

because the reliability of valve incision was entirely dependent on the continued razor sharpness of the circular cutting edge. Such a consistent degree of sharpness is not realistic in an instrument whose blade is exposed and therefore readily damaged by contact with other instruments as is the case in the usual operating room environment. This has and continues to be the case with the modified Mills Valvulotome, which we use for valve incision in smaller (<3.0ml OD) veins. Furthermore, it has been our experience that even seemingly minor degrees of circumferential abrasion, particularly in smaller veins, results in early platelet aggregation on the injured surface and is associated with a high probability of the subsequent development of stenotic lesions. In addition we have found, both in the laboratory and clinically, that use of cylindrical valvulotomes in veins smaller than 3 mm OD was associated with an increased failure rate. This is due primarily to the vasoactivity of such small veins in which even a minor perturbation such as the passage of a 1-mm (#3 French) catheter may induce venous spasm. Further, it should be recalled that a 3-mm OD vein, even if thin walled, has an internal diameter of only approximately 2.2 mm. More extensive study of venous endothelial resistance to shear is now under investigation in our laboratory but unfortunately, there is not sufficient data to comment at present. Suffice it to say, shear force as low as 40 mg to 60 mg in small arteries has been shown to be injurious, resulting in significant myointimal hyperplasia due to disruption of the endothelial monolayer.

The technical methodology that was developed and described in our report has the express purpose of universal application, i.e., to be applied to all cases regardless of the vagaries of venous anatomy, including size. In essence a cylindrical valvulotome, be it a Hall, Cartier, LeMaitre, or Leather, has a greater potential for endothelial injury, particularly when used in a small vein. All are effective in producing valvular incompetence. It is not the instrument per se that's important, but how it is used.

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December 23, 1988

Dear Editor:

Drs. Nyhus, Pollack, Bombeck, and Donahue kindly referred to my report, "Cooper's Ligament Repair: A 25 Year Experience With A Single Technique For All Adult Groin Hernias in Adults"¹ in their paper, "The Preperitoneal Approach and Prosthetic Buttress Repair for Recurrent Hernia: The Evolution of a Technique."²

In their introduction they state, "The repair of recurrent groin hernias is technically demanding and associated with a high in-

cidence of repeated recurrences (2-19%) in selected series." Later, in the discussion they add, "In addition, long-term follow-up study of a variety of other approaches to repairing recurrent hernias, has revealed that re-recurrences occur in as many as 19% of patients." In each instance my report is one of three references listed. Although their statements are technically correct, I believe they give a false impression of my results with repair of recurrent hernias using the Cooper's ligament technique.

In my report that included my patients from 1959 through 1984, I had 3 re-recurrences in 124 patients with recurrent hernia repairs followed-up an average of 9.3 years (recurrence rate, 2.4%). All three of these recurrences were indirect along the cord in a group of patients whose cords were transplanted subcutaneously. This method was discarded in 1972 and since then the cord has been left in the natural position. There has been no recurrence in any recurrent repair done with the current technique. Since 1984, I have repaired another 36 recurrent hernias without known recurrence.

I agree that the repair of recurrent hernias is technically demanding but I believe that it can be done safely with minimal instances of morbidity and few recurrences. Both a Cooper's ligament repair and preperitoneal repair can give good results. The important points are thorough dissection, careful technique, and a complete repair on all recurrent hernias.

References

1. Rutledge, RH. Cooper's ligament repair: a 25 year experience with a single technique for all groin hernias in adults. *Surgery* 1988; 103: 1-10
2. Nyhus, LM, Pollack R, Bombeck CT, Donahue, PE. The preperitoneal approach and prosthetic buttress repair for recurrent hernia. *Ann Surg* 1988; 208: 733-737

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February 3, 1989

Dear Editor:

We note Dr. Rutledge's concern that readers might have considered his Cooper ligament repair inadequate. As he makes clear in his letter, his recurrence rate is very low and very acceptable. We are familiar with Dr. Rutledge's expertise in this area. The technique is detailed in his contribution entitled "A Personal Experience with Cooper Ligament Repair" in *Hernia*, 3rd edition (Nyhus LM and Condon RE, eds. Philadelphia: J. B. Lippincott, 1989;131-136.

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