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### **Prolonged implantation of retrievable IVC filters: Technical, clinical and predictive factors of retrieval failure**

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**Purpose:** Decreased successful retrieval rates have been reported in conjunction with prolonged dwell time of retrievable IVC filters (rIVCF). The use of adjunctive techniques has improved overall retrieval rates of these devices. This study compares the technical successful retrieval rate of rIVCF with prolonged dwell time (defined as >6 months), with rIVCF implanted for <6 months. We hypothesize that the technical success rate of rIVCF retrieval is equivalent. We aim to determine and compare technical and clinical factors that impact retrieval success in both cohorts.

**Materials:** All rIVCF retrieval procedures from Jan 2009 to Dec 2014 were identified from a prospectively acquired database. We assessed the technical success of rIVCF retrieval; we recorded filter dwell time as <6 months or >6 months for all cases. The use of adjunctive retrieval techniques was also recorded. Adjunctive techniques included loop wire, directional sheath use, balloon disruption, endo-bronchial forceps and excimer laser assistance. Statistics were analyzed using the Chi square test, with significance accepted at  $p < 0.05$ .

**Results:** During the study period, 648 rIVCF retrieval procedures were performed. The technical success rate for retrieval procedures performed with rIVCFs in place <6 months was 97.7% ( $n=596$ ); retrieval technical success rate for rIVCFs in place >6 months was 94.2% ( $n=52$ ) ( $p=0.14$ ). Adjunctive techniques were necessary to remove rIVCFs with <6 months dwell time 11% of the time ( $n=62$ ), and 67% of the time ( $n=33$ ) for rIVCFs with >6 months dwell time ( $p < 0.001$ ). Overall, complications occurred in 3% (3 major, 15 minor).

**Conclusions:** There is no significant difference in the technical success rate for removal of rIVCFs that were implanted >6 months vs. <6 months ago. Retrieval rates for both cohorts exceeded 94%. In patients with prolonged IVC filter dwell time, adjunctive techniques are used more frequently to achieve these results.

#### **Biography**

Robert Ryu is a Professor of Radiology and Director of Interventional Radiology at the University of Colorado Anschutz Medical Campus in Denver, CO. He is a Fellow of the Society of Interventional Radiology. He was the Radiology Residency program Director at Northwestern University from 2005-2014, where he was Co-founder of the IVC Filter clinic. He has authored over 100 peer reviewed publications. His areas of clinical and research interests include venous thrombo-embolic disease, interventional oncology and hepatobiliary intervention.

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