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MIDTERM RESULTS OF THORACIC ENDOVASCULAR AORTIC REPAIR AT 108 CENTRAL MILITARY HOSPITAL

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ABSTRACT

Objectives: To evaluate the midterm results of thoracic endovascular aortic repair (TEVAR) for the treatment of thoracic aortic diseases at 108 Military Central Hospital. **Subjects and methods:** A prospective, descriptive longitudinal study was conducted on 29 patients with thoracic aortic pathologies undergoing thoracic endovascular aortic repair (TEVAR), either as an isolated procedure or combined with hybrid supra-aortic debranching, at 108 Military Central Hospital from December 2020 to July 2025. **Results:** The technical success rate and target vessel patency rate were both 100% (29/29). Post-procedural complications included endoleak in 1 patient (3.4%), spinal cord ischemia in 2 patients (6.9%), stroke in 2 patients (6.9%), and stent-graft infection in 1 patient (3.4%). The 30-day mortality rate was 10.3% (3/29). Over a mean follow-up period of 24 ± 14 months, 6 deaths were recorded, yielding an overall crude survival rate (and cumulative Kaplan–Meier estimated survival rate) of 79.3% (23/29). **Conclusion:** Thoracic endovascular aortic repair (TEVAR), frequently combined with hybrid supra-aortic debranching (72.4%), is a feasible and effective treatment modality with a high technical success rate (100%) and acceptable midterm survival (79.3%) in patients with complex thoracic aortic pathologies, although early mortality (10.3%) and neurological complications require careful perioperative management.

Key words: Stent graft, endovascular repair, thoracic aortic aneurysms, thoracic aortic dissection.

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1. Introduction

Pathologies of the thoracic aorta encompass a diverse and complex spectrum of life-threatening lesions. Major pathologies of the acute thoracic aorta include aneurysms, aortic dissection, traumatic aortic injury, penetrating atherosclerotic ulcer, intramural hematoma, and pseudoaneurysm. In the United States, approximately 3,000 people die each year from thoracic aortic disease, and thoracic aortic aneurysms are the 18th leading cause of death overall. Historically, the standard treatment for acute thoracic aortic disease was conventional open surgery involving aortic prosthetic replacement (with or without aortic arch replacement). Conventional open surgery for descending thoracic aortic disease is associated with substantial perioperative morbidity and mortality, with reported mortality rates exceeding 28% and neurological complication rates approaching 30% [1]. Despite numerous advances in perioperative diagnosis and intensive care, postoperative mortality and major complications remain significant clinical challenges, particularly among elderly patients and those with multiple comorbidities [2]. Endovascular stent-graft repair was first introduced for aortic aneurysms by Parodi et al. in 1991 and subsequently adapted for the thoracic aorta by Dake et al. in 1994; since then, thoracic endovascular aortic repair (TEVAR) has rapidly evolved into a cornerstone of cardiovascular intervention. In Vietnam, TEVAR and hybrid aortic arch procedures have only recently been implemented at major tertiary cardiovascular centers. Consequently, domestic clinical evidence remains scarce, particularly regarding midterm survival, management of complex arch landing zones requiring hybrid supra-aortic debranching, and neurological or graft-related complications across heterogeneous acute and chronic thoracic aortic pathologies. To address this evidence gap, we conducted this study with the objective: To evaluate the midterm results of thoracic endovascular aortic repair (TEVAR) at the Department of Cardiovascular Surgery, Heart Institute, 108 Military Central Hospital.

2. Subjects and Methods

2.1. Subjects

This study enrolled 29 patients diagnosed with thoracic aortic pathologies (including descending thoracic or arch aortic aneurysms, selected cases of acute type A aortic dissection, complicated acute type B aortic dissection, and traumatic thoracic aortic injury) who underwent thoracic endovascular aortic repair (TEVAR), either alone or combined with hybrid supra-aortic debranching, at the Department of Cardiovascular Surgery - Heart Institute - 108 Military Central Hospital from December 2020 to July 2025.

