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Perioperative characteristics in patients with infective endocarditis complicated by intracardiac abscesses

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The aim – to present the outcomes of surgical interventions for intracardiac abscesses resulting from infective endocarditis of various localizations.

Materials and methods. We retrospectively analyzed 552 patients with intracardiac abscesses complicating infective endocarditis, treated between September 2000 and August 2023. This cohort represented 10.8 % of all patients diagnosed with infective endocarditis during that period. The entire cohort was categorized into four subgroups based on abscess localization, with an additional group representing cases with abscess fistulization (aortic root abscess (ARA), mitral valve abscess (MVA), aortic root & mitral valve abscess (AMA), fistula (F)). All patients underwent cardiac surgery with intracardiac reconstruction.

Results and discussion. The mean age of patients within the general cohort was 44.1 ± 0.6 years, with males comprising 464 (84.0 %) of the population. Pathogenic organisms were identified in 272 patients (49.3 %), of whom *Staphylococcus* spp. predominated in 157 cases (57.9 %), and *Enterococcus* spp. constituted 57 cases (21.0 %). Surgical complexity varied significantly among groups. The shortest aortic clamping duration was observed in the MVA group (115.1 ± 4.1 minutes), while the longest duration was recorded in the F group (157.9 ± 7.2 minutes). The duration of cardiopulmonary bypass exhibited the highest values in the F group (236.9 ± 11.1 min), indicative of increased surgical complexity within this cohort. Prolonged artificial ventilation of the lungs was noted in AMA patients (25.07 ± 2.6 h). Surgical methods employed for intracardiac abscesses illustrated various strategies for cardiac structure restoration. Aortic valve replacement emerged as the primary procedure: 95.6 % (ARA group), 96 % (AMA group), and 95 % (F group). Valve reconstruction was infrequent, occurring in merely 5 % of cases. Autopericardial patches were used in 95.6 % (ARA group) and 100 % (F group) for the repair of fibrous rings and cardiac walls. Mitral valve reconstruction surgeries were predominant in the MVA group (58.8 %), reflecting a preference for valve-preserving techniques. However, a higher incidence of valve replacement was observed in the AMA and F groups (up to 30.7 %), attributed to extensive tissue damage. The in-hospital mortality rate within the initial 30 days postsurgery was 2.3 %, with the AMA group exhibiting the highest mortality (2.6 %) and the ARA group the lowest (1.8 %).

Conclusions. The surgical treatment strategies for intracardiac abscesses in patients with infective endocarditis constitute a complex yet critical component of cardiac surgery. The 23-year experience in surgical interventions has led to a low hospital mortality rate of 2.3 %. The application of autopericardial patches offers significant advantages, including isolation of infected regions from the systemic circulation, anticipated bacterial resistance, and requisite patch strength. The implementation of mitral valve reconstruction techniques in infective endocarditis patients with intracardiac abscesses have yielded favorable outcomes. Reoperative challenges in such patients persist, alongside increased risks of postoperative complications and in-hospital mortality. Autopericardium emerges as a fundamental component in the surgical reconstruction of intracardiac structures, providing a dependable and versatile approach to the management of intracardiac abscesses, effectively addressing immediate abscess resolution and fostering long-term structural integrity and functional restoration.

Key words: aortic root abscess, mitral valve infection, fistulization of abscesses, bacterial resistance, pericardial patch reconstruction.

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Infective endocarditis (IE) is a global health problem with an incidence of 13.8 cases per 100,000 population per year [1]. Despite advances in the treatment of IE, in-hospital mortality remains high even in experienced centers, ranging from 15 % to 20 %. The 1-year mortality rate is as high as 40 %, highlighting the serious risks associated with this condition [2]. Characterized by nonspecific symptoms and severe complications, the management of IE relies on timely diagnosis, echocardiography, and advanced imaging techniques, such as CT or MRI. Blood cultures are critical for identifying the pathogen and planning treatment. Effective treatment depends on clinical vigilance, timely microbiological confirmation, and evaluation with imaging techniques, which allow for accurate diagnosis and improve the outcome of patients with IE [3].

