

# Transcatheter Tricuspid Repair: A case report of the three first patients treated with TriClip in Argentina

## Reparación percutánea de la válvula tricúspide: Reporte de los tres primeros casos tratados en Argentina con dispositivo TriClip

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### ABSTRACT

New technologies are emerging in the treatment of Tricuspid Regurgitation. Edge to edge repair with TriClip (Abbott, Santa Clara, CA) has reached the highest applicability in clinical practice. We report the first three cases of Tricuspid percutaneous repair with TriClip (Abbott, Santa Clara, CA) in Argentina.

**Keywords:** tricuspid repair, TriClip, percutaneous.

### RESUMEN

Nuevas tecnologías emergen en el tratamiento de la insuficiencia tricúspide. La reparación borde a borde con dispositivo TriClip (Abbott, Santa Clara, CA) es la que mayor penetración ha alcanzado en la práctica clínica. Reportamos los tres primeros casos de reparación percutánea de la válvula Tricúspide con TriClip (Abbott, Santa Clara, CA) en Argentina.

**Palabras clave:** reparación de válvula tricúspide, TriClip, percutáneo.

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### INTRODUCTION

As it happens with other valvulopathies, the prevalence of the tricuspid regurgitation (TR) is increasing while aging. In its significant aspects, it produces signs and symptoms that affect the quality of life (fatigue, dyspnea, oedema), and dysfunction of other organs due to congestion or as a result of low antegrade output. It also influences negatively in survival having been reported mortality at a year of nearly 40% in patients with severe tricuspid insufficiency undergoing pharmacotherapy.

Historic data regarding tricuspid valve replacement surgery in patients with isolated TR inform high rates of mortality (10 to 12%) particularly in patients with previous cardiac surgery or with concomitant cardiopathy. This high mortality rate and the degree of recurrence reported have been responsible for the limited surgery penetration in patients with isolated TR.

Given the pharmacotherapy limitations and the surgical therapy results, the endovascular options emerge, from which the “edge-to-edge” repair with TriClip device (Abbott, Santa Clara, CA) is the strategy with the highest penetration in clinical practice.

We report the first three patients undergoing this technology in the República Argentina.

### CASE 1

A 32-year-old male patient with Marfan syndrome and bac-

kground on multiple ablation attempts of anomalous pathway. Symptomatic from CFII dyspnea. Torrential tricuspid regurgitation (TR) is diagnosed in Doppler echocardiography. In transesophageal echocardiogram (TEE), organic etiology of TR is noted from billowing of septal and anterior veils in the commissural zone and flail of anterior veil in media land central segments that produced torrential TR with right cavities dilation, with right ventricle systolic function preserved.

A first XTW clip is implanted in the billowing of the antero-septal commissure and a moderate reduction in the insufficiency and a significant decline of the coaptation gap at the flail level are achieved, favouring a second XTW clip implant at that level. So a reduction to traces of the insufficiency and mean gradient of 2 mmHg are accomplished. The patient is extubated in the cath-lab and discharged 24 hours later without complications (**Figure 1**).

### CASE 2

A 63-year-old patient, she consults over dyspnea and oedemas in lower limbs. Massive TR is noted. The severity of the insufficiency is confirmed in TEE, whose etiology is functional for predominant regurgitation at septo-anterior level, annular and right cavities dilation with systolic function preserved. Pulmonary hypertension (PHT) is dismissed in right heart catheterization.

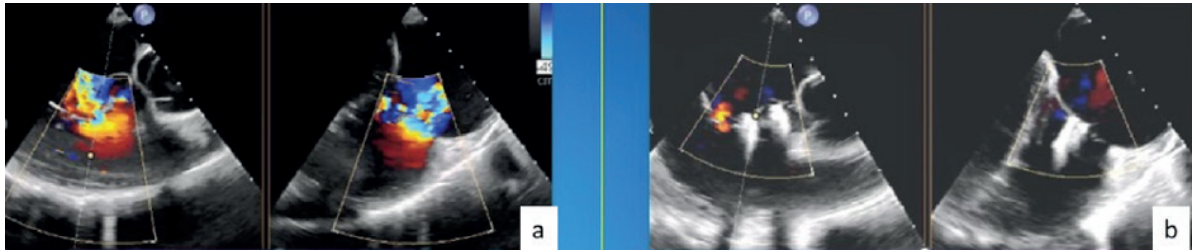
A first XTW clip is implanted by approximating the septal and anterior veils in the medial zone, reducing the regurgitation to moderate. It is decided to implant a second clip parallel to the first one and in a more central position, XT in this case, due to the limited space between the previous clip and the free edge of the anterior veil. The reduction of the insufficiency to mild with mean residual gradient of 1 mmHg is achieved. The procedure finishes without complications. The patient is extubated in the cath-lab and 24 hours later she receives the medical discharge (**Figure 2**).