Inclusion criteria

Patients diagnosed with thoracic aortic aneurysm > 5.0 cm in diameter (or symptomatic/rapidly expanding aneurysms), acute type A aortic dissection with primary entry tear in the descending aorta or high surgical risk amenable to hybrid arch repair and TEVAR, complicated acute type B aortic dissection (characterized by rupture, impending rupture, malperfusion syndrome, refractory hypertension, or persistent pain), or post-traumatic thoracic aortic pseudoaneurysm/transection; all patients and/or their legal representatives received comprehensive information regarding the treatment procedure and provided written informed consent to participate in the study.

Exclusion criteria

Uncomplicated acute type B aortic dissection managed medically, severe iliofemoral arterial occlusive disease or extreme tortuosity precluding safe delivery system access, terminal comorbidities with life expectancy < 1 year, or refusal to participate in the study.

Study setting and period

The study was conducted at the Department of Cardiovascular Surgery - Heart Institute - 108 Military Central Hospital from December 2020 to July 2025.

2.2. Methods

Study design

A prospective, descriptive longitudinal cohort study.

Research process:

- Preoperative assessment and planning: Baseline clinical characteristics, comorbidities, and laboratory data were collected. Contrast-enhanced multi-slice computed tomography (MSCT) angiography of the entire aorta was analyzed using OsiriX software to evaluate lesion morphology, entry tears, proximal and distal landing zone diameters and lengths (requiring a minimum sealing length of 20 mm), and iliofemoral access anatomy. Stent-graft sizing was determined with 10-20% oversizing for aneurysms and 0-10% oversizing for dissections and traumatic injuries.

- Surgical and interventional procedure: All procedures were performed in a hybrid operating

theater by a multidisciplinary team of cardiovascular surgeons and interventionalists. When the proximal landing zone extended into Ishimaru zones 0, 1, or 2 with inadequate native sealing length, hybrid supra-aortic debranching (either total supra-aortic debranching via median sternotomy from the ascending aorta for zone 0, or extra-anatomic carotid-carotid-left subclavian bypass for zones 1-2) was performed prior to retrograde TEVAR stent-graft deployment via femoral artery surgical exposure or percutaneous closure.

- Post-intervention in-hospital evaluation: Clinical neurological examination, peripheral pulse assessment, and contrast-enhanced thoracic aortic MSCT angiography were performed prior to hospital discharge to verify stent-graft positioning, target vessel patency, false lumen thrombosis, and the presence of endoleaks.

- Follow-up protocol: Outpatients were scheduled for clinical examination at 2 weeks, 1 month, 3 months, 6 months, 1 year, and annually thereafter. Contrast-enhanced MSCT angiography was routinely performed at 1 month, 6 months, 12 months, and annually (or earlier if clinically indicated) to monitor aortic remodeling, stent-graft migration, or late endoleaks.

Endpoints and definitions: Primary and secondary endpoints included technical success (defined as successful delivery and deployment of the stent-graft at the intended landing zone without intraoperative surgical conversion, type I or III endoleak on completion angiography, or death within 24 hours), target vessel patency (unobstructed flow through the stent-graft and revascularized supra-aortic branches confirmed on MSCT), endoleak (classified into types I to V according to Society for Vascular Surgery reporting standards on MSCT), spinal cord ischemia (new-onset postoperative paraplegia or paraparesis graded by the Modified Tarlov scale), stroke (new focal or global neurological deficit lasting > 24 hours confirmed by brain CT or MRI), stent-graft infection (diagnosed based on clinical sepsis, positive blood cultures, and perigraft fluid/gas on MSCT), 30-day mortality (all-cause death within 30 days post-procedure or during the index hospitalization), and midterm overall survival.

2.3. Statistic

Collected data were entered and analyzed using SPSS software version 20.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD) and range (minimum - maximum), while categorical variables were presented as frequencies and percentages (n, %). Time-to-event survival analysis was performed using the Kaplan-Meier method, with follow-up time calculated from the date of the index TEVAR procedure to the date of all-cause death or the last clinical follow-up censoring date.