There are three main reasons for surgical intervention in acute IE: heart failure, uncontrolled infection, and prevention of septic embolism (particularly in the central nervous system) [4]. Intracardiac abscesses are among the most serious complications of IE, causing difficult surgical tasks and high mortality. Despite advances in antibiotic treatment and diagnosis, these abscesses require surgical intervention because of their potential to cause valvular dysfunction, fistulas, or life-threatening arrhythmias [5]. Significant complications of cardiac abscess, whether with or without valvular tissue involvement, include conduction disturbances. The incidence of perivalvular abscesses in patients with IE is 30 % to 40 %, with aortic valve abscesses being more common than mitral valve and annulus abscesses. Native aortic endocarditis, usually located in the weak part of the annulus near the conduction pathways, clearly demonstrates the anatomical predisposition and explains why abscesses and AV block are frequent sequelae [6]. Reconstruction of intracardiac abscesses using autopericardium represents an important advance in the surgical treatment of IE. This technique not only isolates areas of infectious destruction, but also provides strength and biocompatibility, minimizing bacterial resistance and improving treatment outcomes. Due to its ability to effectively restore cardiac anatomy, autopericardial reconstruction demonstrates significant advantages in reducing complications, improving postoperative recovery, and ensuring long-term structural integrity of the heart. This approach highlights the increasing precision in the treatment of complex cases of infective endocarditis.

The aim – to present the outcomes of surgical interventions for intracardiac abscesses resulting from infective endocarditis with various localizations.

MATERIALS AND METHODS

We retrospectively analyzed 552 patients with intracardiac abscesses complicating infective endocarditis

treated at the M.M. Amosov National Institute of Cardiovascular Surgery, National Academy of Medical Sciences of Ukraine, from September 2000 to August 2023. This cohort represented 10.8 % of all patients diagnosed with infective endocarditis during this period. The overall group was divided into four subgroups depending on the localization of the abscesses and an additional group with fistulization of the abscesses (aortic root abscess (ARA), mitral valve abscess (MVA), aortic root abscess and mitral valve abscess (AMA), fistula (F)). These groups were compared for preoperative parameters (electrocardiogram parameters (left ventricular ejection fraction, hypertension pulmonary arteries) and embolic complications), intraoperative parameters (aortic cross-clamp time (CC); duration of cardiopulmonary bypass (CPB)), and postoperative outcomes, including duration of mechanical ventilation, intensive care unit stay, and length of hospitalization. Data on postoperative complications and risk factors for in-hospital mortality were also collected. In each case, a comprehensive approach for radical intervention using autopericardial patches was used. The procedure included sanitation of the abscess cavity, antiseptic irrigation, reconstruction of the intracardiac anatomy, repair of damaged fibrous valve rings, valve replacement or repair, and strategies to prevent recurrence of infective endocarditis. This technique highlights the efficacy of autopericardium in resolving abscesses, restoring structural integrity, and optimizing long-term outcomes in complex cardiac reconstructions. Patients were assessed according to the modified Duke criteria for infective endocarditis complicated by intracardiac abscesses.

RESULTS

The diagnosis of infective endocarditis was confirmed using the modified Duke criteria, with the presence of an intracardiac abscess confirmed by preoperative cardiac imaging or during surgery. The mean age of the patients in the overall group was 44.1 ± 0.6 years, of whom 464 (84.0 %) were male. Embolic complications were observed in 166 (30 %) cases, and central nervous system (CNS) involvement was recorded in 99 (17.9 %) cases. The pathogen was identified in 272 (49.3 %) patients, of whom *Staphylococcus* spp. was predominant in 157 (57.9 %) cases, and *Enterococcus* spp. in 57 (21.03 %) cases. Acute heart failure was present before surgery in 139 (25.2 %) patients. All patients underwent transthoracic echocardiography (TTE) to detect intracardiac abscesses, and only 372 (67.3 %) underwent chest CT with contrast. The ejection fraction among the general group was $58.7 \pm 9.3\%$, and the pulmonary artery hypertension index was 47.3 ± 15.0 mm Hg. EUROSCORE II in the general group of patients was 8.28 ± 1.77 %.

