



Bitesize Research:

UPPER LIMB ISCHEMIA

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PAPER 1: *Outcomes of Upper-Extremity Revascularization Following Acute Limb Ischemia*

: A Outcomes of Upper-Extremity Revascularization Following Acute Limb Ischemia. Jo, Diane et al. Journal of Hand Surgery, Volume 50, Issue 11, 1362 - 1369

Summary:

This retrospective study reviewed 366 patients treated for acute upper-extremity limb ischemia (≤ 14 days' duration) between 2003 and 2023 to evaluate outcomes following surgical revascularisation. The mean patient age was approximately 65 years and around 70% were women. Common causes included iatrogenic injury and embolism, often related to atrial fibrillation, with the brachial artery most frequently affected. Median ischaemia time was 12 hours, and overall complications occurred in about 22% of cases. Although longer ischaemia duration was associated with more severe presenting symptoms such as pain and paraesthesia, it did not clearly predict postoperative complications or length of hospital stay. Prophylactic fasciotomy did not demonstrate clear benefit and was associated with higher complication rates, suggesting its routine

use in upper-extremity acute limb ischaemia should be carefully reconsidered.

Pros

This is a large cohort study for a rare condition (366 patients over 20 years). Additionally, the study was over a long period of 20 years which captures and allows insights into real world outcomes across evolving practise. This study addresses practical issues, for example, does ischaemia time predict outcomes? Is prophylactic fasciotomy beneficial? These are directly applicable to surgical and vascular practice. Retrospective, multi-year institutional data reflect routine clinical care rather than idealised trial settings, improving pragmatic relevance. Reporting complication rates (~22%) provides useful counselling information and benchmarking data.

Cons

Retrospective study design which is subject to selection bias, missing data and documentation variability. Cannot establish causation — only associations. Although the longer time frame is a positive It can also be seen as a negative factor. Long time frame can result in increased practise variation. Over 20 years, Imaging technology evolved, Endovascular techniques changed, Anticoagulation practices improved and surgical thresholds for fasciotomy

likely shifted. This introduces heterogeneity that may confound outcomes.

Impact on Practise

Upper-limb ALI is uncommon but high-risk. Although less frequent than lower-limb ALI, complication rates are significant (~22%), so rapid recognition and escalation are critical. Even when ischaemia time isn't clearly predictive of outcome, delay still correlates with worse symptoms. This highlights the importance of timely diagnostic scans. Prompt duplex assessment of the brachial artery (most common site) and proximal inflow is essential. Be alert to embolic patterns, especially in patients with atrial fibrillation. Consider iatrogenic injury in recent arterial access/intervention cases.

PAPER 2: *Acute Upper Limb Ischemia: A Case of Successful Thrombosuction and Catheter-Directed Thrombolysis in a Resource-Limited Hospital*

Baskoro, A, Budiono, E, Sulastomo, H. et al. Acute Upper Limb Ischemia: A Case of Successful Thrombosuction and Catheter-Directed Thrombolysis in a Resource-Limited Hospital. J Am Coll Cardiol Case Rep. 2025 Nov, 30 (37).

Summary

This case report describes a patient presenting with acute upper-limb ischemia, a vascular emergency that accounts for only a small percentage of all acute limb ischemia cases. The authors detail how the diagnosis was made clinically and with vascular imaging, and then describe the successful use of thrombo-suction and catheter-directed thrombolysis as the primary intervention in a resource-limited hospital setting where more advanced surgical or hybrid approaches may not have been available. The report highlights the importance of early recognition, prompt intervention, and pragmatic use of endovascular techniques even in environments with limited infrastructure. It also underscores the feasibility of less invasive vascular procedures for limb salvage when conventional surgical options are constrained.

Pros

This paper provides real-world insights in a low-resource setting. It demonstrates how advanced vascular care can be delivered even when parts of the usual infrastructure are not available. This is important in a global health context. The paper also offered a practical step-by-step logic on how thrombo-suction and catheter-directed thrombolysis were performed and what challenges were encountered. This is educational for vascular teams. The case report highlights how real patients deviate from normal pathways and reinforces that unconventional routes can be limb saving with appropriate judgement.

Cons

By definition, a single case cannot establish effectiveness or compare outcomes across strategies. The successful outcome here doesn't prove that thrombo-suction + CDT is superior to surgery in all cases, especially in well-resourced settings. Unsuccessful cases of similar intervention in resource-limited environments are less likely to be published, so the report may reflect positive outcome bias. The focus is on acute success; longer follow-up data (e.g., limb function, re-occlusion, anticoagulation strategy) is typically limited or absent in case reports. There's no control or comparison group — we don't know, for example, whether a standard surgical embolectomy might have had a similar or better outcome in this specific situation.

