An Indication for Surgery in the Antiangiogenic Era

Even with impressive results of antiangiogenic therapy, subretinal surgery may still be an important treatment option in elderly patients.

BY GREGG T. KOKAME, MD

Subretinal surgery is an important management option to consider in certain cases of peripapillary subretinal neovascular membranes (SRNVM) with vision threatening complications such as subretinal fluid or blood extending into or threatening the central fovea.

The natural history of peripapillary SRNVM is variable, and observation can be considered for small, nonexudative and nonbleeding peripapillary SRNVM. Peripapillary SRNVM, however, often lead to severe irreversible vision loss due to bleeding and exudation and subfoveal involvement,[1,2] as well as bilateral vision loss in up to 75% of patients.[3]

> Our series was limited to extrafoveal peripallary SRNVM because subretinal surgery was not found to be beneficial in the majority of cases of subfoveal SRNVM in the SST Trials.

This surgical series of six consecutive cases was initially published in *Retina* in 2005,[4] but was extended to 6-year follow-up and presented at the Cannes Retina Festival 24th Annual Meeting of the American Society of Retina Specialists (ASRS) & 6th Annual Meeting of the European Vitreoretinal Society (EVRS).[5] Our series was limited to extrafoveal peripapillary SRNVM, because subretinal surgery was not found to be beneficial in the majority of cases of subfoveal SRNVM in elderly patients in the Submacular Surgery Trials.[6] We hypothesized that removal of extrafoveal SRNVM would possibly spare the foveal retinal pigment epithelium (RPE).[7]

ADVANCED DISEASE BEFORE SYMPTOMS

Peripapillary SRNVM often result in very large complexes before they become symptomatic. Although macular laser can be attempted, there is a 50% recur-

Figure 1. A 77-year-old female presented with a peripapillary SRNVM and encroaching foveal exudates and 20/40 vision.

TABLE 1. 2006 US MEDICARE-APPROVED FEES FOR TREATMENT

Surgery		Bevacizumab		Pegaptanib		Ranibizumab	
Initial consultation FA/OCT	$643.53	Initial consultation FA/OCT	$643.53	Initial consultation FA/OCT	$643.53	Initial consultation FA/OCT	$643.53
Surgeon	$1,493.23	Bevacizumab injection	$217.98	Pegaptanib injection	$1,215.79	Ranibizumab injection	$2,228.09
Hospital 3-month follow up	$3,115.02 included	Subtotal:	$861.51	Subtotal:	$1,859.32	Subtotal:	$2,871.62
3 months	$225.37	Subsequent Rx every 6 weeks	$416.45	Subsequent Rx every 6 weeks	$1,414.26	Subsequent Rx every month	$2,426.56
6 months	$102.17						
12 months	$102.17						
Total	$5,681.00	Initial + 12 bevacizumab	$5,859.00	Initial + three pegaptanib	$6,102.00	Initial + one ranibizumab	$5,298.00
1 surgery = 13 bevacizumab injections = four pegaptanib injections = two ranibizumab injections							

rence rate.[2,8] We hypothesized that surgical removal could more completely remove the SRNVM complex, possibly decreasing the recurrence rate, and sparing the papillomacular bundle from damage. All patients initially recovered 20/40 or better vision confirming the ability of subretinal surgery to spare the central foveal RPE and the papillomacular bundle. Additionally, there was only a 17% recurrence rate within the first 3 years, indicating a lower recurrence rate than noted with macular laser. At final follow-up (ie, 3 to 6 years following surgery), 83% of patients improved one or more lines.

> Pharmacotherapy with antiangiogenic drugs has markedly changed our approach and expectations in the management of subretinal neovascularization in AMD.

Recently, pharmacotherapy with antiangiogenic drugs has markedly changed our approach and expectations in the management of subretinal neovascularization in age-related macular degeneration (AMD). Recently reported 1-year data on ranibizumab (Lucentis; Genentech, San Francisco) treatment outcomes from the MARINA trial with occult and minimally classic choroidal neovascularization (CNV) reported a 96% chance of prevention of severe vision loss (<15-letter vision loss) and a 40% chance of significant vision improvement (≥15-letter vision improvement). In the ANCHOR trial with predominantly classic CNV with ranibizumab, there was a 95% chance of prevention of severe vision loss (<15 letters) and a 33% chance of significant vision improvement (≥15-letter vision improvement.)

