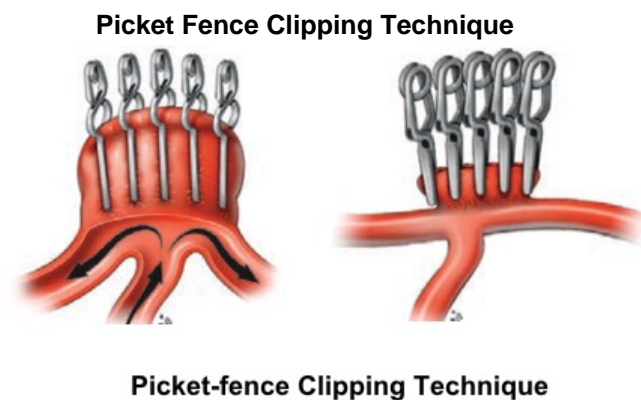


Introduction

Complex aneurysms with atypical morphology (wide neck, presence of calcifications/thrombus within the sac, or aberrant efferent branches) preclude conventional clipping techniques. The “picket fence” technique for aneurysm neck reconstruction stacks clips side by side in parallel, using the tips of the blades to close the neck. The blades run perpendicular to the neck and can be applied over the dome or in the reverse direction with fenestrations around the neck (“reverse picket fence”). We reviewed the outcomes of clipping complex aneurysms using this technique.

Methods

The senior author’s intracranial aneurysm database was reviewed from 1998 to 2018 for patients who underwent picket-fence clipping. The dome fenestration tubes were used to encircle the aneurysm dome and the tips of stacked, straight fenestrated clips were utilized to reconstruct the aneurysm neck and maintain patency of the efferent arteries.



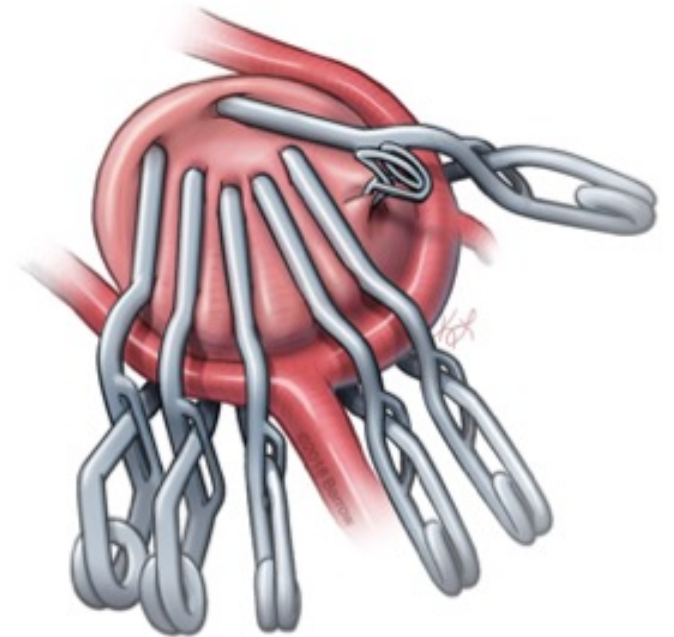
Results

During a twenty-year period, 24 patients (24 aneurysms) underwent picket-fence clip reconstruction including 18 (75%) anterior circulation aneurysms and 6 posterior circulation aneurysms. Of these, 10 (41.7%) aneurysms were ruptured at presentation with a mean pre-operative modified Rankin Score (mRS) of 2.5(SD=1.4) and follow-up mRS of 1.3(SD=1.6). The series included 2 blister-type aneurysms, 8 small-medium aneurysms and 14 large or giant aneurysms. Angiographic occlusion of aneurysms was seen in 91.7% (22/24) aneurysms with no branch artery occlusion related to the clipping. Good neurological outcome (mRS≤2) was seen in 83.3% (20/24) patients and permanent neurological morbidity reported in 8.3% (2/24) cases.

Conclusions

Picket-fence clip reconstruction is a safe and effective technique for managing complex aneurysms which are not amenable to conventional clipping techniques. Fenestrated clips ensure good closing force at the blade tips, and the use of multiple clips allows for clip repositioning to customize the neck reconstruction. This technique is particularly valuable with dolichectatic aneurysms and/or efferent arteries that adhere to the aneurysm wall.

Reverse Picket Fence Clipping Technique



Learning Objectives

By the conclusion of this session, participants should be able to:

1. Recognize the anatomy of complex intracranial aneurysms and customize surgical management based on the vascular anatomy
2. Describe the Picket-fence clip reconstruction technique for clipping aneurysms
3. Understand the clinical and radiological outcomes of patients who underwent clip reconstruction using this technique