Table 1

Main characteristics of patients

Variable	ARA (N=271)	MVA (N=68)	AMA (N=153)	F (N=60)
Male sex	241 (88.9 %)	50 (73.5 %)	120 (78.4 %)	53 (88.3 %)
Female sex	30 (11.1 %)	18 (26.5 %)	33 (21.6 %)	7 (21.7 %)
Cross-clamp time, min	120.5±2.3	115.1±4.1	152.0±3.2	157.9±7.2
Cardiopulmonary bypass time, min	189.6±3.2	176.0±5.2	230.6±5.1	236.9±11.1
Mechanical ventilation, h	24.8±3.8	16.5±1.4	25.07±2.60	24.9±3.3
Dobutamine infusion, h	25.3±1.6	25.7±3.2	40.0±2.7	38.7±6.9
Noradrenaline infusion, h	14.5±0.5	20.6±1.2	20.4±1.2	26.0±2.4
Intensive care unit stay, days	4.95±0.20	4.5±0.3	6.08±0.30	6.6±1.7
Hospital stay, days	20.8±0.7	18.5±0.9	21.6±0.7	23.1±0.7

The use of autopericardium was crucial for restoring the fibrous rings and ensuring structural integrity. This material has numerous advantages:

Biocompatibility: The autopericardium is derived from the patient's own pericardial tissue, ensuring compatibility and minimizing immunological rejection.

Structural integrity: The material is strong and flexible enough to withstand the high pressures in the heart chambers.

Resistance to infection: The pretreated autopericardium demonstrates resistance to reinfection, making it ideal for use in cases of active endocarditis. The treatment involved soaking the autopericardium in a glutaraldehyde solution (0.625 %) for 2 minutes, followed by thorough rinsing with saline to remove residual aldehyde. This approach helps to strengthen the tissue structure and minimizes the risk of bacterial contamination. In our analysis of 552 patients with intracardiac abscesses of various localizations, autopericardial patches were widely used, in particular for the reconstruction of the aortic and mitral valves and their annuli after thorough cleansing of the tissues from infection and treatment with antiseptics. The patches were made by taking into account the anatomical features of the affected area, and their fixation was carried out using a high-precision suture technique. The sutures were performed using a continuous or knotted technique using monofilament materials such as Prolene 4/0 or 5/0, which ensured optimal tightness and reliable adaptation of the patch to the tissues. Additional reinforcing techniques were used to prevent tension at the connection site, especially in areas with an increased risk of tissue perforation. Teflon gaskets were not used. This approach minimized the risk of postoperative complications and ensured the stability of the reconstruction even in difficult clinical cases.

Table 1 contains detailed data on the main characteristics of the patients, who were divided into four

groups depending on the type of pathology: ARA (271 patients), MVA (68 patients), AMA (153 patients) and F (60 patients). The table shows the gender distribution of patients. In particular, in the ARA group, men prevailed (88.9 %), while women accounted for only 11.1 %. A similar situation was observed in the AMA group (78.4 % of men) and the F group (88.3 % of men). The highest percentage of women (26.5 %) was recorded in the MVA group.

The duration of surgical interventions was also considered. The aortic cross-clamp time was the shortest in the MVA group (115.1±4.1 minutes) and the longest in the F group (157.9±7.2 minutes). The duration of artificial circulation was the highest in group F (236.9±11.1 min), indicating a greater complexity of interventions in this group. Artificial lung ventilation (ALV) varied: in the AMA group it reached 25.07±2.60 hours, which is the highest rate among all groups. The need for vasopressor support also varied: infusions of norepinephrine and dobutamine were used longer in group F.

In addition, the duration of stay in the intensive care unit and in the hospital in general is indicated. For example, patients in group F were in the intensive care unit on average 6.6±1.7 days, which exceeds similar indicators in other groups. These data help to understand the features of the clinical course and the need for intensive care in patients with different variants of damage.

Based on the data provided in Table 2, it is possible to describe in detail the diagnostic features of valve lesions and morphological changes in patients with various forms of infective endocarditis:

Pericarditis was detected in a significant proportion of patients, most often in AMA (25.2 %) and F (23.3 %), which may indicate severe inflammation of the serous membranes. Its diagnosis was probably based on echocardiography or other imaging methods, taking into account the characteristic effusion or pericardial induration.

