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Mini-commentary on BJOG-20-0380.R2: Effect of single- versus double-layer uterine closure during caesarean section on postmenstrual spotting (2Close): multicentre, double-blind, randomised controlled superiority trial

Too close to call: Uterine closure technique at caesarean section

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As caesarean section rates around the world rise, attention has begun to turn to the impact of variations in surgical technique, particularly their effect on post-operative recovery and risk of future complications. A common surgical variation is either a single- or double-layer uterine closure. When assessing immediate and short-term outcomes both methods appear similarly effective (Dodd et al. *Cochrane Database Syst Rev.* 2014 Jul 22;(7):CD004732.). The analysis of longer-term sequelae for women following caesarean section may provide a more nuanced understanding of the impacts of varying surgical techniques to better inform whether there is an optimal method for uterine closure.

In this issue, Stegwee et al. report results from the 2Close study: a randomised trial exploring single-layer versus double-layer uterine closure and the relationship to gynaecological

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outcomes, primarily postmenstrual spotting 9 months postpartum (BJOG 2020 xxxx). Secondary analysis included prevalence and size of niche formation, operative time, treatment for gynaecological issues, and impact on general health, social and sexual function. Their previously published meta-analysis suggested improved residual myometrial thickness and reduced rates of niche formation following double-layer uterine closure (Stegwee et al. *BJOG* 2018 Aug;125(9):1097-1108), and a prospective cohort study suggested increased prevalence of menstrual disturbance for women with a uterine niche at 3 months postpartum (van der Voet et al. *BJOG* 2014 Jan;121(2):236-44). Based on these studies, the 2Close study's hypothesis that double-layer closure would be superior was a logical extension.

Interestingly, the results presented in this study contrast to their previous work. Whilst no significant difference in their primary outcome of post-menstrual spotting was observed, the secondary outcomes revealed some interesting findings. Increased prevalence of niche formation is noted in the double-layer closure group, however residual myometrial thickness is not different between the two closure groups. The implication is that double-layer closure may result in small niches that do not significantly impact residual myometrial thickness or gynaecological symptoms; it will be interesting to explore this further in long term analysis.

Conflicting evidence around optimal surgical technique is reflected in the study protocol – the single-layer closure arm was open to surgeon preference regarding endometrial inclusion due to inconclusive evidence. This may have influenced the rates of niche formation observed, since single-layer closure with exclusion of endometrium had a significantly reduced niche prevalence. All women in the double-layer closure cohort had endometrium included. The influence of endometrial inclusion on subsequent niche formation and morbidity should be explored in future research. As Stegwee et al. allude (BJOG 2020 xxxx), single-layer closure is the standard closure for the majority of surgeons involved, raising the potential that differing outcomes in the 2Close study compared to previous work is influenced by the familiarity of surgeons with the single-layer technique.

Given no evidence to support one surgical technique over another, advice from the CORONIS Trial (Abalos et al. *Lancet* 2013 Jul 20;382(9888):234-48) perhaps remains the most relevant today – namely that either technique is acceptable, but that longer term follow up is key to

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understanding their impact. To this end, we look forward to the 3-year follow-up outcomes from the 2Close study.

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