that time, what was the best technique. And even putting in an elephant trunk in the beginning was difficult. So you have to take that into account, I think.

Concerning your further comment, the point is, of course, that we have a lot of type A dissections. And if you take all this away, I think the results will not be that bad. I still think that we have to be very honest about our results. That’s why I put in everything. I’m not afraid that someone may come and says that stentings are better, because they have to have 30-year results with stenting and have the same results before they can say it’s better. The second question was - sorry, I forgot that.

**Dr Schepens:** About the length of the trunk.

**Dr Shrestha:** Yes, I think here you are right. One of the reasons may have been that the floating part was too long. The second point is also that until ‘99 it was deep hypothermic circulatory arrest at 14–15 degrees, and we now know that maybe that was not that good. But having said that, of course, in those days it was early days for aortic surgery. There were a lot of things that we now know, we take for granted, which we didn’t know in those days.

The third point is that now with the frozen elephant trunk we still think that (except in type A dissection, where I think a frozen elephant trunk is a lot easier and better) in cases of aneurysms, mega-aortic syndromes, where you know that you have to go for a second-stage operation, that the classic elephant trunk still has a role, and I still believe that in terms of both the cost and the treatment effectiveness it remains the gold standard.

**Dr M. Karck** (Heidelberg, Germany): Let me ask one more question. If less than one-third of the patients come back for the second-stage operation, doesn’t this mean that the indication is maybe taken too liberally? Didn’t these patients need a second operation, or was there a problem with the follow-up?

**Dr Shrestha:** I think that, because we lost only 11 patients to follow-up, maybe we are liberal, yes. But everyone who has performed total arch replacement knows that they’re just putting in one more graft. Especially with the new techniques and new grafts which we have now, the risk would not be higher. I personally do not believe that the risks are higher if you put in an elephant trunk. When you have to do a total arch replacement anyway, it’s not that difficult. Because the alternative is that if they do come back, then having to do this proximal anastomosis from the left side and to go in to repair in the old operated area is fairly difficult. So I think that I would still say that we have to be liberal, I think it makes our life a lot easier.

**Dr T. Sioris** (Tampere, Finland): I noticed you recommended cutting the membrane when you insert the elephant trunk, cutting the dissection membrane, in one of your slides. Now, this is quite the opposite idea with the frozen elephant trunk. I can understand that if you have a small lumen and you have the conventional elephant trunk, it will not expand because it’s not a nitinol-reinforced thing. So my question is: Are you concerned about the perfusion of both lumina, as in your slide, or is it more of just getting the floppy trunk to fit in?

**Dr Shrestha:** The point I made was only for chronic dissections, not for acute ones.

**Dr Sioris:** For chronic, yes.

**Dr Shrestha:** So in the chronic one, because it’s a free-floating elephant trunk, it can never push it and it will just kink. So you have to cut it if you are putting a normal elephant trunk.

**Dr Sioris:** Yes, this I understand. It was just that on the slide it said there was a concern about the perfusion of both lumina.

**Dr Shrestha:** No, I mean, that was lower down. Because up to the end of the elephant trunk, I would cut the flap. But after that, then both lumina are perfused. I think these are the patients that could come anyway for second stage. So if you are putting an elephant trunk, I think it’s very important that the distal perfusion remains there. If it kinks, as with one of the patients that I operated (I think it was the middle of the night) I had to cannulate the groin (it was a redo), I put in an elephant trunk, and then I forgot to change it immediately. For the first one minute, we couldn’t understand what was happening, then suddenly we realized. Because these are long operations, especially if you do redos, they are 6–7 hours, your concentration decreases, it’s difficult. So these are the points that you have to know. I thought that maybe I should mention the mistakes I made, I don’t know.

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**Editorial Comment**

**The most versatile and useful appendage on earth**

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At first glance, this paper by Shrestha et al. [1] is a standard analysis and evaluation of a single-centre experience using the elephant trunk technique for total arch replacement. About one-third of the operations were followed by a second-stage procedure, mostly a descending thoracic replacement, only in 11 cases by a thoracoabdominal repair. The focus of this paper clearly lies in the first surgical step.

When studying this paper more thoroughly, it becomes obvious that it is not just an average description and common analysis of the surgical results as we can find almost monthly in all well-respected cardiovascular journals. It is much more than that. It is a wonderful piece of history describing the evolution of the elephant trunk technique starting with its introduction three decades ago by its inventor Hans Borst. Needless to say that the idea of inserting a free-floating vascular prosthesis into the downstream aorta and that in doing so, avoid re-entering in a surgical field that is crowded with major vascular, bronchial, neurological, lymphatic and gastrointestinal structures almost merits the Nobel prize in cardiovascular surgery, if it existed. Technical modifications were later introduced by some outstanding pioneers in cardiovascular surgery (such as Crawford and Svensson) in order to facilitate the technique and to reduce complication rate. Very often, these modifications were just simplifications, which is of course characteristic of the influence of great surgeons.

Of special importance are the alterations concerning cerebral protection: for 17 years, deep hypothermic circulatory arrest was the mainstay and in 1999 antegrade selective cerebral perfusion was introduced and is actually a main pillar to success.
It is not a coincidence that this paper now originates from the cradle where the elephant trunk was born. If you do not possess an atlas of cardiovascular surgery, this paper will tell you the ins and outs based on the evolution of the surgical technique. For example, how you can avoid trunk impaction, how to deal with the dissection membrane in chronic situations, what should be the optimal length of the trunk, how to avoid left recurrent nerve damage. These are all fundamental aspects that should be respected in order to obtain optimal results.

Concerning these results, it should be stressed that 25% of the patients received the elephant trunk for an acute Type A dissection. Very few of us are able to perform this under these dangerous circumstances. Moreover, 30% were redos. It is obvious that these two items certainly have influenced the outcome in a negative way. Another important point that had a major impact on the results was the learning curve. As the evolution of the elephant and its trunk took millions of years, we may not expect that the surgical technique can be made perfect in 30. That is why the results should be interpreted with caution and be seen in perspective.

For an elephant, its trunk is absolutely vital and indispensable; without the elephant trunk technique, no matter in which form, cardiovascular surgery certainly would lose tremendous allures and look massively different.

REFERENCE