time to definitive management extends beyond >90 days. Our model included any injury diagnosed within 90 days, even if treatment extended further. Selli et al[2] reported delayed ureteral injuries with laparoscopic gynecologic procedures, all of which were diagnosed 15−20 days postoperatively; Morrow et al[3] reported a median time to diagnosis of 16 days after intraoperatively unrecognized injury. Those diagnosed at >90 days comprise such a minute proportion that they would likely not impact outcomes.

Although it is customary to include facility, anesthesia, and hospitalization fees in total costs, it is acceptable to exclude costs that are common between strategies. We believe that differential costs by strategy, which includes the cost of injury diagnosis/treatment and additional hospital days when prolonged stay was required, were appropriately modelled.

The letter accurately notes that we did not thoroughly describe our methods for the risk required for selective cystoscopy. Indeed, we struggled with the level of detail for the article. We used a "suspicion multiplier" that was arbitrarily set initially to 2. In a hypothetical population with 10% injury rate, the high-risk group has injury rate 10%×2=20%, and the low-risk group has 10%/2=5%. However, with equal groups, this averages to 12.5%, not 10%, which necessitates adjustment in group proportions. The high-risk group proportion is 1/(1+suspicion multiplier), and the rest are low-risk. Different values for the suspicion multiplier that was assessed in the sensitivity analyses did not impact conclusions. As the suspicion multiplier increases, there are fewer people in the high-risk group, which we feel mirrors clinical practice.

We omitted this lengthy description from the article, fearing it might obscure our message that any suspicion of injury is sufficient to prompt intraoperative cystoscopy. The threshold for selective cystoscopy should be low, and selective cystoscopy even at a low threshold may be cost-saving.

The letter's authors, like us, are subspecialists in female pelvic medicine and reconstructive surgery and favor routine cystoscopy. We carry a similar bias, because it is the standard of care for pelvic floor disorder procedures. However, our results show that selective cystoscopy with a low threshold was the better alternative for benign hysterectomy without concomitant procedures. ■

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Uterine and fetal placental Doppler indices are associated with maternal cardiovascular function

Check for updates

TO THE EDITORS: In their recent paper, Tay et al[1] assert that uterine and fetal placental Doppler indices are significantly associated with measures of maternal cardiovascular function, and go on to state that classic descriptions of uterine and fetal Doppler changes being initiated by placental maldevelopment are a "less plausible explanation" for the pathogenesis of preeclampsia and fetal growth restriction (FGR) than are maternal cardiovascular changes.[1] This conclusion is not supported by the findings described in the paper. Furthermore, their hypothesis fails when applied to pregnancies characterized by high rates of preeclampsia, such as molar pregnancy or trisomy 13, or the case of twin pregnancies with discordance for fetal growth restriction and preeclampsia. We[2] and others[3] have described cases where selective feticide of the FGR-affected twin has led to resolution of preeclampsia in a short timeframe. The uterine environment and cardiovascular performance for both twins were clearly identical, yet elimination of the putative morbid placenta resolved the clinical syndrome.[2,3] Another example along the same lines, hinting at the importance of the fetus in the development of preeclampsia, comes from a randomized controlled trial published just recently in *The Lancet*,[4] which described higher rates of preeclampsia in pregnancies achieved with

frozen vs fresh embryo transfers (16/512 [3.1%] vs 4/401 [1.0%]; relative risk 3.13, 95% confidence interval 1.06−9.30, $P = .029$), where the only important difference between the groups was the preparation of the embryos.

Close examination of the data presented in Tay et al[1] as regards maternal cardiovascular functional parameters shows that their findings are at odds with other studies, including from their group[5]: while they describe a state of increased cardiac output (CO) and decreased peripheral vascular resistance (PVR) in cases with preeclampsia, Foo et al[5] described decreased CO and increased PVR, ie, there is no consensus whether preeclampsia is a hyper- or hypo-dynamic state. Moreover, Tay et al[1] show that compared to control pregnancies, CO was increased in "pure" preeclampsia (without FGR), but decreased in FGR alone or with preeclampsia, and PVR was reduced in "pure" preeclampsia and increased in FGR alone or with preeclampsia. This shows a lack of continuum among these degrees of severity of the clinical presentation. It would appear that we are looking at a group of disorders that are characterized by similar clinical presentation but different pathophysiology; mixing them in epidemiological studies produces confusing results.

Taken together with decades-long research into the placental origins of preeclampsia, it would appear that although maternal cardiac adaptation has an important place in the development of the clinical syndrome, there is significant heterogeneity in preeclampsia, as recently described by Benton et al.[6] The investigators found that the clinical heterogeneity of preeclampsia correlates with both gene expression and placental histopathology.[6]

Therefore, future studies on the role of fetal/placental vs maternal cardiovascular factors in the development of preeclampsia should be multicenter, multidisciplinary endeavors with sufficiently large numbers to allow cogent subgroup analysis, in order to reach valid conclusions regarding the pathophysiology of preeclamptic disorders of pregnancy, with or without FGR. ■

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UTERINE AND FETAL PLACENTAL DOPPLER INDICES ARE ASSOCIATED WITH MATERNAL CARDIOVASCULAR FUNCTION: REPLY

TO THE EDITORS: We thank Professor Yagel for his observations. We report that uterine and fetal Doppler indices are associated with maternal cardiovascular function,[1] and have previously found that cardiovascular function prior to pregnancy in healthy women is associated with the development of preeclampsia or fetal growth restriction.[2] Although we do not discount a role for the placenta in these pathological processes, the question is whether cardiovascular function or placental maldevelopment initiates them.

There are few or no data on maternal cardiovascular dysfunction in trisomic, triploid, and twin pregnancies in relation to preeclampsia. In these cases, one might hypothesize that a very abnormal placenta could indeed influence maternal cardiovascular function, in turn leading to perturbations that then drive fetal vascular responses. The theories are not mutually exclusive.

Hence we suggest that it is not a case of "fetal/placental vs maternal cardiovascular factors" as Professor Yagel suggests, but rather "fetal/placental AND cardiovascular factors." Although no one would disagree with the concept of more multicenter, multidisciplinary studies, Professor Yagel does not expand on which questions would be answered by them, and his suggestion should not diminish the value of carefully phenotyped cohort studies designed to answer basic mechanistic questions. ■

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