADs – the HeartMate II (Thoratec) and HeartWare HVAD (HeartWare Inc.) - are those implanted in more than three quarters of patients receiving mechanical support worldwide.

This situation offers the unique opportunity to compare the two pumps in a clinical setting. In the recently published JHLT editorial, centrifugal and axial flow pumps are analyzed in terms of their impact on hemodynamics, hemolysis, and dependency on preload and afterload, based on theoretical data and in vitro experiments [1]. Few clinical studies are available and those existing are mostly of an observational nature; the number of patients studied is too small to draw any meaningful conclusions. An analysis performed at our institution of the long-term follow up of more than 300 patients showed different complication profiles of HeartMate II and the HeartWare HVAD. While patients on HeartMate II pumps tended to suffer from cable damage in the long term [2], those supported with HeartWare more often had pump thrombosis [3], but the overall outcome seemed to be much the same. These studies also showed that, after weak points had been recognized and the pump design was changed, the incidence of complications for both pumps dramatically decreased.

The main question that arises is the scientific and ethical value of a prospective randomized study involving both pumps. A typical example of a prospective randomized study is the Formula 1 motor race. Of course, the driver’s skills do contribute to the success of the team but it is also a (scientific) fact that, after Michael Schumacher switched from Ferrari to the Mercedes team, he did not win a single Formula 1 race. On the other hand, cars from the same team mostly rank close to each other, showing that the technology is more important than the driver’s skills or mental state – in our case the surgeon’s expertise or the hospital as the care provider. On the other hand, we buy our cars based on many decision criteria, but the winner of the 24 hour Le Mans race or of the Paris-Dakar rally is known and this knowledge influences our decision. Of course such simplified examples do not consider many details, but the question we are facing is: “Are we ready for the race? Are we ready for prospective direct comparison of LVADs available on the market?”
A prospective study should be designed to evaluate not only the complication profile of the available pumps but also other factors such as the satisfaction of the patient with the external components and of the surgeon with the internal.

In my personal opinion, in the short-term the study would help to eliminate the tossed coin as a decision-supporting tool in the surgical armamentarium and to find the optimal pump for the individual patient. In the long term, such a study would lead to faster improvements in pump design and in the satisfaction and better outcome of our patients.

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