2.4. Research Ethics

The study protocol was reviewed and approved by the Ethics Committee of 108 Military Central Hospital. All patients or their legal representatives were informed about the procedure, potential benefits and risks, and provided informed consent before thoracic endovascular aortic repair. Patient information was kept confidential and used solely for research purposes. The study did not interfere with the indication, technique, or standard treatment of the patients.

3. Results

Table 1. Clinical characteristics of the patient (n=29)

Characteristic	Value
Age (years), mean ± SD	61.6 ± 15
Male sex, n (%)	23 (79.3)
Follow up (months), mean ± SD	24±14
Hypertension, n (%)	26 (89.7)

** Note: SD - standard deviation.*

The mean age of the patients was 61.6 ± 15.0 years (range: 25-81 years). Male patients accounted for the majority of the cohort (79.3%). The mean follow-up duration was 24 ± 14 months (range: 1-57 months). Hypertension was the most prevalent comorbidity, present in 89.7% of patients.

Table 2. Characteristics of aortic pathology (n=29)

Characteristic	Value
Status of aortic wall on admission, n (%)	
Aneurysmal rupture	4 (13.8)
Impending rupture (threatened rupture)	7 (24.1)
Stable	18 (62.1)
Type of lesion, n (%)	
Aneurysm	23 (79.3)
Type A aortic dissection	2 (6.9)
Type B aortic dissection	3 (10.3)
Traumatic thoracic aortic injury	1 (3.4)

Eleven patients (37.9%) required emergency intervention due to frank aortic rupture (4 cases; 13.8%) or impending rupture (7 cases; 24.1%), while 18 patients (62.1%) were hemodynamically stable

and underwent elective repair. Regarding lesion etiology, thoracic aortic aneurysm was the most common pathology, accounting for 79.3% (23/29), followed by complicated acute type B aortic dissection in 3 cases (10.3%), acute type A aortic dissection in 2 cases (6.9%), and traumatic thoracic aortic injury in 1 case (3.4%).

Table 3. Classification of techniques (n=29)

Characteristic	Value
Hybrid TEVAR with supra-aortic debranching, n (%)	**21 (72.4)**
Total debranching of the supra-aortic branches	10 (34.5)
Carotid-carotid-left subclavian bypass	11 (37.9)
Isolated TEVAR (Endovascular repair alone), n (%)	8 (27.6)
Access route, n (%)	
Surgical exposure of the common femoral artery	17 (58.6)
Percutaneous femoral arterial access	12 (41.4)

As shown in Table 3, among the 29 patients, 21 patients (72.4%) underwent a hybrid approach combining TEVAR with supra-aortic debranching-including total debranching of the supra-aortic branches in 10 patients (34.5%) for Zone 0 landing and extra-anatomic carotid-carotid-subclavian bypass in 11 patients (37.9%) for Zones 1-2 landing-while 8 patients (27.6%) with adequate native proximal landing zones (Zones 3-4) underwent isolated TEVAR (endovascular repair alone). Note that in the initial dataset, the figure of 17 (58.6%) had been inadvertently duplicated from the surgical femoral access route row. Regarding vascular access for stent-graft delivery, surgical cutdown exposure of the common femoral artery was utilized in 17 patients (58.6%), whereas percutaneous femoral access using vascular closure devices was performed in 12 patients (41.4%).