Impact on practise

Acute upper limb ischemia can be successfully managed with endovascular techniques like thrombo-suction and catheter-directed thrombolysis even outside tertiary centres. Early diagnosis, followed by early intervention are key for upper limb success, regardless of setting. Practitioners should be aware of alternative workflow options when traditional surgical support is unavailable. In settings where hybrid approaches are limited, vascular scientists can play a key role but providing rapid access to diagnostics and escalating findings in an urgent manner. Follow up duplex can then be arranged to determine success of procedure.

PAPER 3: *True radial Artery Aneurysm: Diagnosis and Treatment*

Duncan A, Maslen C, Gibson True Radial Artery Aneurysm: Diagnosis and Treatment Ayers, Joseph D. et al. Journal of Vascular Surgery, Volume 62, Issue 3, 813 - 814.

Summary

Ayers and colleagues report a true radial artery aneurysm, a very rare vascular pathology because it involves dilation of all three layers of the arterial wall, unlike the much more common iatrogenic pseudoaneurysms. This case describes diagnosis using duplex ultrasonography (and likely cross-sectional imaging) which revealed a focal aneurysmal dilation of the radial artery. Definitive management involved surgical resection of the aneurysm and vascular reconstruction, tailored by assessing hand perfusion and collateral flow (e.g., Allen's test and imaging). The report emphasises that true radial artery aneurysms, although rare, can carry risks of distal embolisation, ischemia, nerve compression, or rupture, and thus require timely recognition and intervention to prevent complications.

Pros

Focus on a rare but clinically important entity: True radial artery aneurysms are extremely uncommon, and documented cases help broaden awareness and clinical suspicion. Clear diagnostic and management description: Illustrates how vascular imaging (duplex ultrasound as first-line) guides surgical planning and the role of collateral assessment in decision-making. Educational

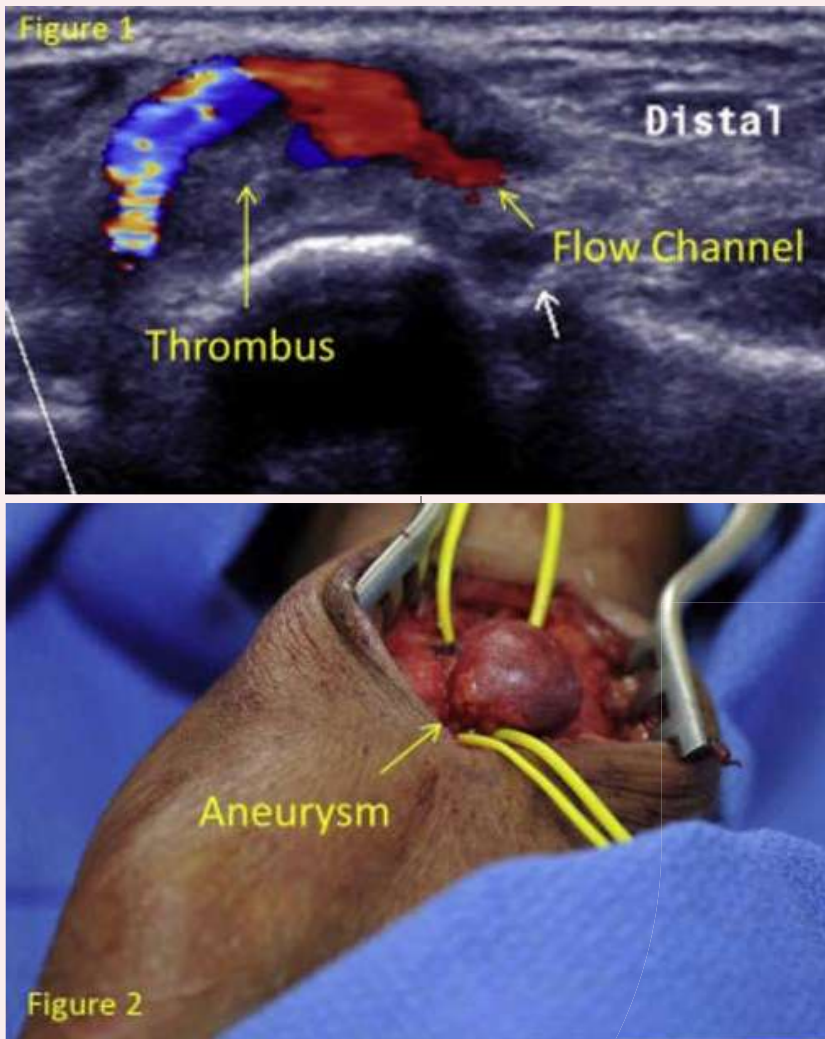


Figure 1 and Figure 2: Figure 1 showing ultrasound image of the radial artery aneurysm. Figure 2 shows the operative exposure of the radial artery aneurysm.

value: Provides a succinct but practical template for recognising and treating similar presentations, aiding clinicians who may never encounter this condition. Highlights another cause of upper limb ischemia.

