CLAIMS

1. An intravascular blood pump (1) for percutaneous insertion into a patient's blood vessel, comprising a catheter (100) and a pumping device (2) attached to the catheter (100), the pumping device (2) having a blood flow inlet (3), a blood flow outlet (4) and a rotor (8) so as to cause blood to flow from the blood flow inlet (3) to the blood flow outlet (4), the blood pump (1) further comprising:

- a ring seal (10) disposed on the pumping device (2) between the blood flow inlet (3) and the blood flow outlet (4), the ring seal (10) configured to assume a collapsed configuration and an expanded configuration and configured to contact and seal against an inner wall of the patient's blood vessel when inserted therein in the expanded configuration so as to separate a proximal area of the blood vessel from a distal area of the blood vessel, and
- a support member (12; 13) disposed inside the ring seal (10) in order to support the ring seal (10) from the inside, wherein the support member (12; 13) is configured to collapse at least partially when a predetermined pressure difference between the proximal area and the distal area of the blood vessel acts on the ring seal (10), wherein the support member (12; 13) withstands a pressure difference of up to 100 mmHg before it collapses.

2. The blood pump of claim 1, wherein the support member (12; 13) is configured to withstand a pressure difference between the proximal area and distal area of up to 20 mmHg before it collapses.

3. The blood pump of claim 1 or 2, wherein the support member (12; 13) is configured to withstand a pressure difference between the proximal area and distal area from 5 mmHg to 35 mmHg, preferably from 7 mmHg to 30 mmHg.

4. The blood pump of any one of the preceding claims, wherein the ring seal (10) comprises a flexible membrane (11).

5. The blood pump of claim 4, wherein the ring seal (10) forms a balloon having an inflation port that allows fluid to be supplied to and to be removed from the balloon.

6. The blood pump of claim 5, wherein the inflation port is connected to a fluid line (14) so as to allow to inflate the balloon by supplying fluid to the balloon and to deflate the balloon by removing fluid from the balloon.

7. The blood pump of any one of the preceding claims, wherein the support member (12; 13) is at least partially compressible.

8. The blood pump of any one of the preceding claims, wherein the support member (12; 13) is biased to the expanded configuration.

9. The blood pump of any one of the preceding claims, wherein the support member (12) comprises a foam or sponge.

10. The blood pump of any one of the preceding claims, wherein the support member (13) comprises at least one elastic wire, preferably made of a shape memory material, such as Nitinol.

11. The blood pump of any one of the preceding claims, wherein an outer diameter of the ring seal (10) in the expanded configuration is from 1 cm to 2.5 cm.

12. The blood pump of any one of the preceding claims, wherein the ring seal (10) comprises a flexible shield (16) extending from an outer circumference of the ring seal (10), the flexible shield (16) configured to contact the inner vessel wall when the catheter (100) is inserted in the blood vessel and the ring seal (10) is in the expanded configuration.

13. The blood pump of claim 12, wherein the shield (16) has a proximal end attached to the ring seal and a free distal end configured to contact the inner vessel wall.

14. The blood pump of claim 12 or 13, wherein the shield (16) comprises a stiffening structure (17) having at least one fluid receiving channel configured to be inflated by receiving a fluid in order to stiffen the shield (16) and to be deflated by removing the fluid in order to soften the shield (16).

15. The intravascular blood pump of any one of claims 1 to 14, configured to be inserted into a pulmonary artery.