Table 4. Treatment outcomes (n=29)

Characteristic	Value
Technical success, n (%)	29 (100)
Target vessel patency, n (%)	29 (100)
Complications, n (%)	
Endoleak	1 (3.4)
Spinal cord ischemia	2 (6.9)
Stroke	2 (6.9)
Stent-graft infection	1 (3.4)
30-day mortality, n (%)	3 (10.3)

Technical success and target vessel patency were achieved in all 29 patients (100%). Early and midterm post-procedural complications included endoleak in 1 patient (3.4%; a late type IV endoleak detected on 6-month MSCT following total debranching and TEVAR for a thoracic aortic aneurysm, which resolved spontaneously at 9 months), spinal cord ischemia in 2 patients (6.9%; both manifesting as lower extremity paraparesis following TEVAR with intentional left subclavian artery coverage, which resolved completely within 3 days after urgent left carotid-subclavian bypass, cerebrospinal fluid drainage in 1 patient, and permissive hypertension), stroke in 2 patients (6.9%; both were perioperative embolic ischemic strokes occurring in elderly patients with severe aortic arch atheroma undergoing hybrid Zone 0/1 arch debranching and TEVAR, confirmed on brain CT, leaving mild-to-moderate residual hemiparesis managed with medical therapy and neurorehabilitation), and stent-graft infection in 1 patient (3.4%; diagnosed 2 months post-procedure and managed with prolonged targeted intravenous antibiotic therapy). The 30-day all-cause mortality rate was 10.3% (3/29), all occurring in high-risk patients undergoing extensive hybrid total arch debranching and TEVAR: 1 death due to retrograde type A aortic dissection and acute cardiac tamponade at 20 hours post-procedure, 1 death due to proximal ascending aortic anastomotic bleeding following a hypertensive crisis on postoperative day 6, and 1 death due to severe hospital-acquired pneumonia and respiratory failure superimposed on severe chronic obstructive pulmonary disease (COPD) and heart failure at 2 weeks post-procedure.

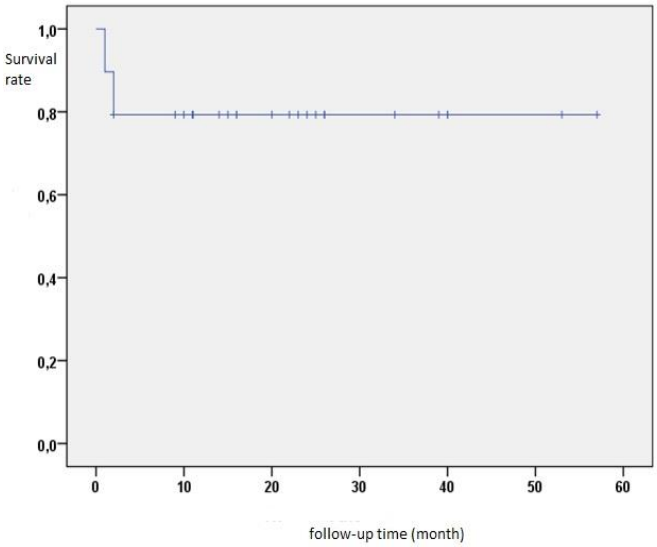


Figure 1. Kaplan-Meier curve of study survival

The mean follow-up duration was 24 ± 14 months (range: 1-57 months). A total of 6 deaths (20.7%) were recorded during the entire study period, comprising 3 early in-hospital deaths within 30 days (10.3%) and 3 late deaths occurring during the 1st and 2nd months post-procedure (10.3%, due to prosthetic graft infection/sepsis and underlying cardiopulmonary

comorbidities), with no additional mortalities observed beyond 2 months. Consequently, both the overall crude survival rate and the cumulative Kaplan-Meier estimated midterm survival rate at the end of follow-up were 79.3% (23/29).

4. Discussion

Thoracic endovascular aortic repair (TEVAR) for thoracic aortic diseases at 108 Military Central Hospital has been implemented since 2016. Although the sample size in the present cohort is relatively modest (n = 29), we have encountered a broad spectrum of thoracic aortic pathologies, including thoracic aortic aneurysms, acute type A and type B aortic dissections, and blunt traumatic thoracic aortic injury, among which thoracic aortic aneurysms accounted for the majority of cases (79.3%).

