

# INFERIOR VENA CAVA FILTER RETRIEVAL FEASIBILITY AND COMPLICATIONS

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## Introduction

IVC filters are indicated for patients with documented DVT and contraindication to anticoagulation and patients with recurrent pulmonary embolism despite being on anticoagulation. IVC filters are not recommended for prophylactic placement, free-floating thrombus or prior to systemic thrombolysis. There are two main types of inferior vena cava (IVC) filters: permanent filters and optional (or retrievable) filters. Permanent filters are implanted in patients who require long-term protection against pulmonary embolism (PE) and are unable to take anticoagulant medication due to absolute contraindications. On the other hand, optional filters are designed to be either retrieved or left in place once the temporary risk of PE or contraindication to anticoagulation has resolved. If retrieved, these devices offer potential advantages over permanent IVC filters, including a reduced likelihood of long-term complications such as an increased risk of subsequent DVT, filter migration or embolization, filter perforation and IVC stenosis or occlusion.

## Aim of the work

To study the feasibility and complications of IVC filter retrieval among AMUH patients in which the indication for filter deployment was temporary.

## Patients and methods

The study was conducted on 20 patients in AMUH in the period between July 2021 till November 2023. All retrievals were done using fluoroscopy guidance. In most cases where the filters had minimal tilt, short dwell times, and struts that have not penetrated the caval wall, the standard techniques for filter retrieval were effective. However, for filters that are tilted, have been in place for an extended period of time, or have struts that have penetrated the caval wall, advanced techniques were often necessary.

The standard method for retrieving an IVC filter involves using a snare to engage the filter's hook and a sheath to collapse it, allowing for removal through the sheath.

Before retrieval an IVC venogram is performed to exclude filter thrombus and after the retrieval, an IVC venogram is performed to verify the integrity of the IVC. This technique typically utilizes a single venous access point.

## Results

**Table (1):** Distribution of the studied cases according to whether the filter was retrieved or not (n=20)

	No.	%
Filter retrieved		
No	2	10.0
Yes	18	90.0

**Table (2):** Relation between dwelling time and different parameters (n = 20)

	N	Dwelling time (days)			U	p
		Min. – Max.	Mean ± SD.	Median		
Retrieval procedure complications						
No	15	14.0 – 120.0	50.0 ± 36.77	33.0	34.0	0.800
Yes	5	16.0 – 270.0	93.80 ± 108.9	27.0		
Technique used for retrieval						
Standard	16	14.0 – 270.0	51.38 ± 62.84	28.50	12.0	0.064
Advanced	4	27.0 – 130.0	99.25 ± 48.40	120.0		
Significant tilt and embedded hook						
No	16	16.0 – 130.0	45.31 ± 36.0	28.50	20.0	0.290
Yes	4	14.0 – 270.0	123.5 ± 107.4	105.0		
Embedded filter limbs						
No	18	14.0 – 120.0	45.50 ± 35.0	28.50	0.000*	0.011*
Yes	2	130.0 – 270.0	200.0 ± 98.99	200.0		

U: Mann Whitney test SD: Standard deviation  
p: p value for comparing between the different categories  
\*: Statistically significant at p ≤ 0.05

## Conclusion

Elective retrieval of IVC Filters in all compatible patients is technically feasible. Technical success occurred in 18/20 (90%) of retrieval attempts. The retrieval of retrievable IVC filters has become increasingly important, especially due to the potential complications associated with prolonged filter dwell time. Physicians placing IVCs should use up-to-date guidelines and carefully weigh the pros and cons for each patient, assuming the filter will stay long-term. Retrieval of temporary IVC filters should be attempted in all patients once the indication for filter placement is over. Follow up and designing an IVC filter retrieval program is essential to increase rates of IVC filter retrieval.