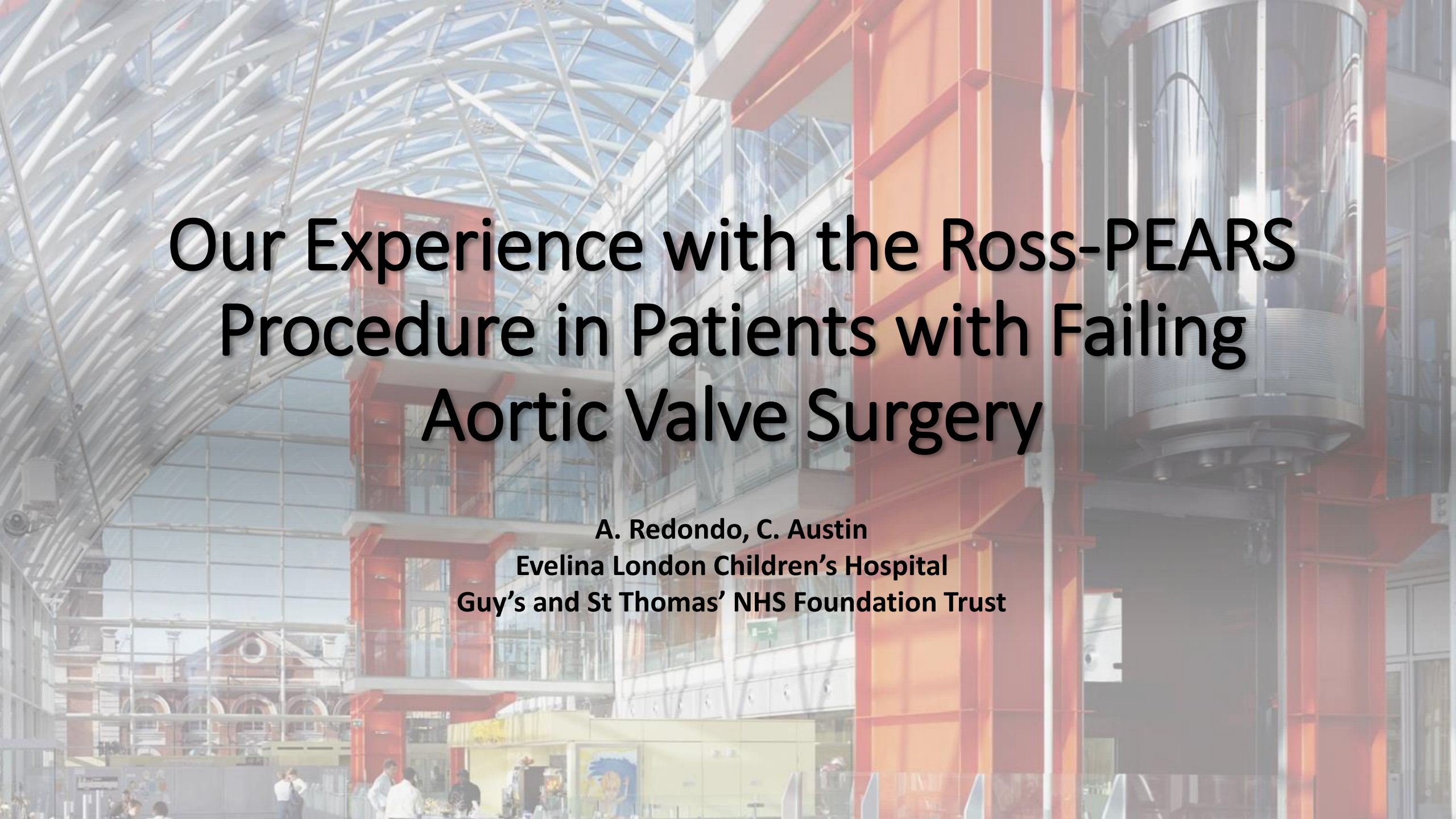

Our Experience with the Ross-PEARS Procedure in Patients with Failing Aortic Valve Surgery

