

Vaginal birth after two caesarean sections (VBAC-2)—a systematic review with meta-analysis of success rate and adverse outcomes of VBAC-2 versus VBAC-1 and repeat (third) caesarean sections

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Background Trial of vaginal birth after Caesarean (VBAC) is considered acceptable after one caesarean section (CS), however, women wishing to have trial after two CS are generally not allowed or counselled appropriately of efficacy and complications.

Objective To perform a systematic review of literature on success rate of vaginal birth after two caesarean sections (VBAC-2) and associated adverse maternal and fetal outcomes; and compare with commonly accepted VBAC-1 and the alternative option of repeat third CS (RCS).

Search strategy We searched MEDLINE, EMBASE, CINAHL, Cochrane Library, Current Controlled Trials, HMC Database, Grey Literature Databases (SIGLE, Biomed Central), using search terms Caesarean section, caesarian, C*rean, C*rian, and MeSH headings 'Vaginal birth after caesarean section', combined with second search string two, twice, second, multiple.

Selection criteria No randomised studies were available, case series or cohort studies were assessed for quality (STROBE), 20/23 available studies included.

Data collection and analysis Two independent reviewers selected studies and abstracted and tabulated data and pooled estimates were obtained on success rate, uterine rupture and other adverse maternal and fetal outcomes. Meta-analyses were performed using

RevMan-5 to compare VBAC-1 versus VBAC-2 and VBAC-2 versus RCS.

Main results VBAC-2 success rate was 71.1%, uterine rupture rate 1.36%, hysterectomy rate 0.55%, blood transfusion 2.01%, neonatal unit admission rate 7.78% and perinatal asphyxial injury/death 0.09%. VBAC-2 versus VBAC-1 success rates were 4064/5666 (71.1%) versus 38 814/50 685 (76.5%) ($P < 0.001$); associated uterine rupture rate 1.59% versus 0.72% ($P < 0.001$) and hysterectomy rates were 0.56% versus 0.19% ($P = 0.001$) respectively. Comparing VBAC-2 versus RCS, the hysterectomy rates were 0.40% versus 0.63% ($P = 0.63$), transfusion 1.68% versus 1.67% ($P = 0.86$) and febrile morbidity 6.03% versus 6.39%, respectively ($P = 0.27$). Maternal morbidity of VBAC-2 was comparable to RCS. Neonatal morbidity data were too limited to draw valid conclusions, however, no significant differences were indicated in VBAC-2, VBAC-1 and RCS groups in NNU admission rates and asphyxial injury/neonatal death rates (Mantel-Haenszel).

Conclusions Women requesting for a trial of vaginal delivery after two caesarean sections should be counselled appropriately considering available data of success rate 71.1%, uterine rupture rate 1.36% and of a comparative maternal morbidity with repeat CS option.

Keywords Complications, uterine rupture, vaginal birth after two caesarean sections.

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Background

Caesarean section (CS) rates have risen worldwide. Performance of elective repeat caesarean is one of the main

reasons for the rise in caesarean rates, together with fetal distress, dystocia and breech presentation.^{1,2} In UK, CS rate in women with a previous caesarean is 67% as compared to 24% in primigravid women according to the results of