Cons

Very low evidence level: As a short case report with only one subject, it cannot establish generalisable recommendations for management or outcomes. Lack of long-term outcome data: Most case reports (including this one) focus on acute technical success; follow-up on graft patency or late complications is limited or absent. Limited generalisability: Because these aneurysms are rare, indi-

vidual case experience may not apply broadly, and clinical decision-making should still be guided by physiology and collateral assessment.

Impact on practise

No mention of follow up on graft patency. This highlights the importance of establishing follow up protocols with vascular surgery following intervention. With limited published guidance, this may be on a case by case basis. Generally lower limb grafting protocol can be followed for upper limb procedures. Consider performing all vascular diagnostic scans in one visit. For example, may be useful to perform vein mapping to avoid delay in treatment plans.

PAPER 4: Outcomes of Surgical Revascularisation for Acute Upper Limb Ischemia- A Single Centre Retrospective Analysis.

Ayman El-Sayed; Navanith Murali; Angela Lee; Ishtiaq Aziz; Adel Abdallah; Philip Stather. Outcomes of Surgical Revascularisation for Acute Upper Limb Ischemia- A Single Centre Retrospective Analysis. *Annals of Vascular Surgery*, January 01, 2025, Volume 110, Pages 506-512.

Summary

This single-centre retrospective study analysed 96 patients who underwent brachial artery embolectomy for acute upper-limb ischemia (AULI) between 2010 and 2021. The brachial artery was the most common site of occlusion, with computed tomography angiography used routinely as the diagnostic modality. The procedure achieved a technical success rate of 76.4%, but overall perioperative complication rates were high: major adverse events occurred in over 11% of patients, including stroke and in-hospital death, while local complications (e.g., haematoma, thrombosis) affected about 24%, and amputation occurred in 2.1%. No clear predictors of local surgical complications were identified. The authors conclude that although Fogarty embolectomy can be effective in selected patients, AULI carries significant morbidity and mortality, and evidence to guide optimal management remains limited. Larger prospective studies are needed to better identify predictors of poor outcomes and refine treatment strategies.

Pros

The paper addresses a clinically meaningful gap: Acute upper-limb ischemia is rare and understudied; this paper provides useful real-world data on surgical outcomes where evidence is sparse. Detailed outcome reporting: Includes both technical success and important perioperative outcomes like stroke, thrombosis, and amputation, giving a balanced view of risks/benefits. Use of modern imaging: CTA as first-line diagnosis reflects current practice and adds consistency to patient evaluation. The paper provides real-world context: Data covers over a decade, reflecting practice evolution and providing practical relevance for clinicians.

Cons

Retrospective single-centre design: Inherently subject to selection bias, missing data, and practice variability over time; findings may not generalise to other settings. Modest sample size: Ninety-six patients isn't small for this condition, but the numbers may still limit statistical power, especially for multivariable analysis or subgroup predictors. Lack of control group: Without non-operative or endovascular comparators, it's hard to judge whether surgery was optimal in all cases.

Impact on practise

Upper-limb ALI treated surgically has significant morbidity, even with technically successful embolectomy, underscoring the importance of rapid diagnosis and patient selection. CTA is valuable as first-line imaging for planning intervention however duplex should not be forgotten, and it might be worth discussing with vascular surgery how ultrasound imaging can aid early diagnosis, especially in cases where CT may not be readily available. Furthermore, ultrasound imaging can be used in patients needing bypass procedure. 🍀

CSVS Research Committee announcement



Members of the College and Society for Clinical Vascular Science (CSVS) are encouraged to take advantage of the Society's research funding opportunities. The CSVS offers a Research Grant of up to £4,000 to support vascular science research projects, as well as a £500 Writing Grant designed to provide members with the time to write grant applications. These grants provide an excellent opportunity to develop research skills, contribute to the vascular science evidence base, and support professional development. Members interested in applying can find further details and application information on the CSVS website.

CSVS members are invited to share their work on the Current Research section of the CSVS website. If you are involved in a research project, service evaluation, audit, or have recently presented or published work related to vascular science, we would be delighted to highlight it. Sharing your research helps showcase the valuable work being undertaken by our members and supports the growth of the vascular science evidence base. If you would like your research featured, please get in touch with the CSVS research team on team@research@csvs.org.uk