Thoracic aortic disease predominantly affects older individuals and is associated with several acquired risk factors, particularly aging, hypertension, smoking, hypercholesterolemia, atherosclerotic degeneration, and previous aortic injury [3]. The underlying etiology varies according to age and anatomical location. Degenerative disease is more frequently observed in older patients, especially in the descending thoracic aorta, whereas thoracic aortic disease presenting at a younger age is more likely to be associated with heritable or congenital conditions, including bicuspid aortic valve, Marfan syndrome, Loeys-Dietz syndrome, vascular Ehlers-Danlos syndrome, and other forms of heritable thoracic aortic disease [3,4]. Consistent with these epidemiological patterns, the mean age of our cohort was relatively advanced (61.6 ± 15.0 years), and systemic hypertension was the predominant comorbidity (89.7%).

In our study, thoracic aortic aneurysms represented the most frequent lesion (79.3%). Notably, emergency TEVAR was required in 11 patients (37.9%) presenting with frank aortic rupture (13.8%) or impending rupture (24.1%). Among the emergency interventions, there was one notable case of penetrating traumatic injury to the supradiaphragmatic descending thoracic aorta; the patient was admitted two hours post-injury in severe hemorrhagic shock and successfully underwent emergency TEVAR with complete hemodynamic stabilization.

For complex thoracic aortic lesions involving the aortic arch or lacking an adequate proximal landing zone, hybrid repair combining open supra-aortic debranching with TEVAR enables exclusion of the aortic lesion while avoiding cardiopulmonary bypass and deep hypothermic circulatory arrest [5]. In our series, hybrid repair was performed in the majority of patients (21/29; 72.4%), comprising total supra-aortic debranching (transposition of all arch branches from the ascending aorta) in 10 patients (34.5%) and carotid-carotid-left subclavian bypass in 11 patients (37.9%), whereas isolated TEVAR was performed in 8 patients (27.6%). Notably, in one patient presenting with a Kommerell diverticulum and aberrant right subclavian artery, we successfully performed a left carotid-right carotid-right subclavian bypass combined with aortic arch TEVAR. Performing such complex hybrid procedures safely requires close coordination between cardiovascular surgeons and interventionalists in a dedicated hybrid operating theater equipped with high-resolution fluoroscopy.

Our technical success rate was 100%, with all stent-grafts accurately deployed at the preoperatively planned landing zones determined by multiplanar MSCT reconstruction on OsiriX software. No intraoperative stent-graft migration, kinking, or unintentional branch occlusion occurred. This high technical success rate is consistent with both domestic and international reports [6,7]. Furthermore, the target vessel patency rate remained 100% throughout follow-up; all patients with supra-aortic bypass grafts were maintained on lifelong antiplatelet therapy with aspirin 100 mg/day.

In our study, endoleak occurred in one patient, accounting for 3.4% of the study population. This rate is consistent with recent reports in the literature. Buczkowski et al. reported type I endoleaks in 3 of 74 patients undergoing emergency TEVAR, corresponding to a rate of approximately 4.1% [1]. In a more recent 10-year single-center series, AlQurashi et al. observed only one intraoperative endoleak, with an incidence of 1.3% [8]. These findings suggest that the incidence of endoleak in our study was within the lower range reported in contemporary TEVAR series. Differences among studies may be related to the underlying aortic pathology, urgency of intervention, anatomical characteristics of the proximal and distal landing zones, stent-graft selection, and duration of follow-up. Our single endoleak case occurred in a patient with a thoracic aortic aneurysm who underwent hybrid total debranching and TEVAR; routine 6-month follow-up MSCT revealed a type IV endoleak (graft porosity), which resolved spontaneously on the subsequent 9-month MSCT without secondary intervention. Regarding neurological complications, spinal cord ischemia (SCI) is a devastating complication of TEVAR caused

