renal failure were not reduced in off-pump coronary artery bypass surgery. But, the atrial fibrillation was reduced significantly by eliminating CPB [2]. We should emphasize that until recent years generally selected patients underwent OPCAB. With growing surgical experience, indication for OPCAB has been changing over the last few years and patients with multi-vessel grafts and more severely diseased vessels can now be a candidate for OPCAB. Therefore, patient selection is the most important weakness in the studies comparing OPCAB and conventional coronary artery bypass grafting (CCABG) surgery.

Again we agree with Dr Raja that prospective double-blinded randomized clinical trials (RCTs) have been allotted the highest level of evidence [3]. But, it is also difficult to design prospective double-blind randomized clinical trials concerning OPCAB and CCABG surgery due to the preference of surgeon and indication of surgical methods. Therefore, although there are some inherent weaknesses in retrospective studies which are well known, we should not ignore the results of well-designed retrospective randomized studies concerning OPCAB and CCABG surgery.

In our retrospective study [4], we tried to compare the patients with similar peroperative variables. The selection of the patients with single vessel disease can help us to standardize the patients. Moreover, the patients with single vessel disease could be easily randomized. On the other hand, the results do not suffice to exclude a possible advantage of OPCABs in patients receiving multiple bypasses. But nowadays, it is still difficult to randomize the patients when you design a randomized study to compare the patients with diffusely diseased multiple vessels. When double-blind randomization is possible with growing experience, the point under consideration will be answered. Until this time, a large-scale multi-center well-designed retrospective RCT of OPCAB versus CCABG may help us to answer the question of whether OPCAB reduces the incidence of post-operative AF.

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**Letter to the Editor**

**Choice of mechanical support for fulminant myocarditis: ECMO vs. VAD?**

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Received 15 December 2004; accepted 21 January 2005; Available online 26 February 2005

**Keywords:** Fulminant myocarditis; VAD; ECMO

The article by Grinda and colleagues in the December 2004 issue of the European Journal of Cardiothoracic Surgery regarding the experience of ventricular assist device (VAD) support on fulminant myocarditis (FM) [1] deserves our respect and we congratulate their excellent results.

From 1995 to 2001, we used extracorporeal membrane oxygenation (ECMO) in our institute as first-line mechanical support to treat 15 patients of FM with shock, including 5 under external cardio-pulmonary resuscitation (CPR) and 10 with high-degree atrio-ventricular block. Our results revealed 93.3% (14/15) in successful weaning rate and 73.3% (11/15) in discharge survival rate [2,3]. The average ECMO support time was 129±50 h (127±83 h for the survivors). As compared with the article [1] and another study regarding ABIOMED use for FM [2], ECMO group had lower morbidity rate than VAD group: mechanical related thrombo-embolism was 6.7% in ECMO group [3] and 40-27.3% in VAD group [1,2]; re-exploration for hemostasis was 20% in ECMO group [3] and 45.5% in VAD group [2].

We would like to mention the following points for the mechanical support for FM. First, since FM tends to recover within 2 weeks [4], ECMO is an appropriate option for this relatively short duration. ECMO is easier to wean off than VAD, and ECMO can be converted to VAD at any time if necessary. Secondly, biventricular involvement is common in FM (over 70% with right heart involvement as reported [4]), therefore ECMO might be a suitable choice for FM in critical condition because the degree of right heart failure cannot be predicted accurately. Therefore, we agree the authors’ protocol of using BiVAD. Third, the support duration to recovery was shorter in ECMO group than in VAD group (5.5±3.0 days in ECMO group [3] vs. 10.2±6.1 days for BiVAD group [1] and 10.0±5.3 days for ABIOMED group [2]). This indicated that the theoretically incomplete decompression of left ventricle (LV) in ECMO group did not negatively influence the recovery of LV in FM. Fourth, daily troponin level was found as a good indicator for myocardial recovery in weaning of ECMO [3], but it cannot be applied in VAD group.

