

Hotline Editorial

Pregnant again after peripartum cardiomyopathy: to be or not to be?

Peripartum cardiomyopathy is a form of heart failure caused by depression of left ventricular systolic function that occurs in healthy women during pregnancy or within a few months postpartum and can have devastating consequences, both physically and mentally^[1]. Although this condition may deteriorate and result in a need for heart transplantation or even death, the majority of patients demonstrate a significant recovery of symptoms and cardiac function within a few months after delivery^[2]. One of the most common issues for women surviving an episode of peripartum cardiomyopathy is whether it is safe to become pregnant again. Because of the rarity of this condition (approximately 1:10 000 deliveries in the United States), reports on peripartum cardiomyopathy have been limited to either single cases or a small number of patients. For this reason, it is not surprising that a position paper published in 2000 following a National Heart, Lung and Blood Institute workshop on peripartum cardiomyopathy in 1997, could not provide a consensus regarding recommendations for future pregnancy after peripartum cardiomyopathy^[3].

We recently conducted a survey among the members of the American College of Cardiology in the United States and one hospital in South Africa and were able to determine the outcome of 60 subsequent pregnancies in 44 women with a history of peripartum cardiomyopathy^[4]. Twenty-eight of these patients normalized their left ventricular systolic function prior to their additional pregnancy (group 1), and 16 women had persistent left ventricular dysfunction (group 2). First subsequent pregnancy was associated with a significant decrease in left ventricular ejection fraction, which was seen, in the study population as a whole as well as in each group (Fig. 1). During the first subsequent pregnancy, 21% of group 1 women and 44% of group 2 women developed symptoms of heart failure (Fig. 2). Twenty-one percent of group 1 and 25% of group 2 had a >20% decrease in left ventricular ejection fraction either during their subsequent pregnancy or during the early postpartum period. Decreased cardiac function either persisted or developed late and

was found at the last follow-up at the average of 6 years post subsequent pregnancy in 14% of group 1 patients and 31% of group 2 patients. While no mortality was reported in group 1 patients, 19% of all women in group 2 and 25% of those who did not have an abortion died after the first subsequent pregnancy. Among 35 women who had non-aborted subsequent pregnancy, 14 delivered by a caesarean section and 21 had a vaginal delivery. Incidence of unfavourable fetal outcome (Fig. 3) was higher in group 2 patients, with premature delivery in 50% of the women (vs 13% in Group 1) and therapeutic abortion in 25% of the cases (vs 4% in group 1).

The results of this study have confirmed findings obtained by us several years ago in a previous, preliminary survey^[5]. That survey, which relied on questionnaires filled out by physicians rather than by review of actual patients' records, provided data on 67 subsequent pregnancies in 63 women with a history of peripartum cardiomyopathy and revealed similar results. The information obtained by these two investigations clearly demonstrates that subsequent pregnancy in patients with peripartum cardiomyopathy is associated with a significant effect on both maternal and fetal outcome. Such pregnancies may be associated with recurrent left ventricular dysfunction and clinical deterioration in the mother, and even death. The incidence of these complications is higher in women with persistent left ventricular dysfunction, and in addition, there is an increased rate of fetal prematurity and fetal loss due to either spontaneous or therapeutic abortion in the latter group of patients. Although the likelihood of maternal death seems to be very low in women with recovered left ventricular function before their subsequent pregnancy, a substantial and at times, persistent reduction in left ventricular ejection fraction and symptomatic heart failure may occur during subsequent pregnancy even in such cases (Table 1).

