

Review of the Safety and Efficacy of Echocardiographically Guided Pericardiocentesis: A Retrospective Single-Center Analysis, 2009 - 2016

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Introduction

- For almost four decades, percutaneous pericardiocentesis guided by two-dimensional echocardiography or echo-guided pericardiocentesis (EGP) has been employed in the management of pericardial effusions
- To-date, there have been several modalities employed to perform pericardiocentesis such as ECG-guided, fluoroscopically, and even a blind subxiphoid approach³
- Given the limited data of this modality's safety profile in American healthcare centers over the past decade, this study focused on the rate of successful pericardiocentesis, evaluated its complications, and also provided insight into the most common etiologies of effusions

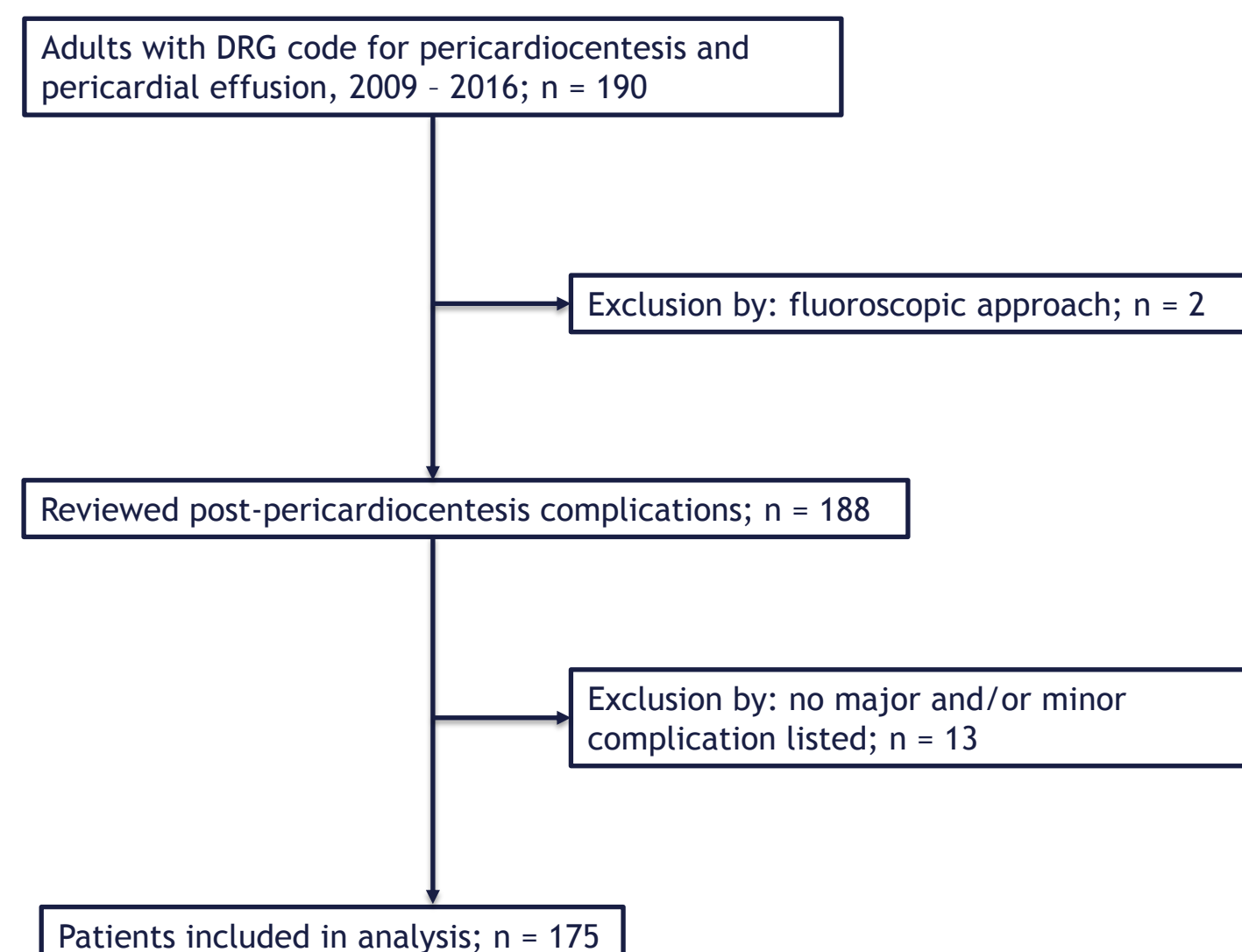
Aims

- To investigate the safety and efficacy of EGP given the relatively limited data of this modality's safety profile in American healthcare centers over the past decade
- To evaluate the characteristics of and risk factors of those needing EGP

Methods

- Single-center retrospective chart review using electronic medical records of patients undergoing echo-guided pericardiocentesis between March 1, 2009 to July 31, 2016
- Patient list was collected from DRG code for pericardiocentesis and pericardial effusion. The study population consisted of 174 patients who underwent 175 echo-guided pericardiocentesis
- The following patient data was collected: demographics, history, laboratory data, procedural details, EGP results, survival

