

'Forbidden points' in pregnancy: no plausible mechanism for risk

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It has been suggested that acupuncture may pose particular risks during pregnancy: by enhancing oxygenation to the developing embryo (presumably via increasing blood flow to the uterus); by affecting the level of maternal progesterone in early pregnancy; or by stimulating uterine contractions. This article examines the proposed risks and fails to find any plausible physiological mechanism for them.

The previous two debate articles tackled the thorny subject of 'forbidden points' in pregnancy.^{1,2} The subject has been discussed before in the pages of this journal, however, it continues to remain unresolved.^{3,4}

Rare treatment-related adverse events are difficult to study, and are generally recorded in the literature as case reports. The incidence of such events can only be reliably estimated in prospective surveys, and some large studies have been performed in acupuncture,^{5,6} but not in the use of acupuncture in pregnancy. Furthermore, the fact that 'forbidden points' are described means that any prospective survey of acupuncture in pregnancy is unlikely to include frequent use of such points, since they would be avoided by many practitioners in routine practice. So in this field we appear to be left with an absence of reports that clearly describe adverse events, laboratory studies on pregnant animals and theoretical considerations.

Guerreiro da Silva *et al*¹ describe both human and animal studies involving 'forbidden points' in various stages of pregnancy, and it seems that unwanted adverse effects have not been found. The same authors have also performed an experimental study recently. They found no evidence that acupuncture in LI4, SP6 and sacral points could be harmful to the pregnancy outcome in Wistar rats.⁷

Betts and Budd,² argue that acupuncturists should take account of historical wisdom, and they suggest three possible physiological mechanisms through which acupuncture may adversely affect pregnancy. While we

should be careful not to dismiss genuine clinical experience, adherence to all historical wisdom would preclude progress in medical science; however, a good physiological argument concerning plausible mechanisms of risk is certainly worth considering.

Early development of the human embryo occurs in a low oxygen environment, so Betts and Budd point out that if acupuncture can enhance oxygenation (presumably through increased blood flow) to the uterus, it may have an adverse effect. A decrease in uterine artery impedance (from an abnormally high level) in infertile women was first demonstrated by Stener-Victorin and colleagues⁸ using segmental electroacupuncture (EA). She also found that ovarian blood flow could be increased in rats with steroid-induced polycystic ovaries (a model for polycystic ovarian syndrome) using segmental EA at low (2 Hz burst) or medium (10 Hz) frequencies.^{9,10} Increases in testicular blood flow have also been measured following abdominal EA at 10 Hz in healthy subjects by Cakmak and colleagues.¹¹ Other researchers have also noted increased blood flow in the uterus and other organs.¹²⁻¹⁴ In several of these studies, blood flow many have been below normal at baseline due to excess sympathetic nerve activity to the organs. In any event, it seems possible that segmental EA could increase blood flow to the uterus in early pregnancy, but would this increase oxygen tension around a developing embryo? According to a review by Burton,¹⁵ it seems likely that the partial pressure of oxygen in the fluid surrounding the 7-10 week embryo is maintained at a

low level as a result of plugs of invading trophoblast in the tips of the spiral arteries of the placenta and a lack of any oxygen carrier in the fluid. If this is the case, then the developing embryo is protected from potentially teratogenic reactive oxygen species by trophoblast activity, and blood flow to the uterus (where the oxygen tension in the placenta is the same as adult skeletal muscle)¹⁵ is unlikely to have any influence on this.

The second theoretical risk proposed by Betts and Budd concerns progesterone levels in early pregnancy. Progesterone is produced by the corpus luteum until the placenta takes over production by about the 12th week of gestation.¹⁶ Insufficient levels of progesterone have been implicated in early pregnancy loss.¹⁷ So is it possible that acupuncture could adversely affect progesterone levels and promote pregnancy loss? Progesterone production from the corpus luteum in early pregnancy is stimulated by β HCG released from developing trophoblast.¹⁶ The effect of acupuncture on hormone levels appears to be mediated via the hypothalamus and pituitary gland. Rises in adrenocorticotrophic hormone have been observed, but the clinical relevance remains unclear.¹⁸ Gonadotropin-releasing hormone may also be influenced by acupuncture via the hypothalamus, but this would not result in a decrease in progesterone. Indeed, on searching PubMed I found no studies that suggest acupuncture can reduce progesterone levels, and most studies seem to demonstrate either no effect or a normalising effect on levels of other hormones.¹⁹⁻²²

