References

1. Evonich RF, Stephens JC, Merhi W, Dukkupati S, Tepe N, Shannon F, et al. The role of temporary bi-ventricular pacing in the cardiac surgical patient with severely reduced left ventricular systolic function. *J Thorac Cardiovasc Surg.* 2008;136:915-21.
2. Flynn MJ, McComb JM, Dark JH. Temporary left ventricular pacing improve haemodynamic performance in patients requiring epicardial pacing post cardiac surgery. *Eur J Cardiothorac Surg.* 2005;28:250-3.

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PERCUTANEOUS AORTIC VALVE IMPLANTATION: WHAT DOES OVERSIZING MEAN?

To the Editor:

We read with interest the recent article by Litzler and colleagues¹ in the *Journal of Thoracic and Cardiovascular Surgery*. The authors reported their first case of emergency surgical aortic valve replacement for severe acute aortic regurgitation after retrograde transfemoral Cribier-Edwards valve implantation.

We would like to comment on this instructive case report and ask for some clarifications:

When valved stent implantation is planned in a patient, accurate pre-procedural determination of the aortic annulus size is of crucial importance. A prosthesis–aortic annulus mismatch may be responsible for valve migration or severe paravalvular leak if the chosen prosthesis is too small and for coronary obstruction or leaflet distortion if it is too large.²

The incidence of paravalvular leak has been shown to be dramatically high in previous studies.^{3,4} To reduce the incidence and severity of paravalvular leak, the oversizing technique (ie, the choice of a prosthesis size at least 2 mm more than that of the aortic annulus diameter as determined by transthoracic echocardiography [TTE]) has been proposed and proved to be effective.⁴

Nevertheless, several previous studies have shown that measurement of the aortic annulus diameter by TTE is inaccurate when compared with surgical sizing.⁵ TTE tends to underesti-

mate by up to 5 mm (3 mm in this case report) the size of the aortic annulus. In the present case, the chosen size of the implanted valve was 23 mm. The latter was supposed to be oversized based on the TTE measurements. The surgically implanted valve was also 23 mm based on the surgical measurements. Despite “oversizing” in this reported percutaneous valve implantation, severe paravalvular leak occurred, which means, in a sense, that this strategy has not solved this major problem at the present time.

We would like to ask the authors a few questions:

- What does “oversizing” mean for them in the choice of the implantable valve? Is oversizing based on the TTE measurements of the aortic annulus diameter or is it based on the “true” aortic annulus diameter if the latter could be measured?
- Do they still rely on TTE for determination of the aortic annulus diameter or have they changed their imaging technique?
- Have they changed the magnitude of oversizing, based on this reported experience?
- If so, how effective is their new approach regarding the occurrence of paravalvular leak?

Optimal sizing of valved stents remains a critical issue with many implications on the post-procedural course. The readers of the *Journal* would greatly appreciate the answers to these “practical” questions from one of the most experienced teams in interventional aortic valve therapy.

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References

1. Litzler P-Y, Cribier A, Zajarias A, Comte D, Eltchaninoff H, Tron C, et al. Surgical aortic valve replacement after percutaneous aortic valve implantation: what have we learned? *J Thorac Cardiovasc Surg.* 2008;136:697-701.
2. Zegdi R, Ciobotaru V, Noghin M, Sleilaty G, Lafont A, Latremouille C, et al. Is it reasonable to treat all calcified aortic valves with a valved stent? Results from a human anatomic study. *J Am Coll Cardiol.* 2008;51:579-84.
3. Webb JG, Chandavimol M, Thompson CR, Ricci DR, Carere RG, Munt BI, et al. Percutaneous aortic valve implantation retrograde from the femoral artery. *Circulation.* 2006;113:842-50.
4. Cribier A, Eltchaninoff H, Tron C, Bauer F, Agatiello C, Nercolini D, et al. Treatment of calcific aortic stenosis with the percutaneous heart valve. Mid-term follow-up from the initial feasibility studies: the French experience. *J Am Coll Cardiol.* 2006;47:1214-23.
5. Mackay A, Been M, Rodrigues E, Murchison J, De Bono DP. Preoperative prediction of prosthesis size using cross sectional echocardiography in patients requiring aortic valve replacement. *Br Heart J.* 1985;53:507-9.

doi:10.1016/j.jtcvs.2008.11.072

PROGNOSTIC SIGNIFICANCE OF VISCERAL PLEURAL INVASION AND TUMOR SIZE IN NON-SMALL CELL LUNG CANCER

To the Editor:

We read with great interest the article by Shimizu and colleagues¹ published in the July 2005 issue of the *Journal*. They found that visceral pleural invasion (VPI) is a significant poor prognostic factor of non-small cell lung cancer (NSCLC), regardless of N status. Stage I NSCLC has been subdivided into IA (T1N0M0) and IB (T2N0M0) based on tumor size (3 cm as a cutoff value) and non-size-based T2 descriptors (including VPI, hilar atelectasis, and obstructive pneumonitis).² Although a poor prognostic effect of VPI has generally been reported, its prognostic value for survival has remained controversial.^{3,4}

