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DISCLOSURE

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End-Stage Hernia Disease: A Conceptual Framework

Successful abdominal wall reconstruction restores function and improves patient quality of life. However, highly complex hernias might fail even the most advanced reconstructive techniques, representing a currently undefined disease state. We call this "end-stage hernia disease."

"End stage" describes a terminal, unresolvable disease state that must be managed and cannot be cured. Frameworks to diagnose and guidelines to treat end-stage diseases exist for heart failure, liver failure, and kidney failure. Although a large body of literature describing increasingly complex hernias exists, criteria to characterize an end-stage hernia do not. After 140 months, Holihan et al. found that recurrence rates for primary repair, secondary repair, tertiary repair, and quaternary repair were 37.5 percent, 66.4 percent, 67.5 percent, and 73.3 percent, respectively, underscoring the progression toward increased likelihood of surgical failure. In the context of this "vicious cycle" of hernia repair, the need to elucidate end-stage hernia disease becomes paramount.[1] Patients may present with end-stage hernia disease either by progressing through this cycle or with a complex initial or secondary hernia.

The lack of expert consensus on end-stage hernia disease represents a gap in our treatment framework. As the current literature does not provide a definition for end-stage hernia disease, assessments and diagnoses depend on an individual surgeon's judgment, informed by experience or intuition. For this reason, the absence of diagnostic criteria contributes to the cycle of repair followed by subsequent failure, propelling patients through a series of morbid events that significantly degrades quality of life.[2] Thus, academic focus on end-stage hernia disease should aim to mitigate undue surgical risk for complex hernia patients.

To begin the first step toward elucidating this complex disease process, we propose a conceptual framework for identifying end-stage hernias. In the senior authors' (J.E.J. and J.P.F.) practices, three domains guide the assessment of end-stage hernia disease: (1) patient comorbidities and characteristics, (2) defect and wound characteristics, and (3) abdominal wall function and quality of life. Slater et al.[3] provide a framework for understanding hernia-related complexity within each of these domains. Relevant features within patient characteristics include predictors of wound healing complications, such as diabetes or prior mesh infection.[3] Defect size of 10 cm or larger, location, full-thickness defects, distorted anatomy, and greater than or equal to 20 percent loss of domain increase complexity.[3] To capture experiences specific to hernia-related quality of life, psychometrically validated instruments should be used to assess physical function, mood, body image, chronic pain, and sleep both preoperatively and postoperatively.[4]

In the senior authors' opinion, consideration of these three domains is key to assessing a patient for end-stage hernia disease—increased risk within two or more of the three domains represents higher risk for surgical failure and low odds of improving quality of life. A complex hernia in a patient with unacceptable health comorbidities epitomizes the patient unlikely to benefit from surgical intervention. While this framework is yet to be scientifically proven, we offer our experience as the first step toward elucidating this morbid disease process.

End-stage hernia disease can be considered the terminal state of a "failed" abdominal wall, the point at which surgical intervention is futile. Expert consensus on diagnostic criteria for end-stage hernia disease would enable preoperative identification with the aim of decreasing patient morbidity and improving patient care.

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Enhancing Microsurgical Assistant Experience with Bifocal Safety Glasses: A Low-Cost Alternative to Surgical Loupes

The standard flap harvest is performed under loupe dissection. It is not infrequently that a medical student or physician assistant participates in the role of first or second assist. Such scenarios have impressed upon us the observation that these surgical assistants seldom use loupes or any other form of visual magnification. The reasons for this are likely multifaceted and may be related to cost as well as perceived opinions of colleagues.

The benefit of encouraging optical aid use among surgical assistants encompasses an augmented surgical and learning experience. The aforementioned barriers, however, prohibit the use of loupes. We have found bifocal safety glasses to be an adequate alternative (Fig. 1). As compared to Galilean or prismatic loupes, which utilize multiple lenses and can magnify up to eight times without distortion (in the case of prismatic loupes), single-lens magnifiers can magnify up to 1.5 times without distortion or significant loss of working distance. Although this level of magnification is not acceptable for the primary surgeon, the added benefit of single-lens magnification is certainly superior to total lack of magnification typically utilized by nonresident surgical assistants.

Bifocal safety glasses need to be selected in order to allow for maximal magnification at the optimal working distance. With this in mind, we recommend lower-powered magnifiers (i.e., diopters between +0.75 and +1.50 diopters), as these allow for crisp magnification and accommodation without causing eye fatigue. It is important to note the conversion of diopter to magnification is described by the equation $m = d/4 + 1$, therefore a +1.00 diopter would result in $m = ¼ + 1 =$ 1.25× magnification.

As compared to surgical loupes, bifocal safety glasses have the added benefit of being lightweight. The detrimental effect of loupes on cervical spine health has been well documented in surgeons of all levels and across multiple specialties; surgeons with severe cervical spine pain can use bifocal safety glasses as an alternative to loupes in cases where high-power magnification is not needed.[1,2] In addition, single-lens magnifiers are not cost-prohibitive. They can be purchased for less than $15, which is markedly less than the typical price of loupes.[3] The design of bifocals is discreet, as they resemble safety glasses typically worn in the operating room, and this mitigates any worry about eliciting negative opinions from colleagues. Bifocal safety glasses are a cost-conscious, comfortable, and inconspicuous optical aid that should be utilized by microsurgical assistants when loupes are not available.

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