Table 2

Valve damage and morphological changes

Variable		ARA (N=271)	MVA (N=68)	AMA (N=153)	F (N=60)
Pericarditis		60 (22.2 %)	11 (16.2 %)	31 (25.2 %)	14 (23.3 %)
Aortic valve	Vegetations:		–		
	Small	75 (27.6 %)		42 (27.5 %)	29 (48.3 %)
	Large ≥ 10 mm	196 (72.4 %)		111 (72.5 %)	31 (51.7 %)
Aortic valve	Single abs.	129 (47.6 %)	–	46 (30.0 %)	7 (11.67 %)
	Two and more abs.	69 (25.4 %)		75 (49.1 %)	45 (75 %)
	Circular abs.	73 (26.9 %)		32 (20.9 %)	8 (13.3 %)
Mitral valve	Vegetations:	–			–
	Small		13 (19.1 %)	47 (30.7 %)	
	Large ≥ 10 mm		55 (80.9 %)	106 (69.3 %)	
Mitral valve	Posterior leaflet	–	13 (19.1 %)	22 (14.5 %)	–
	Anterior leaflet		37 (54.4 %)	105 (68.6 %)	
	Annulus		18 (26.5 %)	26 (16.9 %)	
Aorto-mitral curtain abs.		25 (9.2 %)	–	65 (42.5 %)	–

Aortic valve:**1. Vegetation:**

• Large formations (> 10 mm) were detected in 72.4 % of patients with ARA and 72.5 % with AMA. Transthoracic and transesophageal echocardiography were used to identify them. The significant size of these formations increases the risk of thromboembolism and necessitates surgery.

2. Abscesses:

• Single lesions dominated in 47.6 % of ARA, while multiple abscesses were more common in 49.1 % of AMA.
• Morphological diagnosis included visualization of purulent cavities or fibrous changes that complicate valve function.

3. Circular abscesses:

• Most common in 26.9 % of ARA, but less common in other groups.

Mitral valve:**1. Large vegetation:**

• More common in 80.9 % of AMA and 69.3 % of MVA. Their presence may be accompanied by hemodynamic disturbances and the need for plastic or prosthetics.

2. *The posterior leaflet is most affected in 68.6 % of AMA, as well as the annular area in 16.9 % of patients.*

Combined lesions:

Aorto-mitral abscesses were diagnosed in 42.5 % of AMA and only in 9.2 % of ARA, demonstrating a greater aggressiveness of the process in patients with AMA.

Table 3 shows the surgical approaches used to treat patients with intracardiac abscesses and highlights the variety of strategies aimed at repairing damaged cardiac structures. These interventions play a key role in preventing the progression of the infectious process,

Table 3

Surgical interventions and reconstruction options

Variable		ARA (N=271)	MVA (N=68)	AMA (N=153)	F (N=60)
Aortic valve	Repair	4 (1.4 %)	–	6 (4 %)	3 (5 %)
	Replacement	267 (95.6 %)		147 (96 %)	57 (95 %)
Mitral valve	Repair	–	40 (58.8 %)	106 (69.3 %)	1 (1.67 %)
	Replacement		28 (41.2 %)	47 (30.7 %)	1 (1.67 %)
Suture technique		12 (4.4 %)	27 (39.7 %)	19 (17.4 %)	–
Autopericardial patch		259 (95.6 %)	41 (60.3 %)	134 (87.6 %)	60 (100 %)
Re-operation		37 (13.6 %)	9 (13.2 %)	28 (18.3 %)	6 (10 %)
Coronary artery bypass grafting		32 (11.8 %)	4 (5.89 %)	8 (5.2 %)	2 (3.4 %)

the development of complications, and improving patient survival. The most common aortic valve surgery procedure is aortic valve replacement (95.6 % in the ARA group, 96 % in the AMA group, 95 % in the F group). This method is necessary in cases of significant valve destruction, which is often observed in infective endocarditis. Although valve reconstruction was rarely used (up to 5 % in different groups), it may be preferable in patients with minimal damage and a high probability of successful restoration of valve function.

The use of autopericardial patch has proven to be a universal approach to restore cardiac anatomy. In 95.6 % of cases (ARA group) and 100 % (F group), this technique was used to correct defects in the area of the annulus fibrosus and the heart walls. The pericardial patch provides biocompatibility, reduces the risk of thrombosis and infectious complications. Regarding the mitral valve, reconstruction operations dominated in the MVA group (58.8 %), which emphasizes the desire for valve-preserving interventions. However, in the AMA and F groups, a higher proportion of valve replacement was observed (up to 30.7 %), which is associated with severe tissue damage.