Shimizu and colleagues¹ have demonstrated that both VPI and tumor size had a significant impact on survival for patients with NSCLC in univariate analysis. However, tumor size failed to be a predictor of survival in multivariate analysis, whereas VPI was still a significant predictor for all patients with NSCLC ($P < .001$) and those with stage I disease ($P = .0104$). VPI overwhelmed tumor size as a prognostic factor for NSCLC in their study. However, most studies in the literature have reported tumor size as a significant prognostic factor in NSCLC. The International Association for the Study of Lung Cancer Lung Cancer Staging Project Committee has recommended that T1 tumors be classified as T1a (≤ 2 cm) and T1b (> 2 to ≤ 3 cm) and that T2 tumors be classified as T2a (> 3 to ≤ 5 cm), T2b (> 5 to ≤ 7 cm), and T3 (> 7 cm).⁵ However, revision of non-size-based T2 descriptors has not been recommended because of the small number of patients, inconsistent clinical and pathologic results, or lack of validation.⁵ Their proposal emphasized the prognostic value of tumor size in NSCLC. Shimizu and colleagues¹ have also demonstrated that VPI was significantly associated with tumor size. We wonder how the authors dealt with the interaction of the 2 variables in multivariate analysis and interpreted the greater effect of VPI on survival in their study.

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References

- Shimizu K, Yoshida J, Nagai K, Nishimura M, Ishii G, Morishita Y, et al. Visceral pleural invasion is an invasive and aggressive indicator of non-small cell lung cancer. *J Thorac Cardiovasc Surg.* 2005;130:160-5.
- Mountain CF. Revisions in the international system for staging lung cancer. *Chest.* 1997;111:1710-7.
- Martini N, Bains MS, Burt ME, Zakowski MF, McCormack P, Rusch VW, et al. Incidence of local

recurrence and second primary tumors in resected stage I lung cancer. *J Thorac Cardiovasc Surg.* 1995;109:120-9.

- López-Encuentra A, Gómez de la Cámara A, Rami-Porta R, Duque-Medina JL, de Nicolás JL, Sayas J; Bronchogenic Carcinoma Cooperative Group of the Spanish Society of Pneumology and Thoracic Surgery (GCCB-S). Previous tumour as a prognostic factor in stage I non-small cell lung cancer. *Thorax.* 2007;62:386-90.
- Rami-Porta R, Ball D, Crowley J, Giroux DJ, Jett J, Travis WD, et al. The IASLC Lung Cancer Staging Project: proposals for the revision of the T descriptors in the forthcoming (seventh) edition of the TNM classification for lung cancer. *J Thorac Oncol.* 2007;2:593-602.

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SERUM BRAIN NATRIURETIC PEPTIDE FOR PREDICTION OF SUCCESSFUL MEDICAL TREATMENT OF PATENT DUCTUS ARTERIOSUS IN PREMATURE INFANTS

To the Editor:

We read with great interest the report by Tschuppert and colleagues¹ entitled "The Effect of Ductal Diameter on Surgical and Medical Closure of Patent Ductus Arteriosus in Preterm Neonates: Size Matters" and the relevant letter by Giardini and colleagues.²

Although Tschuppert and colleagues suggested that the size of a patent ductus arteriosus (PDA) can be used to predict patients in whom medical management is likely to fail to achieve hemodynamic irrelevance, Giardini and colleagues claimed that the difference in PDA diameter in patients who did and did not respond to

medical treatment was extremely low and questioned how such a small difference can be clinically significant.²

We would like to add some comment regarding factors other than PDA size to predict successful medical treatment according to our pilot study.

Recent reports suggesting that serum brain natriuretic peptide (sBNP) levels are parallel to the severity of PDA³⁻⁵ prompted us to investigate the relationship between the dose of indomethacin and the levels of sBNP or maximum diameter of PDA by ultrasound cardiography (USCG) during the first week of life. Indomethacin was repeatedly (1–4 times) administered intravenously at a single dose of 0.1 to 0.2 mg/kg until the closure of the PDA was confirmed by USCG. sBNP was measured by a commercially available kit using fluorescent immunoassay ("Shiono-Spot," Shionogi Pharmaceutical Co, Osaka, Japan). The required blood volume is only 70 μ L, and a result can be obtained within 15 minutes with this kit.

There was a significant relationship between the peak levels of sBNP within 5 days of life and the total dose of indomethacin ($n = 8$, $r = 0.78$, $P < .05$, Table). Notably, the required total dose of indomethacin to close a symptomatic PDA was 0.1 to 0.2 mg/kg in the infants with sBNP levels less than 1000 pg/mL, whereas the required dose was 0.3 mg/kg or more in those with higher sBNP levels (> 2000 pg/mL), as shown in Table 1.

TABLE 1. Relationship among serum levels of brain natriuretic peptide, size of patent ductus arteriosus, and total dose of indomethacin

Case no.	Gestational age (wk)	Total dose of indomethacin (mg/kg)	Age at PDA closure* (d)	Peak levels† of sBNP (pg/mL)	Maximum diameter of PDA (mm)
1	27.7	0.1	5	640.4	1.5
2	27.7	0.2	8	40.9	1.2
3	31.4	0.2	3	83.2	1.4
4	28.0	0.2	3	796.5	1.5
5	28.7	0.2	3	152.3	2.1
6	28.7	0.3	16	> 2000	2.1
7	29.9	0.6	5	> 2000	3.9
8‡	29.9	0.7	14	> 2000	3.3

PDA, Patent ductus arteriosus; sBNP, serum brain natriuretic peptide. *Confirmed by ultrasound echocardiography.

†Measured within 5 days of life. ‡PDA reopened at the age of 16 days and received surgical ligation.