by the occlusion of segmental intercostal arteries (particularly in the T8-L2 Adamkiewicz territory) combined with compromised collateral perfusion from the left subclavian artery (LSA) via the vertebral and internal mammary arteries. In the nationwide study by Delafontaine et al. (2019) [9], SCI occurred in 2.2% of patients undergoing TEVAR with LSA coverage. In our cohort, SCI occurred in 2 patients (6.9%), both of whom had intentional LSA coverage without prior revascularization. Immediately upon detecting lower-extremity weakness, we performed urgent left carotid-subclavian bypass in both patients, instituted cerebrospinal fluid drainage in one patient, and maintained permissive hypertension (systolic blood pressure 130-140 mmHg) to augment spinal cord perfusion pressure; both patients achieved full neurological recovery within 3 days. In addition, perioperative ischemic stroke occurred in 2 patients (6.9%), both undergoing hybrid arch debranching and Zone 0/1 TEVAR. Pathophysiologically, perioperative stroke during hybrid arch TEVAR is primarily driven by cerebral atheroembolism resulting from wire, catheter, and rigid delivery system manipulation across a heavily calcified or atheromatous aortic arch, or temporary hemodynamic hypoperfusion during supra-aortic clamping. Minimizing arch manipulation, careful de-airing and flushing of the stent-graft system, and pre-procedural MSCT assessment of arch atheroma burden are essential to reduce stroke risk.

In our study, the 30-day mortality rate was 10.3% (3/29), which is comparable to the 9% early mortality reported by Stelzmueller et al. in acute complicated aortic dissections [10]. However, a detailed pathophysiological analysis of our mortality cases highlights the substantial hazards associated with extensive hybrid repairs and emergency presentations. All three early deaths occurred in patients who underwent hybrid total supra-aortic debranching and Zone 0 TEVAR. The first patient, treated for complicated acute type B aortic dissection, developed catastrophic retrograde type A aortic dissection (RTAD) causing acute cardiac tamponade 20 hours post-procedure. Pathophysiologically, RTAD is triggered by radial force and proximal bare-spring or deployment trauma of the stent-graft against an intrinsically fragile, acutely dissected ascending/arch aortic wall, exacerbated by side-clamping of the ascending aorta for the debranching proximal anastomosis; despite emergency re-sternotomy and Bentall aortic root replacement, the patient succumbed to refractory cardiogenic shock. The second death occurred on postoperative day 6 due to acute proximal anastomotic dehiscence and cardiac tamponade precipitated by a severe paroxysmal hypertensive crisis during tracheostomy, underscoring the extreme vulnerability of the ascending aortic prosthetic anastomosis to acute shear stress and blood pressure surges. The third early death occurred 2 weeks post-procedure in a debilitated patient with severe pre-existing COPD and heart failure who developed ventilator-associated pneumonia and septic shock following median sternotomy and hybrid total debranching. Three additional deaths occurred within the first 2 months post-discharge due to graft sepsis and cardiopulmonary decompensation, yielding a cumulative Kaplan-Meier survival rate of 79.3%.

Limitations of the study: This study has several important limitations that restrict the generalizability of its findings. First, it is a single-center descriptive study with a small sample size (n = 29) and lacks a concurrent open-surgical or medical control group, precluding direct comparative efficacy or safety conclusions. Second, the study cohort is highly heterogeneous, combining elective degenerative aneurysms with emergency ruptured aortas, acute type A and B dissections, and traumatic injuries, as well as mixing isolated TEVAR with complex open sternotomy total arch debranching. Given the 30-day mortality rate of 10.3% and neurological complication rates (6.9% stroke and 6.9% SCI), TEVAR-particularly when combined with hybrid arch debranching-carries non-trivial perioperative risks. Future multicenter studies with larger sample sizes, longer follow-up, and stratified analyses by pathology, urgency, and landing zone are warranted.

