traluminal artifact: the S2 anastomotic system in the off-pump porcine model. *J Thorac Cardiovasc Surg.* 2004;127:498-503.

2. Konstantinov IE. Circular vascular stapling in coronary surgery. *Ann Thorac Surg.* 2004. In press.
3. Demikhov VP. Experimental transplantation of vital organs [authorized translation from Russian by Basil Haigh]. New York: Consultant's Bureau; 1962.
4. Kolesov VI, Kolesov EV, Gurevich IY, Leosko VA. Vasosuturing apparatuses in surgery of coronary arteries. *Med Tekh.* 1970;6: 24-8.

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Reply to the Editor:

We appreciate Dr Konstantinov's encouraging words and fascinating account of the early pioneering work on coronary staplers by Drs Demikhov and Kolesov. We believe that the S² connector design is about to overcome the 3 main obstacles that, according to Dr Konstantinov, to date have precluded the use of coronary staplers as invented in the 1950s and 1960s.

First, S² coronary stapling is an easier and faster bypass grafting method than suturing manually. In subsequent open-chest, beating-heart porcine studies the stapled anastomosis was constructed in 1.8 ± 0.6 (SD) minutes of coronary ischemia time after preloading the graft (1.9 ± 0.5 minutes) versus 11.8 ± 2.7 minutes of ischemia time for the sutured anastomosis ($P < .001$, unpublished observation). Experiments with the device endoscopically on the beating heart look promising for both anterior and posterior coronary arteries (unpublished observation, Paul Gründeman, MD).

Second, the S² stapler can deal with both side-to-side and end-to-side anastomoses because the latter is converted from an initially side-to-side configuration by clipping the very end of the graft. The device uses the latest micromanufacturing technology. As a result, it combines effective stapling and ease of use with minimal connector mass and minimal exposure of foreign body material to blood.

Third, the S² device is designed to stay close to basic surgical principles, which is especially important when handling atherosclerotic vessels. The staples meet the vessel walls in a standardized way, similar to how a surgeon would position his needle, and the applicator allows exerting a precise and direct force on the staples to effect

penetration. Transmitting any undue forces to the tissue is minimized to avoid trauma. Tests with human explanted hearts have shown that the system is capable of effectively dealing with severely atherosclerotic coronary arteries (unpublished observation). Clinical evaluation, however, is needed to substantiate these results and determine patency rates in human subjects.

The coronary stapler is indeed a concept that has remained dormant for almost half a century, waiting for both the proper technology and design to enable its effective implementation. Without modern manufacturing technology, the present development would have been prohibitively difficult. Whether this time coronary stapling devices are here to stay remains to be determined. Our current additional porcine data at 3 months in 20 animals (unpublished) warrant initiation of clinical evaluation.

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Value of intraoperative pleural lavage in staging non-small cell lung cancer

To the Editor:

We are pleased that our article¹ warranted an editorial and grateful to Dr D'Amico for his thoughtful comments. Unfortunately, there is a typographic error in the second paragraph stating that "only 5 of the 292 patients had pathologic stage I or II disease." Of course the denominator should be 13. Dr D'Amico mentions that our follow-up was incomplete, but in fact we accounted for all the patients in our study.

We accept the fact that the pleural lavage cytology results were positive in only 4.5% of our cases. However, this does not render the technique of no value. Other investigators have found a higher incidence of positive pleural lavage (up to 38% in one

study).² We believe that the value of a prognostic indicator should be based more on the discriminating ability of survival than on the frequency alone. In our study, positive lavage status was a more powerful predictor than TNM stage.

Central to our study was a desire to contribute to the discussion on the prognostic impact of positive pleural lavage cytology in patients who did not have a malignant pleural effusion. All patients with any macroscopic effusion were excluded from the study. The Japan Lung Cancer Society in its first English version³ states that "a positive cytologic examination of intrathoracic washings cannot be classified as T4" without further comment on the appropriate classification for this finding. The International Union Against Cancer in its TNM Supplement (a commentary on uniform use)⁴ states, when considering peritoneal lavage cytology, that "newer data suggest that the worsening of prognosis as indicated by positive lavage cytology may have been overestimated" and recommends that the addition of "cy +ve" to the T4 category and R1 classification be applied in these circumstances.

We hope that our data will inform the debate for future revisions of the TNM staging system.

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References

1. Lim E, Ali A, Theodorou P, Nicholson AG, Ladas G, Goldstraw P. Intraoperative pleural lavage cytology is an independent prognostic indicator for staging non-small cell lung cancer. *J Thorac Cardiovasc Surg.* 2004;127: 1113-8.
2. Buhr J, Berghauer KH, Gonner S, Kelm C, Burkhardt EA, Padberg WM. The prognostic significance of tumor cell detection in intraoperative pleural lavage and lung tissue cultures for patients with lung cancer. *J Thorac Cardiovasc Surg.* 1997;113:683-90.
3. Classification of lung cancer: first English edition. Part III: Surgical findings. Kato H, editor. The Japan Lung Cancer Society. Tokyo: Kanehara and Co, 2000. p. 42.
4. TNM supplement: a commentary on uniform use. Wittekind CH, Henson DE, Hutter RVP, Sobin LH, editors. 2nd ed. UICC International Union Against Cancer. New York: John Wiley; 2001. p. 8.

doi:10.1016/j.jtcvs.2004.04.025