

Title: Surgical correction of adult coarctation of aorta using extra-anatomic ascending-to-descending aortic bypass : A case report

Authors: Sumit Barua, Omar Sadeque Khan, Rezwanul Hoque, Sazzad Hossain, Muhammad Nasif Imtiaz

Reviewer E: Md. Fakhru Islam Khaled, **ORCID:** 0000-0002-1003-6598, **COI:** None, **AI disclosure:** None

1. Comment a) Importance of this article in local and regional context, prevalence of the treating condition, b) a brief history of the procedure, c) a clearer explanation of why this technique was preferred over stenting or anatomical repair in this particular patient. Strengthening the rationale will enhance the impact.

Response: I have included these in the text—it accounts for approximately 5–8% of all congenital heart diseases.

- a. In Bangladesh, adult CoA is underreported and often discovered incidentally during evaluation for resistant hypertension or cardiovascular complications.
- b. Surgical repair of CoA was first reported in the 1940s using resection with end-to-end anastomosis, which remains standard in children and adolescents.
- c. Although endovascular stenting has emerged as an effective alternative, it may be unsuitable in cases with complex anatomy, associated patent ductus arteriosus (PDA), long-segment narrowing, or unfavourable landing zones.

2. Comment Important preoperative and postoperative parameters such as upper-limb vs lower-limb blood pressure difference, biochemical findings- regarding secondary hypertension or target-organ-impact of severe HTN, and detailed antihypertensive regimen adjustments are missing. Including these will improve clinical clarity.

Response: Clinical evaluation revealed hypertension (upper-limb blood pressure 180/120 mmHg bilaterally), tachycardia (HR 120 bpm), a grade 3/6 systolic murmur over the thoracic spine radiating to the subclavicular region, and absent femoral pulses.

Laboratory evaluation revealed normal renal function without evidence of hypertensive target-organ damage, and secondary causes of hypertension were excluded by normal plasma renin, aldosterone, and thyroid function tests.

The patient was managed preoperatively with Metoprolol 50 mg twice daily and Prazosin 2 mg three times daily to maintain systolic blood pressure < 140 mmHg. Postoperatively, antihypertensive therapy was guided by upper-limb blood pressure, renal function, and lower-limb perfusion. Metoprolol was tapered, while prazosin and other vasodilators were gradually adjusted to avoid hypotension and rebound hypertension.

3. Comment The manuscript refers to Figures 1a–1d but no detailed captions or figure quality description is provided.

Response: Detailed caption and improved quality images are provided.

4. Comment It would be valuable to clarify whether cardiopulmonary bypass was on standby and whether neuromonitoring for spinal cord ischemia was used.

Response: Cardiopulmonary bypass was kept on standby, and distal perfusion pressure monitoring was not required as distal flow was maintained as a side clamp was used in this procedure.

5. Comment The discussion is informative but can be strengthened by adding:

- a. A brief comparison with outcomes from other reported cases of extra-anatomic bypass in adults.
- b. A clearer justification for not considering endovascular stenting (e.g., specific arch interruption anatomy).
- c. Expected long-term outcomes and recommended surveillance strategies.

Response: a) Favorable postoperative outcomes, low mortality, significant blood pressure reduction, and low rates of graft-related complications have been reported in adults undergoing this procedure [7, 8].

- a. I have included the references from other publications.
- b. Endovascular stenting was avoided due to the interrupted aortic arch anatomy and unfavourable landing zones.

6. Comment References include URLs within the text; BSMMU Journal usually follows Vancouver style with DOI number, without URLs unless essential. Please revise according to journal format.

Response: URLs have been removed and Vancouver style with DOI ensured.

7. Comment Typographical and grammatical errors are present in several sentences (e.g., “The descending aorta appeared thinned and dilated”). A language polishing would improve readability.

Response: I have edited the sentence: A tight 2 cm coarctation was observed just distal to the left subclavian artery, associated with thinning and post-stenotic dilatation of the descending aorta.

8. Comment Consider adding body mass index or body habitus details, as these can influence surgical exposure and decision-making. Ensure uniformity of abbreviations at first use (e.g., PDA, PTFE, LVH).

Response: 21-year-old male (BMI 21kg/m²) included in the text and uniformity of abbreviation has been ensured

Reviewer I: Mainul Mahmud, **ORCID:** 0009-0003-3502-2701, **COI:** None, **AI disclosure:** None

9. Comment Blood pressure reporting
You state BP was 180/120 mmHg bilaterally, but no upper vs lower limb comparison is provided. This is one of the key diagnostic feature in CoA.

Response: Femoral pulsations were absent clinically as mentioned. Therefore lower-limb blood pressure could not be elicited. The echocardiography was performed by a reliable and experienced cardiologist in Bangladesh.

10. Comment Echocardiographic gradient inconsistency

Peak gradient: 62 mmHg.

Mean gradient: 16.3 mmHg.

This difference seems large.

Response: The anatomical findings were similar to those seen in an interrupted aortic arch; however, the anatomy was not consistent with a pure interrupted arch.

11. Comment Imaging details

CT shows post-stenotic dilatation but arch anatomy (interrupted vs hypoplastic) is mentioned later, not earlier. Why?

What about preoperative brain imaging? About 10% CoA patient have intracranial aneurysm. But there is no statement regarding that.

Response: Although a CT scan of the brain was not performed, it would have been wise to do so, considering the clinical context and the known association with coarctation of the aorta. The different treatment options like bypass, resection and end to end anastomosis, stenting, aortoplasty have been included in the text.