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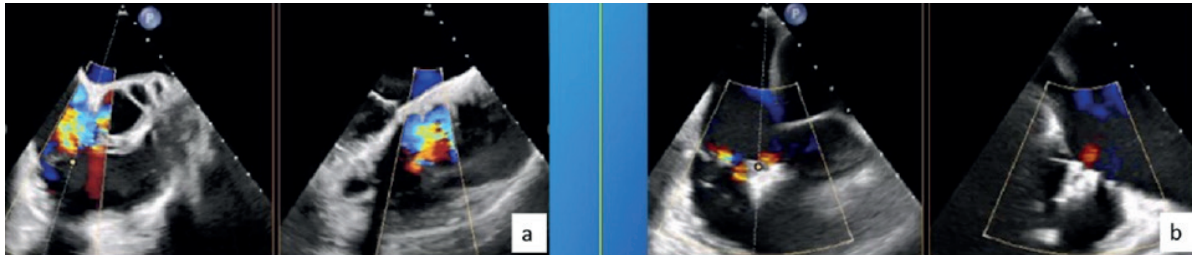
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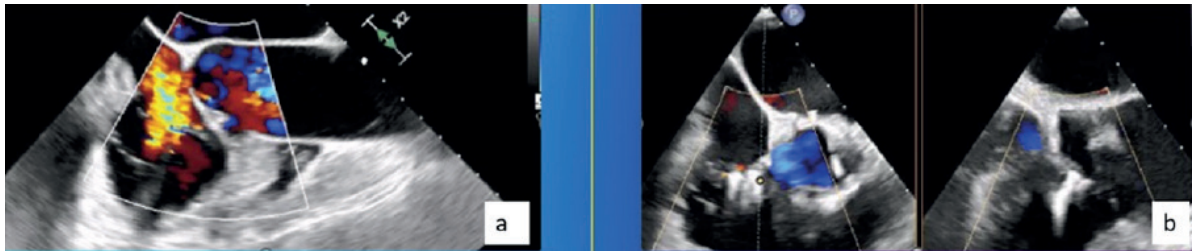
No conflicts of interest whatsoever.



**Figure 1.** Case 1. a) Basal TEE. b) Final TEE after two XTW clips implantation.



**Figure 2.** Case 2. a) Basal TEE b) Final TEE after one XTW clip and one XT clip implantation.



**Figure 3.** Case 3. a) Basal TEE b) Final TEE after one XTW clip and one XT clip implantation .

### CASE 3

Patient with background on mitral valve repair surgery. He consults on asthenia, dyspnea and oedemas in lower limbs. Mild to moderate mitral insufficiency and massive TR of functional etiology because of septal and anterior veils coaptation deficit, right cavities dilation and right ventricular systolic function preserved is noted in TEE. PHT in right catheterism is dismissed.

During the procedure, a first XTW clip is implanted, capturing anterior and septal veils in the commissural zone. Due to persistence of moderate regurgitation towards the center of the valve, an XT clip parallel to the first is implanted, reducing TR to traces with middle gradient of 3 mmHg. The procedure finishes without complications so the patient is extubated in the cath-lab and discharged 24 hours later (**Figure 3**).

### TECHNICAL ASPECTS

The procedure is performed under general anesthesia and guided from transesophageal echocardiogram (TEE) in all its steps. After the right femoral venous puncture a high support guide is carried to the superior vena cava and over it the guide catheter 25 Fr is advanced. Inside the delivery system with the clip in its end is carried. The right atrium is navigated so that the clip is faced to the anatomic defect advancing then to the right ventricle. After that, the clip is retracted until the veils are captured and, in this way, approximate them when closing the clip. Usually, the strategy consists in approximating the anterior and/or posterior veils to



**Figure 4.** TriClip device (Abbott, SantaClara,CA).

the septal veil with one or more clips, depending on the anatomic defect localization.

### DISCUSSION

The TriClip system (Abbott, Santa Clara, CA) is an adaptation of MitraClip (Abbott, Santa Clara, CA) specifically designed to navigate more easily the right atrium in order to face the tricuspid plane to support the implantable clip position in the anatomical defect zone responsible for the mechanism producing the valve insufficiency (**Figure 4**).

The implantable clip has not suffered modifications regarding the mitral device, counting on the four measurements already known (NT, NTW, XT and XTW). It allows adapting the therapy to each patient-specific anatomy.

Were port in this paper, the three first patients treated with this technology.

As usual, in the tricuspid valve as well as in the cases reported here, the tendency is implanting more than one clip; XT and XTW are widely used. The initial strategy is mostly defined on the basis of the anatomical defect localization, the veils length and the valve area. The decision for implanting additional clips and the type of them depends on residual regurgitation and gradient.

In the three cases reported here, the XT and XTW clip implantation achieved a reduction to mild or traces from massive or torrential regurgitations and residual gradients less than 3 mmHg.

It is also remarkable, and aligned with literature, the safety of the procedure and the patient's early recovery, allowing the three of them to receive the discharge 24 hours after the intervention.

## CONCLUSIONS

The transcatheter tricuspid repair with TriClip (Abbott, Santa Clara, CA) is available in Argentina. In concordance with the offered literature, the therapy resulted effective and safe in these three first patients.

## ACKNOWLEDGEMENT

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