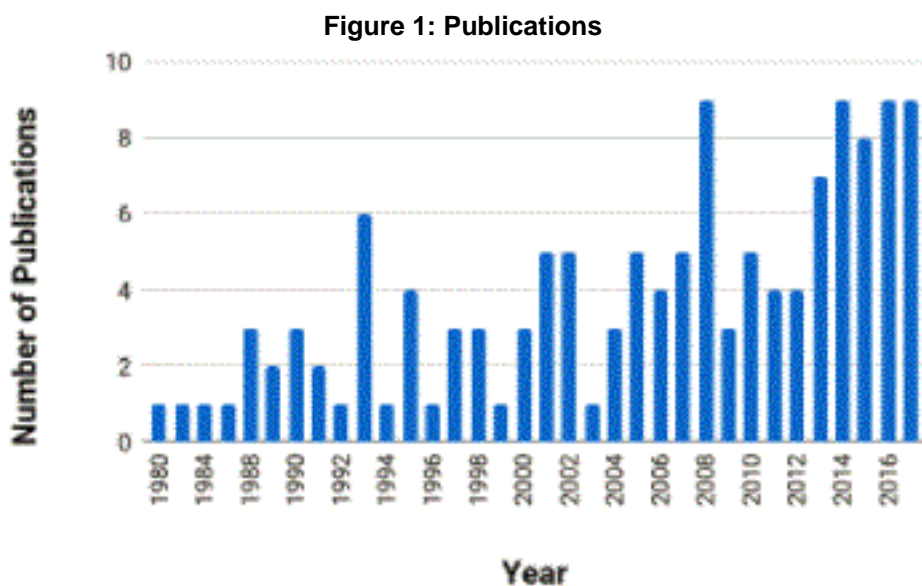


## Introduction

With rising rates of intravenous (IV) drug use, complications of infective endocarditis are becoming more prevalent. Infectious Intracranial Aneurysms (IIAs) represent one type of these complications. To better understand current practice patterns and limits of current published literature, we performed a systematic review.

## Methods

Pubmed search terms included: 'Infectious Intracranial Aneurysm', 'mycotic cerebral aneurysm', 'cerebral mycotic aneurysm, and 'intracranial infectious aneurysm'. We included retrospective and prospective publications 1/1980 to 5/2017. Manual search of references was also performed. We evaluated total publication number, patient and aneurysm number, ruptured status, mention of infective endocarditis, and treatment categories. Single case reports were included.



Annual total of case reports/series on IIAs

## Results and Discussion

132 publications with a total of 499 patients and 665 aneurysms were included. Of the 499 patients, 83 were single case reports, and 20.5% had multiple aneurysms. 35.8% of all aneurysms were ruptured. Of those reporting treatment, 30.0% had conservative antibiotic therapy, 31.1% underwent surgical obliteration, and 31.8% underwent endovascular occlusion. The treatment of the remaining IIAs was not explicitly reported. Chronologically, publication of IIAs has increased (Figure 1). Furthermore, usage of endovascular therapies has grown, while conservative and surgical management have declined. Of those aneurysms initiated on conservative treatment, 56.3 % were eventually intervened upon or death of patient occurred, while 9.8 % ruptured during conservative therapy. In only 20.8% of patients was the issue of cardiac valve surgery in relationship to aneurysm therapy discussed. Of these, 15.0 % underwent valve surgery before aneurysm treatment, while 84.9% underwent valve surgery after aneurysm treatment. Only 33.0 % underwent valve surgery during their admission with the IIA.

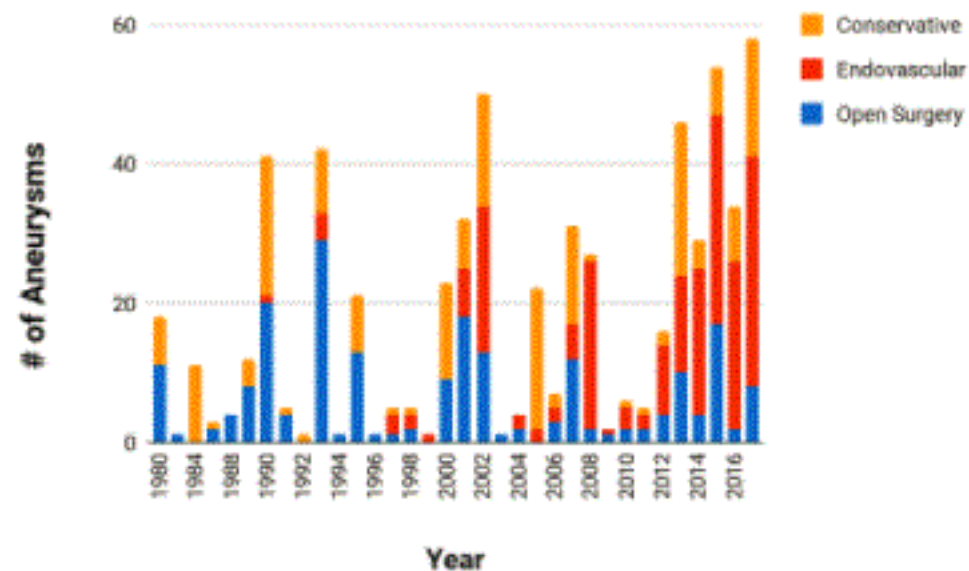
**Table 1: Conservative Management Outcomes**

% of aneurysms initially treated conservatively followed by intervention or death of patient	56.3
% Rupture during conservative therapy	9.8
% Death during conservative therapy	12.1

**Table 2: Cardiac Surgery Details**

Overall % of cases due to IE etiology	77.0
% of IE patients whom valve surgery details were reported	20.8
% valve surgery before IIA management	15.0
% valve surgery after IIA management	84.9
% valve surgery during same admission	33.0

**Figure 2: IIA Final Management Modality**



Annual totals of aneurysm treated via each method

## Conclusions

Increasing trend of endovascular management of IIAs is evident. Generally, a more aggressive universal approach to management of IIAs may be justified as the literature demonstrates a high rate of inefficacy and poor outcomes from conservative management. Details of cardiac surgery timing and patient outcome in IIA management of IE etiology is likely underreported, and warrants investigation to develop systems of practice for outcome optimization.

## Learning Objectives

1. Understand the published literature on treatment of mycotic aneurysms.
2. Recognize trends in disease prevalence in the literature and changing approaches to treatment.
3. Learn about the variance of approaches to addressing mycotic aneurysms in the context of concomitant endocarditis and related systemic complications.