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ORIGINAL ARTICLE

Treatment of Fallot tetralogy with a transannular patch. Six years follow-up☆

Myriam Galicia-Tornell[a], Alfonso Reyes-López[b], Sergio Ruíz-González[b], Alejandro Bolio-Cerdán[b], Alejandro González-Ojeda[c], Clotilde Fuentes-Orozco[c,*]

[a] *Departamento de Cirugía Cardiotorácica Pediátrica, Unidad Médica de Alta Especialidad, Hospital de Especialidades del Centro Médico Nacional de Occidente, Instituto Mexicano del Seguro Social, Guadalajara, Jalisco, Mexico*
[b] *Departamento de Cirugía Cardiovascular, Hospital Infantil de México ''Federico Gómez'', México, D.F., Mexico*
[c] *Unidad de Investigación Médica en Epidemiologia Clínica, Unidad Médica de Alta Especialidad, Hospital de Especialidades del Centro Médico Nacional de Occidente, Instituto Mexicano del Seguro Social, Guadalajara, Jalisco, Mexico*

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KEYWORDS
Fallot tetralogy;
Transannular patch;
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Abstract
Background: Primary repair of Fallot tetralogy has been performed successfully for the last 45 years. It has low surgical mortality (< 5%), with excellent long-term results. However, there are delayed adverse effects: progressive right ventricular dilation and dysfunction, arrhythmia, and sudden death. In our centre, Fallot tetralogy is the most common form of cyanotic congenital heart disease (including transannular patch) and accounts for 7.5% of all cardiovascular surgical procedures. The mid-term follow-up results are reported.
Material and methods: Case series. The study included patients who had complete repair of Fallot tetralogy with transannular patch from January 2000 to December 2009. An analysis was performed on the clinical variables, morbidity and mortality.
Results: There were 52 patients in the study, with mean age 4 ± 2 years. Perioperative mortality in 6 patients, with 5 associated with residual right ventricular obstruction and, 1 associated with further surgery. The survival rate was 88% (46) patients, with a follow-up 75 ± 26 months. Late morbidity occurred in 14, due to right ventricular dysfunction in 11, recurrent distal obstruction in 2, and residual ventricular septal defect in 1. Associated risk factors were severe pulmonary insufficiency ($p = 0.001$); QRS > 160 ms, ($p = 0.001$); cardiothoracic > 0.60 index ($p = 0.048$), and tricuspid regurgitation ($p = 0.001$).

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* Corresponding author at: Belisario Domínguez #1000, Colonia Independencia Oblatos, C.P. 44329 Guadalajara, Jalisco, Mexico. Tel.: +33 3618 2760.
E-mail address: clotilde.fuentes@gmail.com (C. Fuentes-Orozco).

Conclusions: There was reasonable long-term survival and excellent quality of life after total correction of Fallot tetralogy; however, progressive right ventricular dysfunction requires continuous monitoring, as well as the choice of optimal timing of pulmonary valve replacement.

PALABRAS CLAVE
Tetralogía de Fallot;
Reparación quirúrgica;
Parche transanular

Tratamiento de la tetralogía de Fallot con parche transanular. Seguimiento a 6 años

Resumen
Antecedentes: La reparación quirúrgica de la tetralogía de Fallot se ha realizado exitosamente en los últimos 45 años, con mortalidad inferior al 5% y con resultados satisfactorios a largo plazo; sin embargo, existen efectos adversos tardíos como: insuficiencia progresiva ventricular derecha, arritmias y muerte súbita. En el Hospital Infantil de México es la cardiopatía cianógena más frecuente y su corrección quirúrgica (incluido el parche transanular) corresponde al 7.5% de toda la cirugía cardiaca. El propósito de este informe es reportar el seguimiento a 6 años en niños tratados en esta institución.
Material y métodos: Serie de casos. Se incluyeron pacientes intervenidos de corrección total de tetralogía de Fallot con parche transanular entre enero de 2000 a diciembre de 2009. Se analizan variables clínicas, morbilidad y mortalidad.
Resultados: Se incluyeron 52 pacientes. Edad 4 ± 2 años. Mortalidad perioperatoria 6, asociada a obstrucción residual ventricular derecha 5 y, reoperación por isquemia miocárdica en 1. Sobrevida 46 (88%) pacientes, seguimiento 75 ± 26 meses. La morbilidad tardía se presentó en 14, debido a insuficiencia ventricular derecha en 11, obstrucción recurrente distal 2 y comunicación interventricular residual uno. Factores de riesgo asociados de insuficiencia ventricular derecha: insuficiencia pulmonar grave ($p = 0.001$); complejo QRS > 160 ms ($p = 0.001$); índice cardiotorácico > 0.60 ($p = 0.048$) e insuficiencia tricuspídea ($p = 0.001$).
Conclusiones: Encontramos una sobrevida razonable a largo plazo y calidad de vida excelente, posterior a la corrección total de tetralogía de Fallot; sin embargo, la insuficiencia progresiva ventricular derecha obliga a un continuo seguimiento para elegir el momento óptimo de reemplazo valvular pulmonar.

Background

Fallot Tetralogy is the most common form of cyanotic congenital heart disease, and accounts for 7–10% of all congenital cardiopathies.[1–7] If it is not corrected surgically, Fallot tetralogy is progressive with high mortality (>35% die in the first year of life, and 50% at 3 years of age),[3,4,7] total correction is the treatment of choice, and this has low perioperative mortality (2–5%), even in neonates,[7–12] and high long term survival rates (95.7% at 10 years, 93.5% at 20, and 85% at 36).[7,13,14] It is considered the cyanogenic cardiopathy with the longest survival (mean age of 30).[7]

Total correction has diverse complications, which include: progressive ventricular dilatation due to residual obstruction of the outflow tract; severe pulmonary valve insufficiency, other residual lesions, arrhythmia, and sudden death. It is observed that reoperation is needed in 6–10% of cases up to 10–20 years from the initial correction.[13]

The need to insert a transannular patch during reconstruction surgery of the right ventricular outflow results in pulmonary insufficiency which, associated with other residual defects (interventricular communication, obstruction in the pulmonary branches), creates volume overload, ventricular dysfunction requiring subsequent reinterventions, and even pulmonary valve replacement. It has been demonstrated that the surgical technique determines postoperative recovery, and long-term results.[14–17]

Over the past decade, 338 cases (26%) have been treated in the *Hospital Infantil de México Federico Gómez*, of whom 4.4% of the total number of congenital cardiopathies had Fallot tetralogy.

The purpose of this study was to assess the patients who underwent total correction of Fallot tetralogy with a transannular patch between January 2000 and December 2009.

Material and methods

A case series was used which included fifty-two patients with Fallot tetralogy, treated surgically by total correction with transannular patch in the Cardiovascular Surgery