The mechanism of recurrent symptomatic heart failure in patients with a history of peripartum cardiomyopathy and recovered left ventricular function has been attributed to a significant physiological increase in blood volume, stroke volume and heart

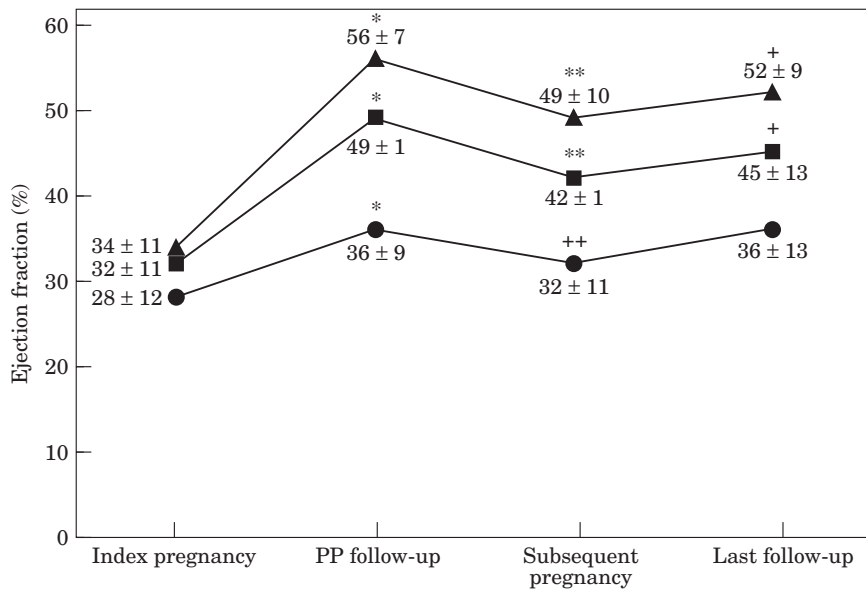


Figure 1 Mean left ventricular ejection fraction during index pregnancy (time of diagnosis), at postpartum (PP) follow-up, during the first subsequent pregnancy and at the last follow-up at a mean of 6 years after subsequent pregnancy. Group 1=women with left ventricular ejection fraction $\geq 50\%$ prior to subsequent pregnancy; group 2=left ventricular ejection fraction $< 50\%$; * $P < 0.05$ vs index pregnancy; ** $P < 0.05$ vs PP follow-up; † $P = 0.06$ vs subsequent pregnancy; †† $P = 0.08$ vs PP follow-up. ■ = All women; ▲ = group 1; ● = group 2.

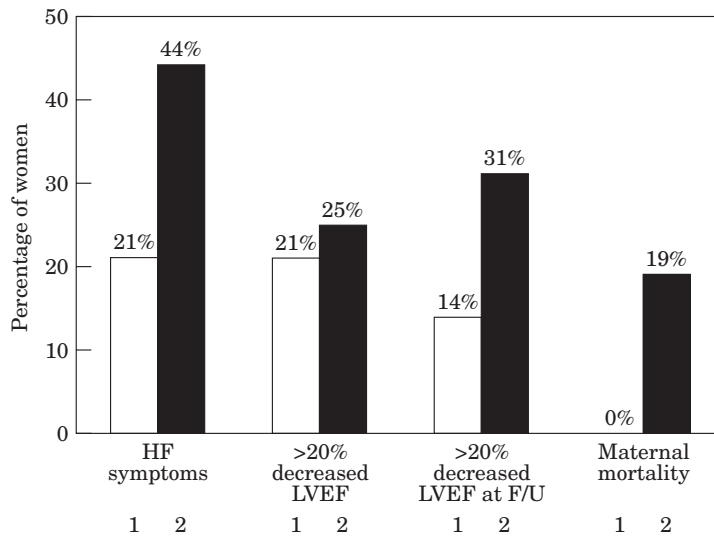


Figure 2 Maternal complications associated with subsequent pregnancy in patients with peripartum cardiomyopathy. HF=heart failure; LVEF=left ventricular ejection fraction; F/U=last follow-up post subsequent pregnancy. Group 1=women with left ventricular ejection fraction $\geq 50\%$ prior to subsequent pregnancy; group 2=left ventricular ejection fraction $< 50\%$.

