

The Leuven technique with the use of Panther staplers for lung implantation during lung transplantation

The lung transplant program at the University Hospitals Leuven, Belgium was initiated in 1991. By the end of 2020, more than 1200 procedures have been performed with an annual volume of about 70 transplant during the last 10 years.

We hereby briefly describe our technique to explant the native lung using the Panther stapler:

- Following anterior thoracotomy, the hilum is dissected and the pulmonary vessels (artery and both veins) are isolated with an umbilical tape.
- The hilum of the isolated lung is then clamped for 5 min to evaluate cardiopulmonary stability prior to explanting the native lung
- Both pulmonary veins are then transected consecutively using the Panther stapler with 30-45 mm white cartridges (VPI – VPS – PA)
- The stump of the transected vessel is then suspended with a Prolene 4/0 U-stitch underneath the stapler line to better expose the surgical field
- The lung is then implanted while anastomosing the anatomic structures between the recipient hilum and the donor lung in the following order:
 - bronchus: running PDS 4/0 using 2 corner stitches
 - artery: running Prolene 5/0 using 2 corner stitches
 - left atrium: running Prolene 4/0 using 2 corner stitches
- Prior to starting the arterial anastomosis, a Satinsky clamp is placed on the recipient's vessel proximal to the stapler line.
- The Panther stapler line on the native pulmonary artery is then transected and removed while trimming the cuff to match the diameter between donor and recipient vessel
- Next, a second Satinsky clamp is placed on the recipient's left atrium proximal to the Panther staple line.
- The stapler line on the native left atrium is then transected and removed while trimming the muscular cuff to match the diameter between donor and recipient vessels.
- After complete implantation, both Satinsky clamps are gently removed starting by the artery to de-air the pulmonary arterial anastomosis and then the left atrial anastomosis followed by removing the clamp on the left atrium and the pulmonary artery in this order.
- The donor lung is then slowly reperfused and ventilated
- Hemostasis of the vascular anastomosis is ensured with tissue glue
- The same sequence is repeated for implantation of the second (contralateral) lung

The advantages of using Panther staplers to explant the native lung are:

- to speed up the explantation process
- to provide a better exposure to mediastinal and hilar structures to ensure adequate hemostasis prior to implanting the donor lung
- to avoid the position of clamps in the surgical field while doing the bronchial anastomosis first
- to avoid long-standing compression of the left atrium by the Satinsky clamp while doing the bronchial and pulmonary arterial anastomosis first

In the year 2021, we have used the Panther stapler in a series of about 20 lung transplantations with no specific problems.

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