**Title: LINC 22: AVF Formation with Adjuvant Endovascular Maturation**

**Participants: Dr Shannon Thomas**

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**Dr Shannon Thomas**

- So my name is Shannon Thomas, I'm a vascular surgeon at Prince of Wales Hospital in Sydney, Australia.

**Study Background**

Patients who have end stage kidney failure will require a vascular access and the gold standard vascular access, certainly in all of the guideline documents, such as KDOQI, state that a fistula is the best option, but it's very difficult to make a functional fistula for a patient for various reasons. There was a meta-analysis published in 2017 which really shocked me in that they looked at the literature reports of some 62,000 fistula. This was Bylsma and colleagues in European Journal, and they found that at six months, only 26% of fistulas were mature and usable and 21% were abandoned without any use. And I think that's a massive waste of resources and a lot of unnecessary surgery for patients as well. And so, that really spurred me to think about the current endovascular tools that we have. We're now very comfortable with treating stenoses and fistulas, and it's often stenoses that cause a fistula to remain small and unusable. So what we did was we formed the fistula, but then integrated a lot of these endovascular techniques like stenting and angioplasty into the formation process, such that we could achieve timely and universal maturation of the AVF for our patient population.

**Study Design and Patient Selection Criteria**

So this was a retrospective single centre cohort study and essentially it was any patient at our institution who was a long term candidate for hemodialysis who had not had a fistula before. And so we basically took everyone and we then retrospectively looked at the outcomes of this programme of making the fistula, following them up closely, and then intervening at an early stage to make sure that fistula was mature and usable.

**Key Result**

So the key result was that at six months, we had 94% of fistulas mature and ready for use, or actually being used. The patency was very good as well. So the primary patency at four years was 34%, but the assisted primary patency was 83% at four years. And this came at a reintervention rate of 0.36 procedures per patient per year, which was very low. There are only 12 thromboses, 12 thrombosed fistulas that occurred, which were pretty simple to sort out with some thrombolysis and further angioplasty. Such that at four years, our secondary functional patency was a hundred percent. So we didn't lose any fistulas with this programme. We managed to keep all of them running as long as the patient required it. And I think that's a really important outcome for our patients.

**Impact on Clinical Practice**

I think anyone who is doing vascular access work needs to really focus on achieving timely and universal maturation for their patients. I think it's an important aspiration. And I think we all now have the tools, the techniques to be able to do this and to be able to maintain that fistula for the patients long term. And I think this study really provides the data, the impetus for people to combine the endovascular tools with the open surgery to form the fistula.

**Next Steps**

So the next steps for this study is really adding to the literature that's out there now, where we are seeing a lot more people take up endovascular techniques, endo AVF formation procedures as well. What we don't want is that surgically made fistulas somehow will appear inferior to endo made fistulas when both really can benefit from these adjuvant endovascular techniques to make them mature and usable for the patient. So I think that's where we're going to see this go in the future.