

FALLOT REPAIR IN ADULTHOOD. SURGICAL RESULTS AND MEDIUM FOLLOW-UP

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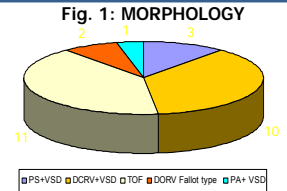
OBJETIVES

Evaluate the surgical risk and late benefits in Fallot situation patients repaired at age >18 years.

MATERIAL & METHODS

27 patients were operated in 2 hospitals, between 1993 and 2010. Morphology (Fig. 1)

Retrospective study of the patients clinical reports. The statistical analysis was done with SPSS-15.0.



RESULTS

55% males.
30% right aortic arch. 48% had ASD.
Preoperative NYHA status \geq III: 59%.
Prior palliative surgery: 26%
Preoperative arrhythmias: 26%.

Two patients had agenesis of the left pulmonary artery.
Mean preoperative SaO₂: 91 +/- 7% and hematocrit: 50 +/- 11%. Ten patients were cyanotic (hematocrit \geq 50)

Diagnosis:

Echocardiography in all patients: RV-PA preoperative ECO gradient: 95 +/- 34 mmHg. PR and TR is absent or mild in 96%. RV function: normal 74%, mild dysfunction 15%, moderate 7%, and severe 4%.

Catheterization in 23 patients: RV-PA gradient 81 +/- 33 mmHg. Mean systolic and diastolic RV pressure were 116/12 mmHg. Systolic pulmonary pressure 33 +/- 15 mmHg.

Cardio MR or CT in 10 patients.

Indication for surgery:

Asymptomatic patients: peak/mean ECO gradients > 60/40 mmHg.

Symptomatic patients: peak/mean ECO gradients > 50/30 mmHg.

Surgical technique:

CPB, aortic cross-clamp, and antegrade hematic cold cardioplegia.

CPB and aortic cross-clamp time were 121 +/- 40 and 88 +/- 39 minutes.

The VSD was closed from the RA in 52%, from the RV in 41%, from aorta in 7%.

Pulmonary annulus was preserved in 68%, pulmonary bioprosthesis was implanted in 18% and in 11% a transannular patch was placed.

Associated procedures: 2 aortic prostheses and 3 valvuloplasty (1 aortic, 1 mitral, 1 tricuspid)

In hospital results:

No mortality nor need of early reoperation.

Intubation time: 16 +/- 49 hours, ICU 3 +/- 2 and hospital stay 14 +/- 7 days.

Follow-up results:

There has been no late mortality in a mean time of 7 years (range 0.5 - 17).

One patient required interventional catheterization for stents in RPA and LPA.

Three patients (11%) underwent reoperation: residual VSD, pulmonary bioprosthesis + residual VSD and tricuspid bioprosthesis.

Actual status:

Functional class is \leq II: 96%. 52% have no medical treatment.

Residual PA-RV ECO gradient: 21 +/- 14 mmHg.

Fig. 2: CT of a patient with severe TOF: main pulmonary and hypoplastic arising branches (A), coronary anatomy (B) and VSD (C)

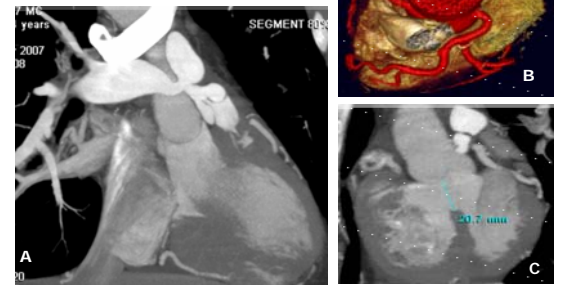
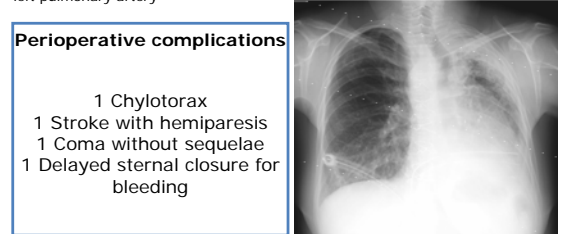


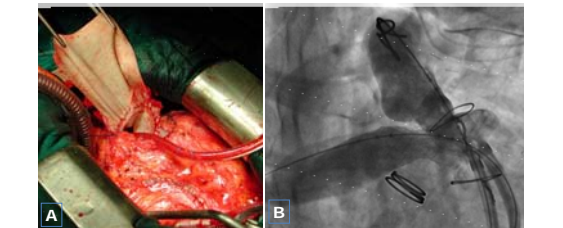
Fig. 3: Postoperative right chylothorax (3 weeks) in one of the two patients who underwent unipulmonary correction due to agenesis of the left pulmonary artery



Perioperative complications

- 1 Chylothorax
- 1 Stroke with hemiparesis
- 1 Coma without sequelae
- 1 Delayed sternal closure for bleeding

Fig. 4A: Pulmonary valve replacement + residual VSD closure in late follow-up.
Fig. 4B: "kissing stents" in left and right pulmonary branches in late follow-up



CONCLUSIONS

1. Fallot repair in adulthood is performed in our hospitals without early mortality. Despite of permeability of only one pulmonary branch, one-lung correction is possible.
2. The long-term survival is excellent, but with need of reoperation in late follow-up.

3. In DORV Fallot type and TOF, the percentage of pulmonary annulus conservation is superior to the children's series.
4. Pulmonary bioprosthesis improve postoperative course when transannular surgery is required.

REFERENCES

1. Nollert G, Fischlein T, Bouterwek S, Böhmer C, Dewald O, Kreuzer E, Welz A, Netz H, Klinner W, Reichart B. Long-term results of total repair of tetralogy of Fallot in adulthood: 35 years follow-up in 104 patients corrected at the age of 18 or older. Thorac Cardiovasc Surg. 1997 Aug;45(4):178-81.
2. Atik FA, Atik E, da Cunha CR, Canejo LF, Assad RS, Jatene MB, Riso A, Barbero-Marcial M. Long-term results of correction of tetralogy of Fallot in adulthood. Eur J Cardiothorac Surg. 2004 Feb;25(2):250-5.
3. Erdoğan HB, Bozbuğa N, Kayalar N, Ereñtuğ V, Omeroglu SN, Kirali K, Ipek G, Akinci E, Yakut C. Long-term outcome after total correction of tetralogy of Fallot in adolescent and adult age. J Card Surg. 2005 Mar-Apr;20(2):119-23.
4. Hörer J, Friebe J, Schreiber C, Kostolny M, Cleuziou J, Holper K, Lange R. Correction of tetralogy of Fallot and of pulmonary atresia with ventricular septal defect in adults. Ann Thorac Surg. 2005 Dec;80(6):2285-91.
5. Ghavidel AA, Javadpour H, Tabatabaei MB, Adambeig A, Raeisi K, Noohi F. Complete surgical repair of Tetralogy of Fallot in adults, is it ever too late? J Card Surg. 2008 Jan-Feb;23(1):23-6.