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Background

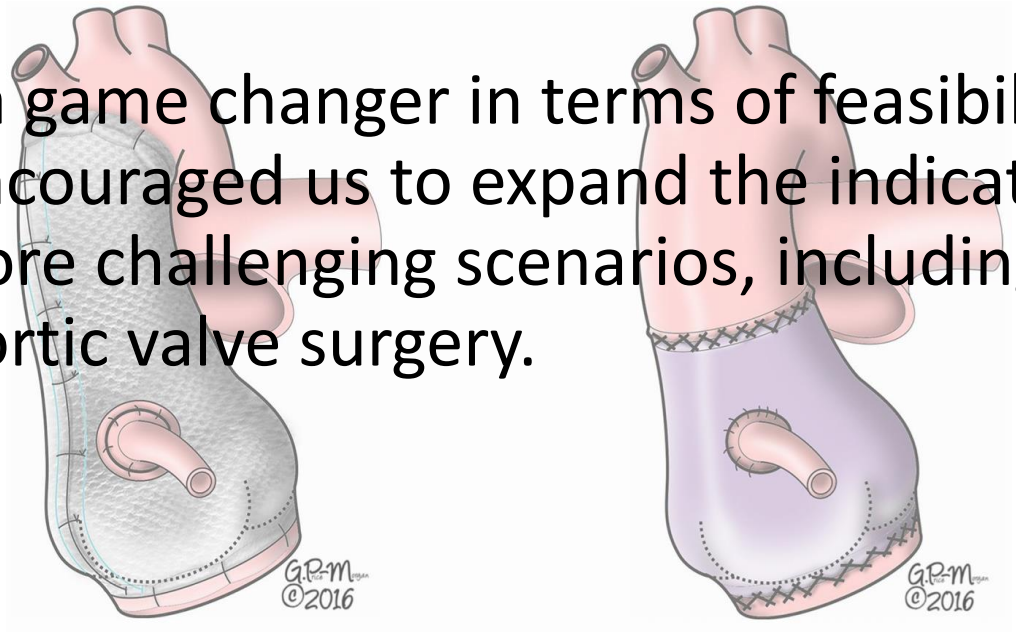
- The Ross operation is a well-known procedure for aortic valve replacement in children and young adults.
  - There is strong evidence that it offers excellent results at mid and long-term, comparable to the general population.

- Its application in cases of failing aortic valve repair or replacement is rare, as it is technically challenging, even in hands of experienced surgeons.
  - A previously operated aortic root normally involves surgical dissection difficulties
  - Explanting previous prosthetic material that much of the time is heavily calcified

⁕ On the other hand, in collaboration with Exstent Ltd, we had been using the ExoVasc PEARS (Personalised External Aortic Root Support) in dilated aortopathies with positive results.

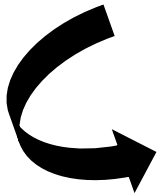
- We integrated the ExoVasc PEARS technique in 2015 in the Ross operation to support the autograft and prevent its dilatation and subsequent failure

⁕ This has been a game changer in terms of feasibility and results, therefore has encouraged us to expand the indications of the Ross procedure to more challenging scenarios, including those patients with previous aortic valve surgery.



Methods

- We have collected the data of all the Ross-PEARS procedures performed by a single surgeon in two different institutions



From this cohort, we have selected those patients who had *previous aortic valve surgery* (repair or replacement)

- We have analized:
  - Demographic data and clinical background
  - Intraoperative and early postoperative data
  - Postoperative follow-up results (clinical status, need for reoperation and grade of neo-aortic regurgitation measured with MRI and echocardiogram)

Results

- 80 Ross-PEARS have been performed in the UK since the start of the project (2015)
  - 20 of those patients (25%) had previous aortic valve surgery
    - 6 valve repair (including 1 Ozaki)
    - 14 valve replacement
      - 7 tissue valves
      - 4 mechanical valves
      - 2 homografts
      - 1 root replacement

Results

Demographic data and clinical background

- Mean age was 29.30 years old (SD 1.22)
- In 12 patients there was a background of bicuspid aortic valve
- Initial aortic valve lesion (which indicated the first operation)
  - Stenosis: 60% (n=12)
  - Regurgitation: 25% (n=5)
  - Endocarditis: 15% (n=3)

Results

Intraoperative data

- Mean bypass time: 219.21 minutes
- Mean cross-clamp time: 172.74 minutes

- 5 patients required an aortic annular enlargement after explanting the previous valve
- 4 patients required a reduction aortoplasty to match the sizes of the pulmonary autograft and the ascending aorta

Results

Postoperative (in-hospital)

⁕ *In-hospital length of stay* (median): 7.5 days (comparable to those having a reintervention for aortic valve replacement

⁕ *Early postoperative complications (n=1):*

One patient had a coronary percutaneous intervention due to severe ostium calcification (had a previous aortic root replacement)

† This patient died 6 years later due to sudden cardiac death

Results

Postoperative (follow-up)

✲ *Reoperations (n=1):*

One complex patient (5 previous cardiac procedures) required a valve replacement for a mechanical valve due to iatrogenic autograft dysfunction (leaflet tear)

✲ *Deaths (n=1)*

The previously mentioned patient who died 6 years later due to sudden cardiac death

Conclusions

- The Ross procedure after previous aortic valve surgery offers good results when performed by an experienced surgeon

- The main advantages offered by this technique would be avoiding life-long anticoagulation and a better longevity compared to the tissue valves currently available in the market.

Conclusions

- The ExoVasc PEARS support has helped to improve these results, and we have integrated it in the Ross operation since 2015.

- As we have seen in our relatively young cohort, it should be considered as an option to improve patients' quality of life, especially in those with active lifestyle, despite being a more challenging and technically demanding procedure.