It is easy to write a commentary on the extremely well done article by Etemad et al. Patients who had their meshes fixed into position during hernia repair were shown using the Americas Hernia Society Quality Collaborative database to have more pain and worse function at 30 days in comparison with unfixed mesh patients. Hernia recurrence rates using a fixed mesh were found to be statistically equivalent to those of the unfixed mesh patients. Dr. Poulose, a prime developer of the Americas Hernia Society Quality Collaborative, can use these data to effectively support his surgical technique of a fixation-free placement of mesh for ventral hernia repair.

Hernia repairs can be thought of in analogous fashion to fracture osteosynthesis. The initial construct strength needs to be stronger than the maximal forces applied that occur with position changes, stairs, and coughing. A fixation-free mesh placement requires that the friction between the mesh and the tissues, along with the midline soft-tissue closure, remain stronger than any of these deforming forces to prevent suture pull-through and either acute or chronic failure patterns. A mesh that is fixed in place has a greater initial construct strength to resist these early deformation forces. A side benefit of a fixed mesh is to limit potential spaces, seroma formation, and mesh movement. It is well known, again from orthopedics, that a well-fixed implant does not become infected. Despite the theoretical advantages of a fixed mesh, patient outcomes in this study were better with unfixed meshes. The improvement of initial construct strength with mesh fixation, in a sense, is overengineering for the clinical problem.

Having spent my entire hernia career espousing well-fixed meshes, I need to explain how I can agree with the article by Etemad et al. and disagree with some of its conclusions at the same time. The key to understanding this article is in observing the average size of the meshes used. The length of a human abdomen is on the order of 30 cm (for simplicity). The average size of the meshes in this article—both fixed and unfixed—was over 720 cm². For a full abdominal wall repair, the mesh would be on average $720/30 = 24$ cm wide or wider. To achieve that kind of overlap, if the average rectus muscle is 8 cm wide in these age groups, a posterior component release would need to be performed to get past the semilunar line and to permit the 12 cm of overlap on each side of the abdominal wall. Sure enough, 90 percent of patients had an unspecified components release. To fix the mesh, either a wide skin undermining is performed (not mentioned in this article, and it does not marry well with posterior releases), or else a suture is introduced through the skin and then through the abdominal wall to reach the mesh. The nerves become larger as the surgeon moves laterally from the midline, and the chance of a suture entrapment of a sizable nerve becomes more likely. As it is so technically challenging to pass these mesh fixation sutures, the surgeons I have seen perform this maneuver do so sparingly. Perhaps for the mesh fixation patients, there were not enough sutures to meaningfully distribute forces, increase the construct strength, and offload the midline closure. Even one or two sutures placed per side and done for the purpose of holding the mesh in place would be scored as a “mesh fixation” procedure. The problem with the analysis of multisurgeon databases such as the Americas Hernia Society Quality Collaborative is the loss of granular detail of important variations such as the exact method of suture placement and how many mesh fixation sutures are placed per case.

Disclosure: Dr. Dumanian is the founder of Advanced Suture, Inc., and Mesh Suture, Inc. There are no conflicts of interest to report arising from this commentary.
An alternative technique of hernia repair is a well-fixed narrow mesh. The meshes I use for hernia repairs are no more than 7.5 cm wide total, or approximately 4 cm wide per side. The skin is elevated 4 cm from the medial border of the rectus muscle to permit facile placement of eight to 10 transrectus sutures per side to achieve a strong initial construct. Perforators are spared to allow for healthy skin flaps with or without an anterior components release. One can see and avoid the intercostal nerves while suturing to decrease postoperative pain. Staying closer to the midline, the nerves are also smaller. We have documented that, using this technique in severe cases of rectus diastasis, and even with an associated abdominoplasty, the median hospitalization is 2 days. Long-term pain is not a problem. The construct strength of these transfascial sutures is high, resulting in no hernias with 2 years of follow-up.

Alas, the hernia closure field has moved away from anterior releases toward posterior components releases. The surgical robots no doubt have facilitated this transition. This article demonstrates that giant unfixed meshes associated with these posterior releases have advantages over giant fixed meshes. However, caution is necessary before this article is generalized to other techniques of hernia repair where mesh is used for force distribution and the limitation of suture pull-through.

It is laudatory to Dr. Poulose and the creators of the Americas Hernia Society Quality Collaborative that the concerted effort to develop and use large quality-related databases can answer many fundamental surgical questions. Although not overly applicable to my surgical practice, I have no doubt this article will become widely quoted and referenced.

Gregory A. Dumanian, M.D.
Division of Plastic Surgery
Department of Surgery
Northwestern University Feinberg School of Medicine
675 North St. Clair Street
Chicago, Ill. 60611
gdumania@nm.org

REFERENCES