5. Conclusion

Thoracic endovascular aortic repair (TEVAR) is a feasible and effective treatment modality for patients with complex thoracic aortic pathologies at 108 Military Central Hospital, achieving a 100% technical success rate, 100% target vessel patency, and a midterm cumulative survival rate of 79.3%. A high proportion of patients required a hybrid approach combining supra-aortic debranching with TEVAR (72.4%) to secure an adequate proximal landing zone; however, given the 30-day mortality rate of 10.3% and neurological complication rates (stroke 6.9%, spinal cord ischemia 6.9%), careful patient selection, meticulous perioperative blood pressure control, and neuroprotective strategies are essential.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Declaration of Generative AI and AI-Assisted Technologies

The authors declare that no artificial intelligence (AI) was used during the research process or in the writing of this manuscript.

Author Contributions

Tuan Anh Ngo and Tien Nhat Doan contributed to the study conception and design. Thi Thu Trang Tran, Thanh Mai Nguyen, Thi Thanh Tra Nguyen, and Thi Thu Trang Nguyen participated in data collection and investigation. Thi Thu Hien Nguyen and Thi Kim Thuy Nguyen contributed to data analysis and interpretation. Tuan Anh Ngo drafted the initial manuscript. Hoai Nam Ha supervised the study and critically revised the manuscript for important intellectual content. All authors reviewed and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

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KẾT QUẢ ĐẶT STENT GRAFT ĐIỀU TRỊ BỆNH LÝ ĐỘNG MẠCH CHỦ NGỰC TẠI BỆNH VIỆN TRUNG ƯƠNG QUÂN ĐỘI 108

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TÓM TẮT

Mục tiêu: Đánh giá kết quả trung hạn can thiệp đặt stent graft (TEVAR) điều trị bệnh lý động mạch chủ ngực tại Khoa Phẫu thuật Tim mạch - Viện Tim mạch - Bệnh viện Trung ương Quân đội 108. **Đối tượng và phương pháp nghiên cứu:** Nghiên cứu tiến cứu, mô tả theo dõi dọc trên 29 bệnh nhân mắc bệnh lý động mạch chủ ngực (phình động mạch chủ ngực, bóc tách động mạch chủ ngực, chấn thương động mạch chủ ngực) được điều trị bằng đặt stent graft động mạch chủ ngực (đơn thuần hoặc phối hợp phẫu thuật Hybrid chuyển vị các nhánh mạch vùng quai) tại Khoa Phẫu thuật Tim mạch - Viện Tim mạch - Bệnh viện Trung ương Quân đội 108 từ tháng 12/2020 đến tháng 7/2025. **Kết quả:** Tỷ lệ thành công về mặt kỹ thuật: 100% (29/29), tỷ lệ thông mạch đích: 100% (29/29), rò stent graft (endoleak): 1 (3,4%), thiếu máu tủy sống: 2 (6,9%), đột quỵ não: 2 (6,9%), nhiễm trùng stent graft: 1 (3,4%), tử vong trong 30 ngày: 3 (10,3%). Trong thời gian theo dõi trung bình 24 ± 14 tháng, ghi nhận tổng cộng 6 ca tử vong, tỷ lệ sống còn chung (và tỷ lệ sống còn tích lũy ước lượng theo phương pháp Kaplan–Meier) đạt 79,3% (23/29). **Kết luận:** Can thiệp đặt stent graft (TEVAR) là phương pháp điều trị khả thi và hiệu quả đối với các bệnh lý động mạch chủ ngực phức tạp với tỷ lệ thành công kỹ thuật đạt 100% và tỷ lệ sống còn trung hạn đạt 79,3%. Tỷ lệ bệnh nhân cần phối hợp phẫu thuật Hybrid chuyển vị các nhánh mạch máu vùng quai động mạch chủ chiếm tỷ lệ cao (72,4%); tuy nhiên, trước tỷ lệ tử vong sớm trong 30 ngày (10,3%) và các biến chứng thần kinh (đột quỵ não 6,9%, thiếu máu tủy 6,9%), cần lựa chọn bệnh nhân chặt chẽ và kiểm soát huyết động, bảo vệ thần kinh tối ưu quanh phẫu thuật.

Từ khóa: Stent graft, can thiệp nội mạch, phình động mạch chủ ngực, bóc tách động mạch chủ ngực.