Discussion to: Preliminary Results in Tracheal Replacement Using Stented Aortic Matrices for Primary Extensive Tracheal Cancer

Dr. Emmanuel Martinod, Dr. Rafael Andrade

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Discussion to: Preliminary Results in Tracheal Replacement Using Stented Aortic Matrices for Primary Extensive Tracheal Cancer

Presenter: Dr. Emmanuel Martinod

Invited Discussant: Dr. Rafael Andrade

Corresponding Author: Dr. Emmanuel Martinod

1. Assistance Publique - Hôpitaux de Paris, Hôpitaux Universitaires Paris Seine-Saint-Denis, Hôpital Avicenne, Chirurgie Thoracique et Vasculaire, Université Sorbonne Paris Nord, Faculté de Médecine SMBH, Bobigny
2. Inserm UMR1272, Hypoxie et Poumon, Université Sorbonne Paris Nord, Faculté de Médecine SMBH, Bobigny
3. Université de Paris, Fondation Alain Carpentier, Laboratoire de Recherche Bio-chirurgicale, AP-HP, Hôpital Européen Georges Pompidou, Paris
4. Thoracic and Foregut Surgery, University of Minnesota, Minneapolis, MN

Corresponding Author: Prof. Emmanuel Martinod, MD PhD

Assistance Publique - Hôpitaux de Paris, Hôpitaux Universitaires Paris Seine Saint-Denis, Hôpital Avicenne, Chirurgie Thoracique et Vasculaire, Faculté de Médecine SMBH, Université Sorbonne Paris Nord

Tel number: 0033148955831; Fax number: 0033148955232

Email: emmanuel.martinod@aphp.fr

COI: None
Dr. Rafael Andrade (Minneapolis, MN):

Professor Martinod, this was an excellent presentation and I'd like to congratulate you and your team on really an impressive feat. This is the culmination of 25 years of work and a very scrupulous process from the lab to bedside and following strict ethical principles. So, it's very impressive and I think it's exemplary work on how to solve a difficult problem. I think to summarize, these are 13 patients, almost all of them had adenoid cystic carcinoma, and it's a subgroup from your Triton study. The mortality you mentioned, 7.7% of morbidity, are in line with other studies of large tracheal resections. And the other important thing about this study is that these are patients that otherwise would have been unresectable. They would not have been able to have had surgery. So, you're offering these patients some hope of cure. And in contrast to other more complex--particularly the forearm flap reconstruction methods with or without transplantation, although these are huge complex operations, it's pretty simple. It's not this lengthy two-stage operation or this lengthy 12-hour operation with high morbidity and mortality. So overall, this is very, very impressive. And finally, an 85% negative margin rate is also much higher than what has been reported in the past for adenoid cystic carcinoma, which is usually 50 to 60%. So overall, this is a wonderful example of how work should be done. So, I have three questions for you. The first thing that came to mind--and this is about the biology of the graft was, how do you manage to sew the trachea, which is a living organ, to this fairly inert tube, at least initially inert tube, as it doesn't have blood supply, and get away with it without dehiscences? That's my first question.

Dr. Emmanuel Martinod (Paris, France):

Thank you very much, Dr. Andrade, for these very nice comments on our work. It was a surprise for us because at the beginning of the story, in the laboratory in Paris, we didn't know what could be happening with these grafts. And we know we have experience in vascular surgery. It's not very important that these grafts have been revascularization. Because in vascular surgery, when we replace vessels using cryo-preserved graft, there is no revascularization. And these grafts are submitted to a very high arterial pressure, and no rupture in the majority of the cases. This is the first answer, and the second one is that we clearly showed regeneration of the epithelium from the native trachea. And for the cartilage, I know that there is some doubt about this regenerative process, but we have a grant from France, from the ministry, and we are working hard with some immunologists, some scientists, specialists in cartilage regeneration, or epithelial regeneration, airway epithelial regeneration to explain the mechanism.

But we know that after, for example, ten years of cryopreservation after extraction of the graft from the ice, we can have some secretion of cytokines and growth factor, especially interleukin-3. And we believe that this is the key point. And another fact is that most probably since the beginning of the story,
we worked with a tissue bank in Paris, who is, I think, the only bank in Europe which used -80 Celsius cryo-preserved autologous grafts. And maybe it could be better than -150 Celsius grafts.

Dr. Andrade:

Okay, and then my second question is the least attractive part of this is the silicone stent that's in for years in patients. Can you tell us a little bit more about how you manage these and how patients fare with these stents for periods of 4, 5 or more years?

Dr. Martinod:

As you have seen, we had some complications, but the majority of patients experienced granulomas at the extremities of the stent. And we manage using flexible or rigid bronchoscopies. And this is a collaboration with our pulmonologist. They do flexible bronchoscopies and we do rigid bronchoscopies by chance is by the natural airways.

Dr. Andrade:

And then finally, when do you extubate your patients?

Dr. Martinod:

On the table, if it's possible.

Dr. Andrade:

Thank you. Excellent work.