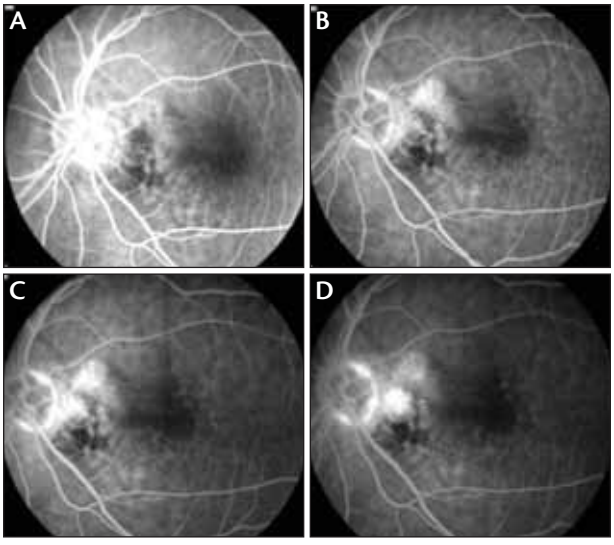

Figure 2. Fluorescein angiography showed a peripapillary SRNVM involving most of the papillomacular bundle.

SURGERY CAN SAVE MONEY

Even with such impressive results of antiangiogenic therapy, subretinal surgery may still be an important treatment option in elderly patients, if we consider the overall picture, including the significant costs,

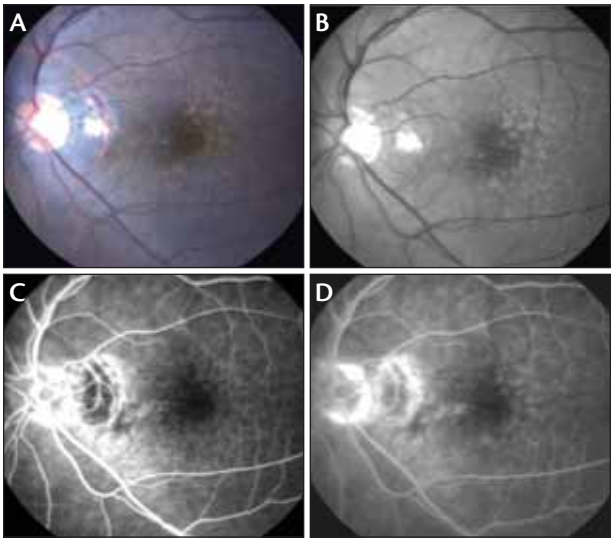

Figure 3. Pars plana vitrectomy, subretinal surgical removal of the SRNVM complex and fluid-air exchange was performed. The exudates resolved and postoperative visual acuity at 3 years is 20/30.

travel and logistical concerns of treatments every 4 to 6 weeks. Using US Medicare-approved fees for physician and hospital for 2006 (Table 1), subretinal surgery can result in significant cost savings with one subretinal surgery and hospitalization equivalent to the costs of only two ranibizumab treatments (only half of induction therapy based on the label recommendation by the US Food and Drug Administration). Ranibizumab therapy is recommended monthly, and on average, seven to 12 treatments are expected to be necessary per year.

In an example case from our series, a 77-year-old female presented with a peripapillary SRNVM and encroaching foveal exudates and 20/40 vision (Figure 1). Fluorescein angiography (FA) showed a peripapillary SRNVM involving most of the papillomacular bundle (Figure 2). Pars plana vitrectomy, subretinal surgical removal of the SRNVM complex and fluid-air exchange was performed. The exudates resolved, and postoperative visual acuity at 3 years is 20/30 (Figure 3). There has not been any SRNVM recurrence. More importantly, this patient has required follow-up only every 6 months after the first 6 months following surgery, and rarely has required repeat FA or optical coherence tomography (OCT).

DIFFERENCE IN LIFESTYLE TOO

This patient illustrates the marked difference in follow-up, costs and lifestyle that she has enjoyed over the past 2 1/2 years of follow-up compared with an antiangiogenic treatment patient. In our extended follow-up, since recurrence was uncommon, we only needed to follow our patients with office examination and Amsler grid monitoring every 6 months after the initial 6 months following surgery.

Many patients cannot make such frequent visits for retreatment required in antiangiogenesis due to costs, travel concerns, logistical planning and illnesses.

Thus, subretinal surgery avoided the every 4- to 6-week follow-up and treatment required for antiangiogenic therapies, as well as the multiple repeat diagnostic testing, such as OCT or FA. This represents a significant advantage for our elderly patients in regards to cost savings and enjoyment of life without the need for frequent reexaminations and repeat treatments necessary with antiangiogenic therapy. Many patients cannot make such frequent visits for retreatment required in antiangiogenesis, due to costs, travel concerns, logistical planning concerns, and multiple concurrent illnesses. ■

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