Percutaneous transcatheter pulmonary and tricuspid replacement in carcinoid heart disease.

Sheng Wang*

Department of Anesthesiology, Guangdong Cardiovascular Institute, Guangdong Academy of Medical Sciences, Guangzhou, China

Abstract

The most successful treatment for carcinoid heart disease is surgical valve replacement; however, reoperation for prosthetic valve failure has a high risk. In a patient with carcinoid heart disease, we present the first known percutaneous transcatheter pulmonary and tricuspid valve-in-valve replacement for bioprosthesis degeneration for any reason.

Keywords: Pulmonary, Tricuspid replacement, Biliopancreatic.

Introduction

In December 1994, the patient developed a congestive cough and dyspnea. She was in New York Heart Association (NYHA) functional class II. Echocardiographic examination revealed leaflet thickening and fibrosis, along with thickening of the chordae tendineae and papillary muscle, resulting in massive regurgitation of the tricuspid valve (4/4) and a transvalvular gradient of 7 mmHg. The pulmonary valve leaflets also showed fibrous deposits and thickening, leading to valvular insufficiency of 1 to 2 on a scale of 4 and mild stenosis. Subsequent cardiac catheterization showed a mean right atrial pressure of 11 mmHg, a systolic right ventricular pressure of 34 mmHg, and a mean pulmonary pressure of 12 mmHg. The transvalvular pulmonary gradient was 8 mmHg, and the left ventricular ejection fraction was 73%. The patient was referred to our department for surgical treatment [1].

At surgery, the tricuspid leaflets were visibly fibrotic and thickened, and the chordae tendineae were adherent. With the patient under moderate hypothermia, myocardial protection was achieved with cool crystalloid cardioplegic solution (myocardial temperature, 10°C). After a median sternotomy, tricuspid valve replacement was performed through a right atriotomy at an esophageal temperature of 25°C. The prosthetic valve was a 27-mm mechanical Sulzer Carbomedics valve (Sulzer Carbomedics, a part of the Cardiovascular Prosthesis Division of Sulzer Medica; Austin, Tex). The pulmonary valve was examined through a pulmonary arteriotomy. The valve was only slightly incompetent, the stenosis was mild, and the right ventricular contractility was good. Accordingly, the pulmonary valve was not replaced [2].

Carcinoid tumours are rare neuroendocrine tumours that arise most typically in the gastrointestinal system from amine precursor uptake and decarboxylation cells. Carcinoid syndrome affects about half of all patients (facial flushing, intractable secretory diarrhea, and bronchoconstriction). Due to the paraneoplastic effects of vasoactive 5-hydroxytryptamine (serotonin), histamine, tachykinins, and prostaglandins generated by malignant cells, 50 percent develop right heart disease (valvar, subvalvar, and endomyocardial plaques and fibrosis). Because the vasoactive chemicals are destroyed in the liver, lung, and brain, only hepatic metastasis causes right heart disease. These symptoms include tricuspid and pulmonary stenosis/regurgitation, as well as right heart dilatation and failure, all of which necessitate valve replacement. Early bioprosthetic failure due to circulating vasoactive chemicals may be linked to a high burden of metastases, necessitating high-risk reoperation [3].

HOVER is the fourth phase (Heterotopic Implantation Of the Edwards-Sapien XT Transcatheter Valve in the Inferior VEna cava for the treatment of severe Tricuspid Regurgitation) The scaffold for secure seating is provided by a robust frame of a standard bioprosthesis. ViV for failed bioprostheses in the right heart was largely done off-label with transcatheter valves that were initially approved for the aortic position. The pulmonary valve is replaced by catheterization through a vein in percutaneous pulmonary valve implantation (PPVI), also known as transcatheter pulmonary valve replacement (TPVR). In comparison to open heart surgery, it is a far less intrusive procedure that is routinely used to treat disorders like pulmonary atresia [4].

Neuroendocrine tumours (NETs) of the bronchopulmonary and gastroenteropancreatic (GEP) systems are uncommon cancers. The access modality of a medical procedure in which a medical device is put into a patient's blood vessel via a needle stick is referred to as percutaneous. The Seldinger Method, named after Sven Ivar Seldinger, is a popular moniker for this method. The procedure is inserting a needle into a blood

***Correspondence to:** Sheng Wang, Department of Anesthesiology, Guangdong Cardiovascular Institute, Guangdong Academy of Medical Sciences, Guangzhou, China, E-mail: Shengwang.gz@gmail.com

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vessel, such as an artery or vein, until bleedback is obtained. After that, a flexible "introducer guide wire" is used to outline the course through the skin and into the blood vessel's passageway or "lumen." The needle is then replaced with a "introducer sheath," which is a tiny tube that is inserted into the body through the introducer guide wire vessel of blood The introducer guide wire is withdrawn and replaced with a catheter or other medical device for the delivery of medication or the insertion of a medical implant into the blood vessel, such as a filter or a stent [5].

Percutaneous access has the advantage of allowing devices to be introduced into the patient without the need for big cut downs, which can be uncomfortable and, in some cases, bleed out or become infections. In comparison to a surgical cut down, percutaneous access involves only a small incision through the skin that seals readily and heals quickly. Percutaneous access and procedures often refer to catheter procedures such as percutaneous transluminal angioplasty (PTA) ballooning, stent delivery, filter delivery, cardiac ablation, and peripheral or neurovascular catheter procedures, but it can also refer to a device that is implanted in the body and receives power via a lead that passes through the skin to a battery pack outside the body, such as a heart pump (LVAD)

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