How to do it

Transatrial access for left atrial pressure monitoring in cardiac surgery patients

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Abstract

We describe a simple method for left atrial pressure (LAP) monitoring from the right to the left atrium (LA) by a central line catheter. The anesthesiologist cannulates vena jugularis interna and inserts two central line catheters. One catheter is placed in the vena cava superior and the second single-lumen catheter is placed in the right atrium. The surgeon positions a one-line catheter from the right in the LA during the transatrial surgical procedure. This new access diminishes bleeding complications. © 1997 Elsevier Science B.V.

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The monitoring of left atrial pressure (LAP) is a useful method for precise and proper evaluation of filling pressures of the left ventricle. This method is widely used in patients after cardiac surgery to manage volume and vasoactive therapy. There are two classical surgical accesses for left atrium (LA) cannulation, the direct cannulation of LA and cannulation of the LA through the pulmonary vein, using the tobacco suture technique. The direct access of the LAP catheter to the LA during open heart surgery can cause some complications (e.g. postoperative bleeding). Even the cannulation of the pulmonary vein can bring some problems, e.g. air embolism [1].

We have proposed and used transeptal access by using a central line venous catheter which was originally placed into the right atrium. The surgeon, during open heart surgery, positions this catheter transeptally into the LA. The central line catheter then functions as a left atrial catheter for LAP monitoring.

After inducing general anaesthesia the anesthesiologist inserts two central line catheters separately via the vena jugularis int. dx. by the Seldinger technique. The whole length of a single-line catheter should be inserted into the patient for easy manipulation of the catheter tip. At the end of surgical procedure (e.g. mitral valve replacement) the surgeon puts the tip of the single-lumen catheter transeptally in the left atrium. This central line then works as a LAP catheter.

The catheter should be carefully labelled (red or yellow line) for easy manipulation.

The LAP monitoring is a very useful method for managing therapy during the weaning from a cardio-pulmonary bypass and the first 24 h, postoperatively. After this period the LAP catheter can be withdrawn to the vena cava superior position by pulling the catheter 3–5 cm. The right position is controlled by the aspiration of venous blood and the catheter can work again as a central venous line.

This method is very safe for patients. There has been no bleeding complication and no air embolism in 36 successive patients. We use this technique in patients undergoing mitral or double aortic and mitral valve replacement, with poor left ventricle function and/or mild and moderate pulmonary hypertension.
This new access has both medical and economic advantages. We can recommend the central line right-left atrial access as a simple, easy and safe technique for wide use in cardiac surgery patients.

References