rate during pregnancy^[6]. These haemodynamic changes are expected to cause symptomatic deterioration in patients with persistent unmasked subclinical myocardial dysfunction, which may exist even in patients who seem to recover their left ventricular

function^[7]. At the same time, however, the findings of a significant and in some patients, striking depression in left ventricular function associated with subsequent pregnancy suggests that worsening of symptoms are also due to reactivation of the underlying idiopathic

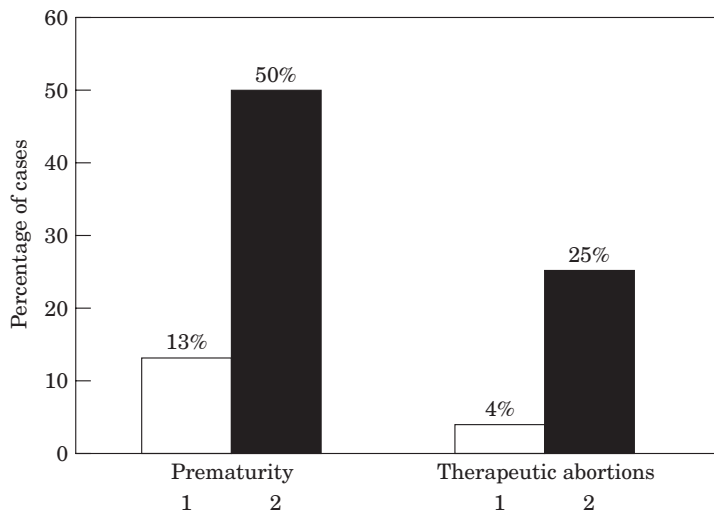


Figure 3 Fetal complications associated with subsequent pregnancy in patients with peripartum cardiomyopathy. Group 1=women with left ventricular ejection fraction $\geq 50\%$ prior to subsequent pregnancy; group 2=left ventricular ejection fraction $< 50\%$.

Table 1 Effect of subsequent pregnancy on changes in left ventricular ejection fraction in 10 group 1 patients who had $> 20\%$ reduction during subsequent pregnancy†

Patient no.	Index pregnancy	Postpartum follow-up	Subsequent pregnancy	Last follow-up
1	40	50	40	50
2	7	50	32	46
3	45	60	19	50
4	43	65	47	58
5	40	67	50	50
6	34	50	50	50
7	25	70	65	43
8	30	55	50	40
9	30	55	40	40
10	44	59	35	20
Mean	34 ± 12	$58 \pm 7^*$	$43 \pm 13^{**}$	$45 \pm 10^{**}$

*= $P < 0.01$ vs index pregnancy; **= $P < 0.01$ vs postpartum follow-up; †=out of a total of 41 subsequent pregnancies, 28 first and 13 additional.

process responsible for the development of the cardiomyopathy in previous pregnancy.

What should be the recommendations for a woman with a history of peripartum cardiomyopathy who wishes to become pregnant again? The available data suggest a high risk in peripartum cardiomyopathy patients with persistent left ventricular dysfunction that warrants strong considerations to avoid additional pregnancies. These patients should also be informed of the potential unfavourable effect on fetal outcome due to the increased rate of prematurity and possible need for therapeutic abortion. Pre-conception counselling in a patient with recovered left ventricular function is more difficult. The results of

our study clearly show that subsequent pregnancies in such patients can be associated with an important and persistent fall in left ventricular function and clinical deterioration. At the same time, however, mortality was reported in none of 40 pregnancies in such women in the present study and in one of 43 pregnancies in our previous survey^[5]. These results suggest a low likelihood of mortality as a result of subsequent pregnancies in peripartum cardiomyopathy women with recovered left ventricular function. Persistent reduction in left ventricular ejection fraction after subsequent pregnancy seen in some of these patients may, however, lead to late complications not evidenced in our study because of its limited duration of follow up. Since the decision to have additional pregnancies should be made by the patient and her family, this information should be useful in arriving at such a decision in women with a history of peripartum cardiomyopathy who desire subsequent pregnancies.

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