alternative sources of energy. A bialtrial lesion pattern was conducted in 815 patients, whereas 1422 patients had a left atrial lesion pattern. The SR rates were 81.0 and 77.6%, respectively. Univariate analysis did not reveal any statistical significance (P=0.703) in the SR rates for the patients with left and bi-atrial lesion patterns, nor after correction for potential confounders such as age, type of arrhythmia and type of surgery (P values of 0.597, 0.327 and 0.499, respectively).

The necessity to create transmural lesions, visualized in the acute phase is still a matter of debate. There tends to be a discrepancy between the histological and electrophysiological characteristics during the acute phase after the creation of atrial lesions using radiofrequency or microwave ablation. Maessen and colleagues, who performed an epicardial beating-heart microwave ablation in 16 mongrel dogs, observed that histological analysis in the acute phase of the induced myocardial lesions were circumferentially incomplete (48±20%) in all dogs, although electrophysiological evaluation showed a complete entrance and exit block in 8 dogs and in another 5 dogs after repeated ablation. At follow-up (1-3 weeks), the isolations remained electrophysiologically complete. So, immediately after treatment, ablation lesions are best evaluated electrophysiologically, because complete (transmural and circumferential) lesions are not shown by histological evaluation in the acute stage [1]. This observation has been corroborated by Santiago and Pappone as discussed in our original manuscript. We do agree with the last two remarks of Dr Shamugam, as discussed in the section limitations of the study of our manuscript [2].

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doi:10.1016/j.ejcts.2005.03.020

Letter to the Editor

Surgical implantation of left ventricular epicardial leads for cardiac resynchronization

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doi:10.1016/j.ejcts.2005.03.020

Received 7 March 2005; accepted 22 March 2005

Keywords: Cardiac resynchronization therapy; Surgically placed epicardial LV-lead; Heart failure

We read with great interest the article by Mair and colleagues [1] which compared the surgical implantation of left ventricular epicardial leads with the coronary sinus placement for cardiac resynchronization.

We have previously reported our experience [2] with surgical implantation of left ventricular epicardial leads using video-assisted thoracoscopy and agree with Mair et al. that the surgical approach may have potential benefits as primary implantation for a substantial subset of patients. However, we would like to point out some considerations.

First, we believe that preoperative patient selection plays a critical role in order to identify nonresponders to cardiac resynchronization therapy. Standard criteria such as QRS duration, depressed left ventricular ejection fraction and heart failure have been used in large randomized trials [3]. Nevertheless, these standard criteria should be complemented with Doppler-echocardiographic demonstration of intraventricular asynchrony and the evaluation of the hemodynamic changes during left ventricular stimulation. Our protocol includes tissue Doppler imaging to determine the sequence of ventricular wall contraction in a similar way as described by Mair et al. [1]. In addition we routinely perform endocardial pacing of different segments of the left ventricle during the preoperative cardiac catheterization to evaluate changes on dP/dt, cardiac output and pulmonary arterial pressure [4].

Second, we prefer video-assisted thoracoscopy instead of minithoracotomy because it is a less invasive technique although the presence of pleural or pericardial adhesions can hinder the procedure and even force conversion from thoracoscopy to minithoracotomy. We routinely use orotracheal intubation with a double lumen tube for selective pulmonary ventilation. This technique allows the collapse of the left lung, facilitates the vision of the pericardium and avoids laceration of the lung and pneumothorax. In our series of 19 consecutive patients we have not observed hemodynamic or ventilation complications during the collapse of the left lung although it required expert anesthetic management. All our patients have been extubated in the operating room. Convalescence has been satisfactory without complications unless an episode of postoperative atrial fibrillation.

Finally, we have observed acute and chronic left ventricular pacing thresholds similar to those in the Mair et al. study [1] which are significantly lower to the coronary sinus leads.

From our point of view, the article of Mair et al. [1] as well as other reports [5] have demonstrated that surgical epicardial implantation of left ventricular leads—either with minithoracotomy, video-assisted or robotic-assisted [1,2,5]—is more reliable than the percutaneous coronary sinus approach, allows the best possible lead position and therefore should be considered the technique...
of choice for left ventricular pacing in cardiac resynchronization.

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doi:10.1016/j.ejcts.2005.03.027

Reply to the Letter to the Editor

Reply to Garcia-Bengochea et al.

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Received 21 March 2005; accepted 22 March 2005

Keywords: Surgically placed epicardial LV-lead; Cardiac resynchronization therapy; Doppler echocardiography; Medtronic 10626 Lead Implantation Tool

I agree with Dr Garcia-Bengochea [1] that Doppler echocardiography is important in management of patients referred to cardiac resynchronization therapy (CRT) and indeed QRS duration alone is only weakly correlated to CRT response and cardiac improvement. Optimal lead positioning is one of the most important tasks in CRT and Doppler echocardiography may help to reduce nonresponders or prevent from a worsening effect of biventricular pacing: e.g. a proarhythmogenic effect may occur due to incorrect lead positioning and consecutive interventricular dysynchrony.

Personally, I am a fan of video-assisted or robotic approaches in CRT [2], but these techniques are sometimes time- and money-consuming. Therefore, cost-effectiveness may be an important restrictor in adoption and widespread of these techniques. Single lung ventilation with double lumen tube is mandatory; with careful monitoring it will be well tolerated even in presence of severe congestive heart failure. Nevertheless, most colleagues prefer a minithoracotomy using the Medtronic 10626 Lead Implantation Tool for the Medtronic 5071 Epicardial Pacing Lead. However, the 5071 lead faces some drawbacks: it is not steroid eluting and it is only an unipolar lead. Further advances and new prototypes for next generation of epicardial leads are already in clinical testing.

References


Letter to the Editor

Simultaneous repair of post-infarct ventricular septal defect and coronary artery bypass grafting

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Received 1 March 2005; accepted 30 March 2005

Keywords: Myocardial infarction; Ventricular septal defect; Coronary artery bypass grafting; Mid-term survival

We enjoyed reading the recently published article by Jeppsson and colleagues [1], which examined the national results in Sweden for surgical repair of post-infarct ventricular septal defects (VSD). They correctly concluded that the long-term survival of these patients was limited by pre-existing coronary artery disease (CAD), postoperative renal failure, and the presence of a residual post-operative shunt. Interestingly, Jeppsson showed that the risk of death increased with the number of coronary anastomoses performed and concluded from this that this was a reflection of the extent of CAD. However, their conclusions on the potential benefits of performing concomitant coronary artery bypass grafting (CABG) were inconclusive.

In our own series of post-infarct VSD patients within the northwest of England [2], we concluded that concomitant CABG offered a significant benefit with respect to mid-term mortality. Although our series of 65 patients was smaller than the 189 patients in Jeppsson’s series [1], we found that after adjusting for other risk factors for mid-term mortality (unstable angina (class IV), current smoking, and total occlusion of the infarct related artery), patients with concomitant CABG had a substantial reduced risk of death.