Reoperations in patients with intracardiac abscesses are one of the most difficult aspects of infective endocarditis surgery. In our center, reoperations were performed in 10–18.3 % of cases (F, AMA, ARA groups), and all of these patients had previously been operated on in other cardiac surgical centers. They were brought to us with severe complications, such as abscesses and progressive infective endocarditis. These patients represented a significant surgical challenge due to the complexity of the anatomical lesions, the presence of adhesions in the areas of previous operations, as well as an increased risk of re-infection and failure of reconstructive interventions. Reoperations involved reopening the chest, which is accompanied by the risk of damage to the heart, great vessels or previously implanted prostheses. Recovery after such operations requires an individual approach. The difficulty was not only in eliminating intracardiac abscesses and restoring cardiac anatomy, but also in maintaining hemodynamic stability in patients who were often in critical condition. A significant proportion of reoperations required the use of an autopericardial patch to reconstruct the damaged tissues. Such operations are classified as high-risk due to the combination of previous lesions, concomitant pathologies and the need for complex reconstructive procedures. Successful implementation of such interventions is possible only under the conditions of experience of a multidisciplinary team, modern equipment and the availability of individual strategies for managing patients after surgery.

Coronary artery bypass grafting (CABG) was required in cases where concomitant ischemic heart disease necessitated simultaneous intervention.

Among the study groups, CABG was performed in 11.8 % of patients in ARA, 5.89 % in MVA, 5.2 % in AMA, and 3.4 % in F, reflecting variations in coronary involvement. The necessity of revascularization underscores the complexity of intracardiac abscess surgery, where the extent of valve destruction, fibrous ring involvement, and systemic complications dictate the surgical strategy. While valve-preserving techniques are considered when feasible, extensive lesions often require non-preserving methods. In such cases, CABG plays a crucial role in optimizing long-term outcomes by ensuring adequate myocardial perfusion and reducing perioperative risks, highlighting the need for a multidisciplinary approach in managing these high-risk patients.

The analysis of 552 patients undergoing surgery for intracardiac abscesses highlights the complexity and unique challenges of these procedures (Table 4). In-hospital mortality within the first 30 days post-surgery was 2.3 %, demonstrating the effectiveness of surgical intervention in this high-risk population. Among the most common postoperative complications, respiratory failure was observed in 23 % of cases, most frequently in the AMA group (33.9 %). Pacemaker implantation was required in 15.7 % of cases, predominantly in the AMA (20.2 %) and ARA (12.9 %) groups, reflecting the high incidence of conduction disturbances due to extensive periannular involvement. Acute renal failure occurred in 10.3 % of patients, often associated with prolonged cardiopulmonary bypass and systemic inflammatory response syndrome. The incidence of CNS embolism remained low at 1.2 %, with the lowest rates in groups F and MVA.

Hospital mortality was highest in the AMA group (2.6 %) and lowest in the ARA group (1.8 %). Sepsis was the leading cause of death (46.2 %), followed by acute heart failure and related complications (23 %). Notably, no cases of infection recurrence were recorded, emphasizing the efficacy of the surgical approach.

Intracardiac abscess surgery represents a specialized and highly demanding area of cardiac surgery. The procedure involves multiple technical challenges, including complete debridement of infected tissue, reconstruction of the annulus fibrosus, and valve replacement or repair using autopericardium. The choice of intervention – whether valve-preserving or prosthetic replacement – depends on the extent of tissue destruction, hemodynamic status, and presence of systemic complications. The use of autopericardial patches has proven to be a reliable strategy, ensuring structural integrity while reducing the risks of thrombosis and reinfection.