The final solution of the best choice of mechanical support for FM still awaits further evidence-based studies.
our first choice is to assist fulminant myocarditis with
of the left ventricle as a condition for rapid recovery, so
post-operative day 7. We consider an efficient unloading
from the BIVAD with a complete recovery (FEVG 60%) on
932
30%). The patient was weaned
30%). The patient was weaned
days 2 (FEVG
unloading of the left cavities with a recovery on post-
with a flow of about 2 l, we obtained a complete
incomplete left ventricular unloading and a severe liver
dysfunction. In spontaneous contrast in the left ventricle due to an
oagulation and a severe hemolysis. The ETT showed
an intractable hemorrhage due to the level of antic-
medical support should be considered first? J Heart Lung Transplant 2005;
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1617-26.

Reply to the Letter to the Editor

Reply to Chen and Yu

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Received 21 January 2005; accepted 21 January 2005; Available online 26 February 2005

Keywords: Cardiogenic shock; Cardiac assist device; Fulminant myocarditis

I thank Dr Chen for his response, and I agree with him that the choice of the device is still debated [1].

ECMO, or ECLS has many advantages (rapid peripheral technique of insertion, easy weaning), but many inconve-
niences, among them the incomplete unloading of the left
ventricle.

As reported in the paper, we had a case of fulminant
myocarditis in a 5-year-old, 20 kg, child. This patient had an
ECMO previously inserted in another institution, with a
mean flow of 1.8 l/min. But after 3 days, he presented with
an intractable hemorrhage due to the level of anti-
ocagulation and a severe hemolysis. The ETT showed
spontaneous contrast in the left ventricle due to an
incomplete left ventricular unloading and a severe liver
dysfunction.

So we switched for a BIVAD (Medos HIA-VAD) and,
with a flow of about 2 l, we obtained a complete
unloading of the left cavities with a recovery on post-
operative days 2 (FEVG —30%). The patient was weaned
from the BIVAD with a complete recovery (FEVG 60%)
on post-operative day 7. We consider an efficient unloading
of the left ventricle as a condition for rapid recovery, so
our first choice is to assist fulminant myocarditis with
BIVAD.

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doi:10.1016/j.ejcts.2005.01.042

Letter to the Editor

Clinical and morphologic evidence points to closure of the zone of apposition in atrioventricular septal defects

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Received 3 December 2004; accepted 24 January 2005; Available online 24 February 2005

Keywords: Congenital heart disease; Valve disease; Atrioventricular septal defect; Cardiac morphology

We read with interest the article published by Al-Hay and
colleagues [1]. They report commendable results for the repair of partial AVSD with separate orifices over 21 years. The conclusion that the hypothesis that the ‘cleft’ or zone of apposition (ZoA) in the left atrioventricular (AV) valve should always be closed, is not proven. We think they go far too far in making their conclusion. Further, we must challenge some of the observations made in the light of our own observations and other’s experiences of the management of the left AV valve in partial AVSD.

The design of their study cannot allow them to ‘test a hypothesis’. The study is retrospective and observational, with no randomisation or predefined primary measures of outcome. The study groups they report are unequal and not contemporaneous. One could, just as reasonably, argue that any difference could have occurred by chance.

One may also reasonably conclude that those in whom the ZoA was left open were also those in whom the surgeon, at the time, felt had the least dysplastic and more morphologically robust valve. This is an intangible judgement that cannot be measured retrospectively, but may confound any subsequent conclusions drawn about the outcome.

Time and experience are showing that the ZoA between the bridging leaflets is not, and cannot, be managed as a simple commissure, and that the left AV valve falls morphologically short of the ‘gold-standards’ set by its mitral counterpart. We have observed, in morphological specimens in the archives of specimens held at Great Ormond Street, Pittsburgh and Boston museums (report in preparation [2]), that the left AV valve in atrioventricular septal defects is deficient in terms of coaptation of the leaflets and sub-valvar cordal support, with the morphology of the left AV valve in the variants with separate orifices, the very subject of the report by Al-Hay and colleagues [1], lying at the most extreme and adverse end of this sub-valvar deficiency.

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doi:10.1016/j.ejcts.2005.01.041