Figure 1. Flowchart of patient selection

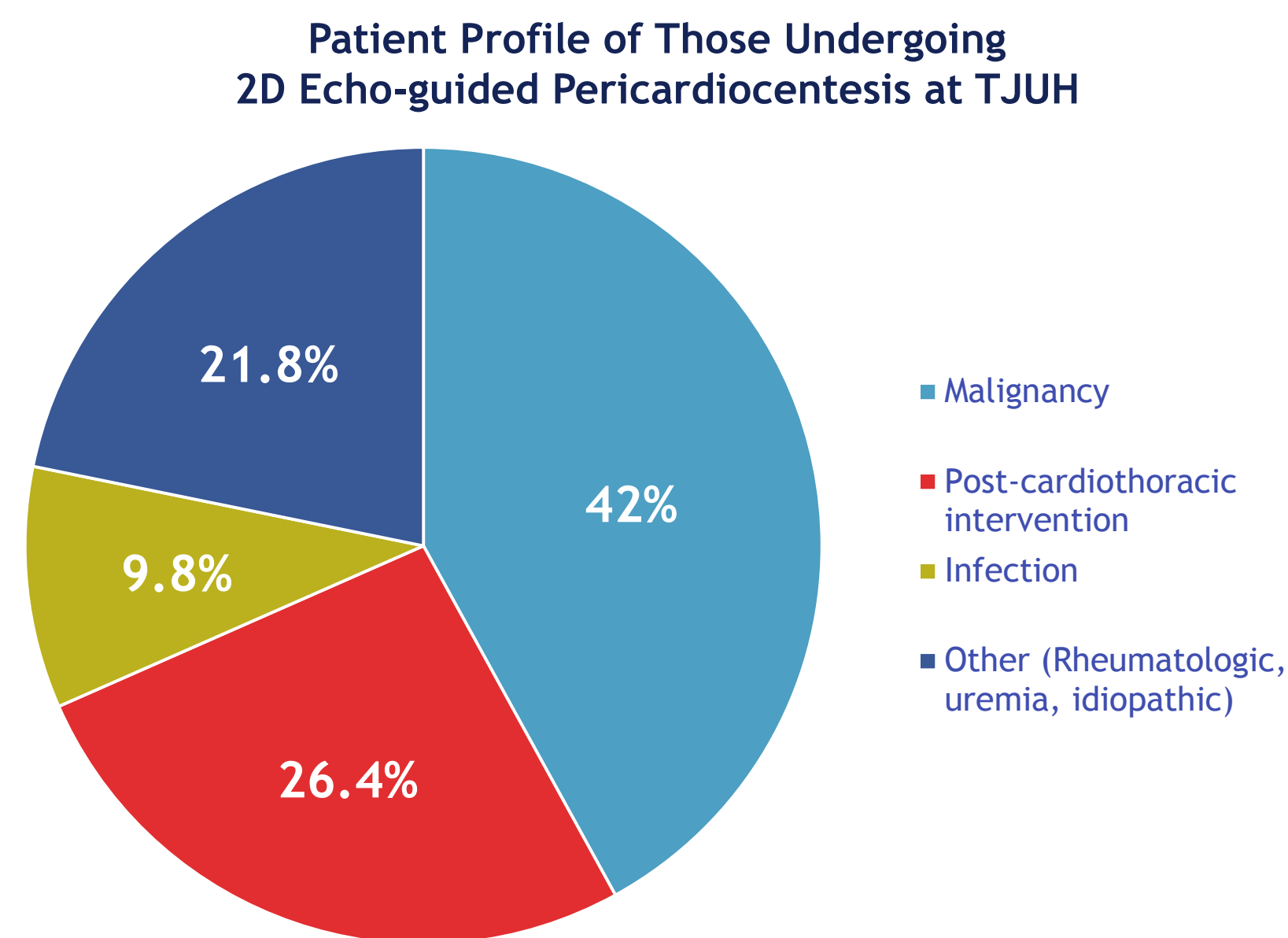


Results

Table 1. Demographic and clinical case data

Patients		Number (%)
Sex	Female	76 (43.7)
	Male	98 (56.3)
Race	African American	50 (28.7)
	Asian	10 (5.8)
	Caucasian	102 (58.6)
	Latino	7 (4)
	Middle Eastern	3 (1.7)
	Not Reported	2 (1.2)
Mean Age (Year)		57.7 (1 wk – 93 y/o)
Mean BMI		27.4
Size of Effusion	Small	2 (1.1)
	Small-moderate	6 (3.4)
	Moderate	26 (14.9)
	Moderate-large	29 (16.6)
	Large	110 (62.9)
	Unspecified	2 (1.1)
Ideal Entry Site	Apical	121 (69.5)
	Parasternal	23 (13.2)
	Subcostal	26 (14.9)
	Unspecified	4 (2.3)
Mean ± SD fluid volume withdrawn (mL)		562±379
Echocardiographic Tamponade		142 (81.1)

Figure 2. Patient profile



- 12 patients (6.9%) were diagnosed with a new malignancy
- Several patients who were symptomatic due to tamponade were also given therapeutic benefit

Table 2. EGP complications

Major complications ¹	Number of cases	% of the total
Hypotension and ST-segment elevation (with an unremarkable left heart catheterization)	1	0.6
Hemothorax	1	0.6
Minor complications ²		
Non-sustained supraventricular tachycardia (NSVT)	4	2.3
Cellulitis near puncture site	1	0.6
Total	5	2.9
TOTAL	7	4.1

¹Major complications defined as needing subsequent invasive intervention

²Minor complications defined as needing monitoring or non-invasive management

- A successful pericardiocentesis was defined as entering the pericardial space and fluid drained either for analysis or achieving symptomatic relief or both
- The procedure success rate was 174 of 175 cases (99%) and an overall complication rate of 4.1%
- There was no procedure-related mortality (within 30 days) that was noted

Conclusion

- EGP is a safe, effective, and time-conscious technique
 - Blind pericardiocentesis complication rates approached 20%, and mortality rates were as high as 6%¹
 - Fluoroscopic approach exposes radiation for patient and physician. Need catheterization laboratory
- Malignancy and post-cardiothoracic intervention account for nearly 70% of EGP performed
- Our results compliment prior published literature on the efficacy and safety of echocardiographically guided pericardiocentesis from other institutions and encourages its use as standard practice in hospitals today
- Limitations:** retrospective study, single-center, two experienced operators and their proficiency in EGPs after performing a myriad of cases spanning many years, lack of standardized technique

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