These findings underscore the necessity for an individualized surgical approach, considering the complexity of each case. The ability to successfully treat such severe conditions with low mortality and

Table 4

Postoperative complications and in-hospital mortality in patients undergoing cardiac surgery for intracardiac abscesses

Variable		ARA (N=271)	MVA (N=68)	AMA (N=153)	F (N=60)	Total (N=552)
Postoperative complications	Pacemaker implantation	35 (12.9 %)	2 (2.9 %)	31 (20.2 %)	19 (31.6 %)	87 (15.7 %)
	Respiratory failure	53 (19.5 %)	11 (16.1 %)	52 (33.9 %)	11 (18.3 %)	127 (23 %)
	CNS embolism	3 (1.1 %)	–	4 (2.6 %)	–	7 (1.2 %)
	Acute renal failure	22 (8.1 %)	4 (5.8 %)	26 (16.9 %)	5 (8.3 %)	57 (10.3 %)
	Bleeding	7 (5.8 %)	1 (1.4 %)	7 (4.5 %)	2 (3.3 %)	17 (3.07 %)
Hospital mortality		5 (1.8 %)	2 (2.9 %)	4 (2.6 %)	2 (3.3 %)	13 (2.3 %)
Lethal complications	Infection recurrence	1 (7.7 %)	–	–	–	1 (7.7 %)
	Acute heart failure	1 (7.7 %)	1 (7.7 %)	1 (7.7 %)	–	3 (23 %)
	CNS embolism	1 (7.7 %)	–	1 (7.7 %)	–	2 (15.4 %)
	Respiratory failure	1 (7.7 %)	–	–	–	1 (7.7 %)
	Sepsis	1 (7.7 %)	1 (7.7 %)	2 (15.4 %)	2 (15.4 %)	6 (46.2 %)

minimal recurrence risk highlights the importance of surgical expertise, multidisciplinary management, and advanced perioperative care. Ultimately, the reconstruction of intracardiac abscesses is not only a surgical intervention but a refined combination of science and artistry in modern cardiac surgery.

DISCUSSION

Surgical management of intracardiac abscesses in infective endocarditis (IE) is a challenging task that requires precise decisions and specialized expertise. Our 23-year experience in 552 patients has demonstrated that autopericardium reconstruction is a valuable approach, providing a low in-hospital mortality rate of only 2.3 %. Despite the inherent risks, especially in cases of multiple abscesses, the use of autopericardium has been shown to be effective in isolating infectious areas, ensuring bacterial resistance, and restoring the structural integrity of the fibrous rings [7].

The autopericardial patch technique minimizes hemodynamic stress while maintaining valve function, especially in cases of mitral valve (MVA) reconstruction [8]. Our findings suggest that this technique not only prevents the need for two valve replacements in the aortomitral junction (AMA) abscess group, but also shortens the operative time, reducing the risk of postoperative complications and 30-day mortality.

It should be noted that reoperations remain a significant risk factor for in-hospital mortality, highlighting the importance of effective initial interventions.

Aortomitral junction reconstruction using autopericardium is an example of a surgical innovation that offers unparalleled biocompatibility, resistance to

infection, and restoration of structural integrity in complex cardiac surgical cases [9].

The study highlights the efficacy of autopericardium in achieving favorable surgical outcomes for intracardiac abscesses. Key findings include the following:

- Individualized approach: The choice between valve reconstruction and valve replacement is based on several key factors, including abscess size, location, and degree of tissue involvement. Our study analyzed in detail the characteristics of each case: the location of the lesion (aortic valve, mitral valve, aorto-mitral curtain), the extent of the inflammatory process, and the depth of destructive tissue changes. For example, large abscesses (>10 mm) with valve annulus involvement required combined reconstruction techniques using autopericardial patches. When possible, reconstruction provides better long-term results.
- Advanced surgical techniques: The application of autopericardial patches tailored to the anatomical needs of each case has enhanced the precision of reconstruction and facilitated more effective intracardiac repairs. This approach has optimized structural integrity while contributing to reduced operative time.
- Preventive strategies: Careful antiseptic protocols during surgery and prolonged antibiotic therapy after surgery is critical to prevent recurrence of infection.

Our study highlights the critical role of echocardiographic assessment and careful surgical technique in achieving favorable outcomes. Future studies should continue to refine these techniques to further improve survival and reduce complication rates in this high-risk patient group [10].

CONCLUSIONS

1. The surgical management of intracardiac abscesses in patients with infective endocarditis is a challenging but important step in cardiac surgery. Our 23-year surgical experience has resulted in a low in-hospital mortality rate of 2.3 %. The use of autopericardial patches has undeniable advantages: isolation of infected areas from the bloodstream, expected bacterial resistance and the necessary strength of the patch.