Finally, Betts and Budd refer to the potential of acupuncture to induce uterine contractions. Somatovisceral reflexes initiated through acupuncture stimulation have been studied extensively,²³⁻²⁵ and there certainly seems to be the potential to modify visceral function.²⁶ Uterine contractions may have been initiated by acupuncture at term, although the systematic review data on inducing labour with acupuncture is inconclusive,²⁷ and the recent randomised controlled trials

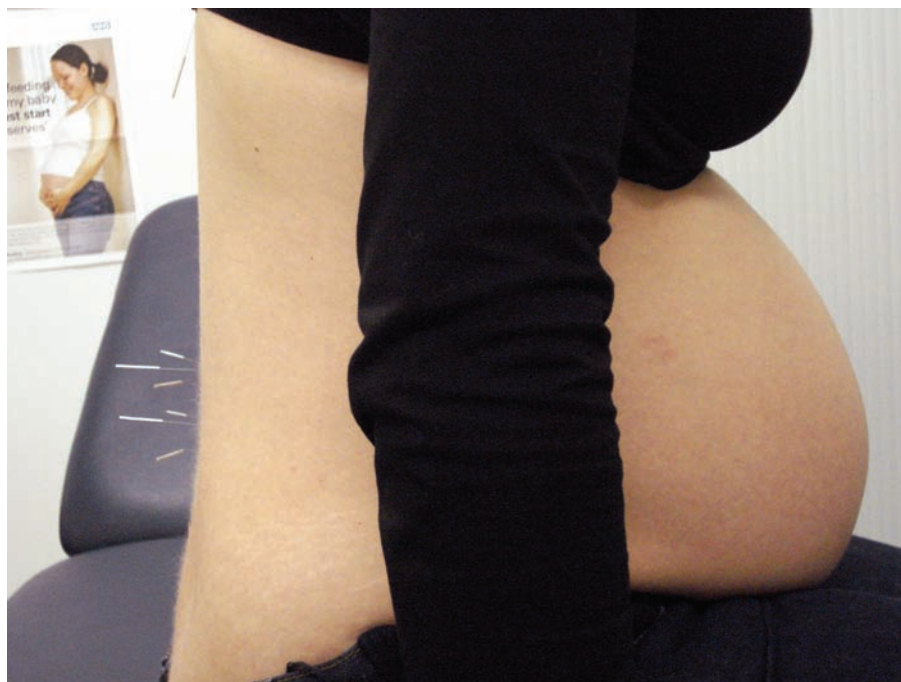


Figure 1 This image shows a woman in the later stages of pregnancy receiving acupuncture treatment for back pain.

seem consistently negative.^{28–30} A case series (n=60) describing both induction and inhibition of labour reported beneficial effects in most cases, that is, induction of labour at term, and inhibition of preterm labour.³¹ Midterm abortion was attempted in seven cases within this series—while uterine contractions were reported, all cases failed to progress with acupuncture, and went on to require prostaglandins the following day. Laboratory studies suggest that acupuncture at LI4 and SP6 tends to result in a reduction in oxytocin-stimulated uterine contractions in pregnant rats.^{32–34} In conclusion, while it does seem possible for acupuncture to influence uterine activity, there is no indication that the effect would be deleterious.

It is wise to be cautious of using potentially unhelpful interventions in areas of uncertainty; however, pregnant women seem to have particularly limited options for treatment of symptoms or other conditions in contemporary practice (see Figure 1), because of concerns about teratogenicity, such as occurred in the late 1950s with the sedative drug thalidomide. If we allow ourselves to be restricted in our practice without evidence of harm or plausible theoretical

risk, ‘just in case’ there could be a problem, I believe we are doing a disservice to our patients.

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