



The Role of a Single Serum Progesterone Level in Predicting the Success Rate of Expectant Management in Women with Miscarriage

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Introduction: Miscarriages can occur in 1 in 5 pregnancies. These women are offered expectant, medical and surgical options for the management. At times, it may be very difficult for women to choose, especially when they have presented very early, do not prefer any intervention but are concerned regarding the uncertainty associated with the expectant management, given its 50% chance of success.

Aims: The aim of this study was to determine the feasibility of using a single serum progesterone level in the predicting the success rate of expectant management in women with early miscarriage.

Methods: We looked into the serum progesterone levels in women who initially presented with a pregnancy of unknown location (PUL) and subsequently were diagnosed with a miscarriage from December 2021 to July 2022 in KK Women's and Children's hospital, a tertiary centre in Singapore and studied their outcomes.

Results: A total of 145 women presented with PUL during the study period. Of these, 86 women were subsequently diagnosed with a miscarriage.

In this group of women, the age range was 21 to 43 years and the mean age at presentation was 32 years. Over half of them (n=46, 53.5%) were nulliparous.

Their serum progesterone levels at presentation ranged from 1.6 to 114.9 nmol/L. The mean serum progesterone level was 12.95 nmol/L. Majority of women (n=55, 63.9%) had a serum progesterone

level under 5 nmol/L. The levels were <10 nmol/L in 68.6% (n=59), <20 nmol/L in 81.1% (n=70), <30 nmol/L in 83.7% (n=72) and <35 nmol/L in 86% (n=74). The serum progesterone levels were over 30 nmol/L in only 16.3% (n=14) of women.

Of these 86 women, 93% (n=80) miscarried spontaneously. Of note, all women who had a serum progesterone level <30 nmol/L miscarried spontaneously. Surgical evacuation was performed in two women and medical management was offered to four women. The lowest serum progesterone level in this group that required a surgical intervention was 31.5 nmol/L.

Discussion: A serum progesterone level of <20 nmol/L has been known to be linked to a higher risk of failing pregnancy.¹ In our study, about 4 in 5 women with miscarriage (83.7%) had a serum progesterone level <20 nmol/L.

A serum progesterone level of <35 nmol/L has shown to be prognostic of spontaneous miscarriage in women who present with threatened miscarriage in early pregnancy.² In our study, 74 women had serum progesterone levels <35 nmol/L. Of these, 98.8% (n=73) of women had a spontaneous miscarriage. Our findings are in keeping with the other studies published in the literature.³

Conclusion: This study shows that a single serum progesterone level of less than 30nmol/L in women with an early miscarriage could help to predict the success rate of conservative management and enable them to make an informed choice regarding their management.

Table1: Serum progesterone levels (nmol/L) in women with miscarriage (n = 86)

Serum progesterone	< 5	5-10	10-20	20-30	>30
n, %	55, 63.9%	4, 4.6%	11, 12.8%	2, 2.3%	14, 16.3%
Cumulative serum progesterone	< 5	< 10	< 20	< 30	> 30
n, %	55, 63.9%	59, 68.6%	70, 81.4%	72, 83.7%	14, 16.3%

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