**Title: TCT 24: MATTERHORN: Transcatheter Repair Versus Surgery in Mitral Regurgitation**

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**Dr Stephan Baldus**

**What is the reasoning behind this trial?**

"So what we performed is a subgroup analysis of the MATTERHORN trial. We designed the MATTERHORN trial because treatment algorithms for patients with secondary mitral regurgitation are still not entirely evaluated. We know that secondary mitral regurgitation has a worse prognosis. However, we don't know whether surgery in surgical candidates or transcatheter therapy is superior.

That's why we randomized, within the MATTERHORN trial, patients who were eligible for surgery to either surgery or TIA transcatheter edge-to-edge therapy. And the main outcome of this trial, which was designed as a non-inferiority trial, was that, with respect to efficacy, there were no differences. TIA met the non-inferiority criteria. However, with respect to safety, there was a significantly lower safety profile in those patients randomized to TIA as opposed to those who underwent surgery. This was basically what we found for the entire cohort.

**What are the current unmet needs in mitral regurgitation management?**

Now, secondary mitral regurgitation comprises a larger group of patients with different pathology. We have patients with ventricular-driven secondary mitral regurgitation after, for example, myocardial infarction or in the presence of dilation of the ventricle as such. And we have also a newly defined subgroup of patients with so-called atrial functional mitral regurgitation—a patient population which has primarily diastolic heart failure or atrial fibrillation, which leads to enlargement of the annulus.

And we wanted to know whether these patients, who had no tethering of the leaflets due to ventricular dysfunction or had atrial fibrillation in its closest sense, derived different benefit from either one of the therapies.

**Could you tell us about the patient population and study design for MATTERHORN?**

So we did two analyses. First, we dichotomized the entire population into those with leaflet tethering versus no tethering. And in the second analysis, we looked at specific characteristics for atrial functional mitral regurgitation.

**What were the key findings?**

If we stick to the first analysis, where we just crudely looked at tethering versus no tethering, we found basically no differences with respect to the primary endpoint. Patients who had no tethering—109 out of the 208 patients—had a better left ventricular function. There are more often females. Other than that, there were no differences between the cohorts, and efficacy was basically the same.

However, if we looked at safety, even in the group of patients who had no tethering, safety was much better in patients randomized to TIA as opposed to those undergoing surgery in the AFMR group.

In the group of patients who had fulfilled the strict criteria of atrial functional mitral regurgitation—a number of 34 patients out of the 208 patients—we basically saw the same. Again, no differences with respect to efficacy. However, a clear signal towards better safety in patients undergoing TIA.

**Were there any surprising or unexpected results?**

Perhaps two answers to this. One is it's not surprising because it's following the overall message of the MATTERHORN trial. On the other hand, one would assume that patients with better left ventricular function, with no left ventricular dilatation, patients who are having better ejection fraction, should be good candidates for surgery.

However, if you're looking at immediate safety endpoints, we see that they basically have the same safety events as those of the entire cohort. So this was in a way a little bit surprising.

What we need to do though is we have to look at these patients in the longer run. A follow-up. Right. We have only a one-year follow-up so far, and we cannot say what's going on in the years to come.

**What further study is needed in this area?**

Well, I guess as I just said, we probably need longer-term follow-up on the entire cohort of patients and then have to see whether there are long-term differences with respect to durability of repair and replacement in the surgical group. And we may also see that some patients perhaps are not perfect candidates for transcatheter repair and would need transcatheter replacement.

And this is something we're all waiting for in the field—having a transfemoral-based therapy with respect to replacement for our patients also. But as of today, we don't know whether this holds true and we don't know which patients to select for such a future therapy. What we know is that the safety profile of TIA is exceptionally good, and this is obviously one of the major advantages of the therapy, which is as effective as surgery with respect to one year of follow-up.”