

Five-step approach

Classification system aimed at various corneal refractive surgery complications

Innovative protocol helps determine best option to achieve unaided emmetropia

By Lynda Charters

Reviewed by Arun C. Gulani, MD

Jacksonville, FL—The 5S Classification System, developed by Arun C. Gulani, MD, is an approach to classifying various corneal refractive surgery complications. Clinicians can use it to describe the cornea based on appearance rather than by previously used technologies, said Dr. Gulani, founding director of Gulani Vision Institute, Jacksonville, FL.

Dr. Gulani's 5S classifications are an extension of his previous systemization for LASIK¹. The 5S system proceeds as follows:

- Determine whether the patient can see and has vision improvement with a hard contact lens (S = sight).
- Determine the clarity of the cornea (S = scar).
- Determine the location, i.e., center or periphery, of a corneal pathology (S = site).
- Measure the topography of the patient for corneal irregularity and refractive error (S = shape).
- Determine the thickness of the cornea (S = strength).

"The ability to plan for unaided emmetropia is based on the principle of using the cornea as a platform for visual rehabilitation irrespective of the pathology or the previous surgery," Dr. Gulani said. "The cornea is corrected to final reshaping with the excimer laser for excellent unaided emmetropia." Even though Dr. Gulani has access to cutting-edge diagnostic technologies in his practice, he said the best

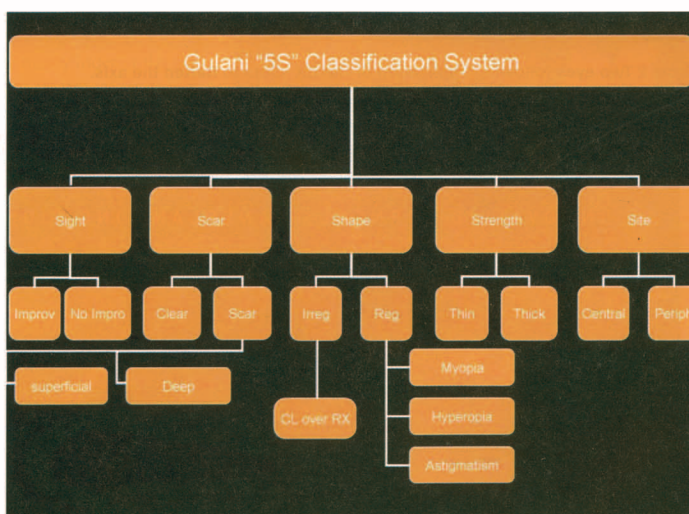


Figure 1 The 5S Classification System by Arun C. Gulani, MD. (Figure courtesy of Arun C. Gulani, MD)

way to measure scarring and the extent and depth of scarring is by mastering the art of slit-lamp examination².

"A point to remember is that, optically, the posterior opacities may be of little significance in these patients," he said. "Don't focus on chasing the scar; focus on improving the vision."

Dr. Gulani incorporated the Pentacam (Oculus), an ophthalmic imaging device for the anterior segment, into his practice. "This instrument not only allows the ability to study the cornea in three dimensions³ but also enables the clinician to determine the relationship of the cornea to other visually significant anatomy," he said. Dr. Gulani noted that the use of the imaging technology and 5S Classification System is invaluable for determining which surgical approach to take for keratoconus ranging from form fruste to advanced cases⁴.

In a case of keratoconus with extensive central scarring, treatment for the patient might be deep lamellar keratoplasty to correct the cornea for the central pathology (site) of the opacity (scar) and thickness (strength).



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By addressing the thickness, he noted, the amount of donor tissue is increased by about 20%, so that there is more tissue to work with later when sculpting this tissue with the excimer laser (shape) to achieve unaided vision (sight). He described another patient at the other end of the spectrum who underwent epikeratophakia 18 years previously. With a decentered scarred central cornea, the patient had a best-corrected visual acuity of 20/400.

"When putting the 5S system into place, the patient has vision; when corrected with a contact lens, the patient's vision is 20/30. There is a central injury, as the cornea is scarred. The shape is irregular, and the cornea is thicker than normal," Dr. Gulani continued. "The name of the surgery in this case is irrelevant, and the plan is clear. Some tissue has to be removed to bring the cornea to normal thickness (to address site, strength, and shape) and then address the sight."