2. The use of methods of mitral valve reconstruction in infective endocarditis with intracardiac abscess-

es allows achieving excellent results in patients with its abscessation.

3. Repeated operations in such patients remain difficult, with an increased risk of postoperative complications and hospital mortality.

4. Autopericardium is a cornerstone in the surgical restoration of intracardiac structures, offering a reliable and universal solution for the treatment of intracardiac abscesses. This approach not only solves the immediate tasks of abscess removal, but also contributes to long-term structural stability and functional recovery.

There is no conflict of interest.

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Особливості перебігу періопераційного періоду в пацієнтів з інфекційним ендокардитом, ускладненим внутрішньосерцевим абсцедуванням

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Мета роботи – представити результати хірургічного лікування внутрішньосерцевих абсцесів при інфекційному ендокардиті різної локалізації.

Матеріали і методи. Ретроспективно проаналізували 552 пацієнти із внутрішньосерцевими абсцесами, які ускладнювали інфекційний ендокардит, пролікованих у період з вересня 2000 року до серпня 2023 року. Ця когорта становила 10,8 % від усіх пацієнтів, у яких було діагностовано інфекційний ендокардит за цей період. Загальна група була поділена на чотири підгрупи залежно від локалізації абсцесів та додаткову групу з фістулізацією абсцесів (абсцес кореня аорти (ARA), абсцес мітрального клапана (MVA), абсцес кореня аорти та мітрального клапана (AMA), фістула (F)). Усі пацієнти пройшли кардіохірургічне лікування з реконструкцією внутрішньосерцевих структур.

Результати та обговорення. Збудник був ідентифікований у 272 (49,3 %) пацієнтів, з яких *Staphylococcus spp.* переважав у 157 (57,9 %) випадках і *Enterococcus spp.* – у 57 (21,03 %) випадках. Хірургічні втручання значно відрізнялися за складністю між групами. Час накладення аортального затискача був найменшим у групі MVA ($115,1 \pm 4,1$ хв) і найбільшим у F ($157,9 \pm 7,2$ хв). Тривалість штучного кровообігу варіювалася: максимальні показники спостерігалися у групі F ($236,9 \pm 11,1$ хв), що свідчить про складність хірургії в цій групі. Штучна вентиляція легень тривала найдовше в пацієнтів AMA ($25,07 \pm 2,60$ год). Хірургічні підходи при внутрішньосерцевих абсцесах демонструють різноманіття стратегій відновлення структур серця. Заміна аортального клапана була основною процедурою: 95,6 % (група ARA), 96 % (група AMA) і 95 % (група F). Реконструкція клапана проводилася рідше, лише у 5 % випадків. Автоперикардіальні латки застосовувалися у 95,6 % (група ARA) і 100 % (група F) для відновлення фіброзних кілець і стінок серця. Щодо мітрального клапана, то в групі MVA домінували операції з реконструкції (58,8 %), що підкреслює прагнення до клапанозбережних втручань. Утім у групах AMA та F частіше замінювали клапан (до 30,7 %), що пов'язано з тяжким пошкодженням тканин. Внутрішньолікарняна летальність протягом перших 30 днів після операції становила 2,3 %. Госпітальна летальність була найвищою у групі AMA (2,6 %) і найнижчою – у групі ARA (1,8 %).

Висновки. Тактика хірургічного лікування внутрішньосерцевих абсцесів у пацієнтів з інфекційним ендокардитом є складним, але важливим етапом у кардіохірургії. Наш 23-річний досвід хірургічних втручань дав змогу досягти низької госпітальної летальності на рівні 2,3 %. Використання автоперикардіальних латок має беззаперечні переваги: ізоляція інфікованих зон від кровоплину, очікувана бактеріальна стійкість та необхідна міцність латки. Автоперикард є наріжним каменем у хірургічному відновленні внутрішньосерцевих структур, який забезпечує надійне та універсальне рішення для лікування внутрішньосерцевих абсцесів. Цей підхід сприяє довготривалій структурній стабільності та функціональному відновленню.

Ключові слова: абсцес кореня аорти, інфекція мітрального клапана, фістулізація абсцесів, бактеріальна резистентність, реконструкція за допомогою автоперикарда.