

Cekirge-Saatci classification

[Raymond-Roy Occlusion Classification](#) is expanded with novel subgroups such as class 1 represents complete occlusion and is subdivided if a branch is integrated to, or originated from, the aneurysm sac; class 2 represents neck filling; class 3 represents incomplete occlusion with aneurysm filling as in the previous classification; and class 4 describes the immediate postoperative status after extra- or intrasaccular flow modification treatment. A new concept, “stable remodeling,” is included as class 5, which represents filling in the neck region that stays unchanged or reduced, as shown with at least 2 consecutive control angiographies, at least 6 months apart, for not <1 year or the remodeled appearance of a dilated and/or tortuous vessel in continuation with the parent artery without sac filling ¹⁾.

Jesser et al. assessed the anatomical results according to the O'Kelly-Marotta (OKM) scale and the Cekirge-Saatci Classification (CSC) scale. Results: The overall complication rate was 24/159 (16%). Thrombotic-ischemic events occurred in 18/159 treatments (11%). These resulted in long-term neurological sequelae in two patients (1%) with worsening from pre-treatment mRS 0-2 and mRS 4 after treatment. Complete or near-complete occlusion of the treated aneurysm according to the OKM scale was reached in 54% (85/158) at 6 months, in 68% (90/133) at 1 year, and in 83% (77/93) at 2-year follow-up, respectively. The rates of narrowing or occlusion of a vessel branch originating from the treated aneurysm according to the CSC scale were 11% (12/108) at 6 months, 20% (17/87) at 1 year, and 23% (13/57) at 2 years follow-up, respectively, with all cases being asymptomatic. In this retrospective multicenter study, FRED Jr was safe and effective in the midterm occlusion of cerebral aneurysms. Most importantly, it was associated with a high rate of good clinical outcome ²⁾.

Hanel et al. proposed a modification for Cekirge-Saatci classification ^{3) 4)}

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Cekirge HS, Saatci I. A New Aneurysm Occlusion Classification after the Impact of Flow Modification. *AJNR Am J Neuroradiol*. 2016 Jan;37(1):19-24. doi: 10.3174/ajnr.A4489. Epub 2015 Aug 27. PMID: 26316566; PMCID: PMC7960201.

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Jesser J, Alberalar ND, Kizilkilic O, Saatci I, Baltacioglu F, Özlük E, Killer-Oberpfalzer M, Vollherbst DF, Islak C, Cekirge SH, Bendszus M, Möhlenbruch M, Koçer N. Safety and Efficacy of the FRED Jr Flow Re-Direction Endoluminal Device for Intracranial Aneurysms: Retrospective Multicenter Experience With Emphasis on Midterm Results. *Front Neurol*. 2021 Oct 1;12:722183. doi: 10.3389/fneur.2021.722183. PMID: 34659086; PMCID: PMC8518710.

³⁾

Hanel RA, Cortez GM, Lopes DK, Saatci I, Cekirge HS. Brain aneurysm and parent vessel remodeling after flow diversion treatment: a proposed modification for Cekirge-Saatci classification (mCSC). *J Neurointerv Surg*. 2022 Dec 6;jnis-2022-019757. doi: 10.1136/jnis-2022-019757. Epub ahead of print. PMID: 36597946.

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Hanel RA, Cortez GM, Lopes DK, Nelson PK, Siddiqui AH, Jabbour P, Mendes Pereira V, István IS, Zaidat OO, Bettgowda C, Colby GP, Mokin M, Schirmer CM, Hellinger FR, Given C, Krings T, Taussky P, Toth G, Fraser JF, Chen M, Priest R, Kan P, Fiorella D, Frei D, Aagaard-Kienitz B, Diaz O, Malek AM, Cawley CM, Puri AS, Kallmes DF. Prospective study on embolization of intracranial aneurysms with the

pipeline device (PREMIER study): 3-year results with the application of a flow diverter specific occlusion classification. J Neurointerv Surg. 2022 Mar 15:neurintsurg-2021-018501. doi: 10.1136/neurintsurg-2021-018501. Epub ahead of print. PMID: 35292570.

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