

LOWER URINE SEGMENT SCAR THICKNESS AS A PREDICTOR OF SUCCESSFUL VAGINAL BIRTH AFTER CAESAREAN SECTION IN FEDERAL MEDICAL CENTRE, YENAGOA: A PROSPECTIVE COHORT STUDY

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INTRODUCTION

- Successful conduct of vaginal birth after Caesarean section is dependent on a number of foetal and maternal factors including integrity of the previous caesarean section scar.
- Hence, the need for the ultrasonographic evaluation of lower uterine segment scar thickness as a predictor of successful and safe vaginal birth after caesarean section.

OBJECTIVES

- Ultrasonographic assessment of lower uterine segment (LUS) of a woman with one previous caesarean section to determine the average LUS scar thickness for women being planned for VBAC, the relationship of the scar thickness with successful vaginal birth after one caesarean section and to secondarily predict risk of uterine dehiscence / rupture and subsequent maternal and perinatal morbidities.

MEHODS

- This was a prospective cohort study of 338 pregnant women at 36 weeks gestational age (GA) that were recruited to undergo transvaginal ultrasound scan having met the inclusion criteria and booked for vaginal delivery at the Federal Medical Centre (FMC) Yeragoo.
- A consecutive sampling technique was used. The women were allocated into three groups A(<2.5mm), B(2.53.4mm) and C(≥3.5mm) according to the thickness of the lower uterine segment scar. Primary outcome was successful VBAC in relation to lower uterine segment thickness while secondary outcome was recourse to abdominal delivery with or without unfavourable outcome.

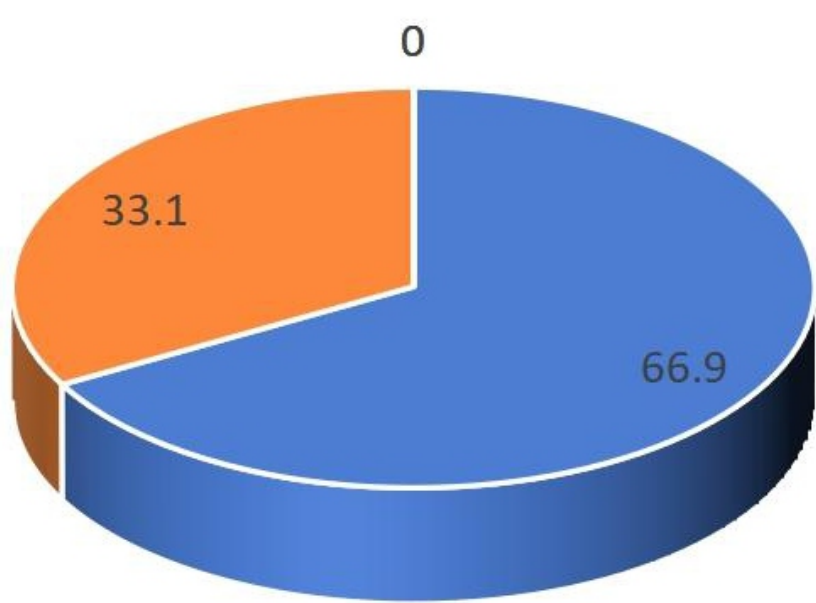
RESULTS

- The range of lower uterine segment thickness in the study was 1.5mm to 6.8mm (mean 3.89 ± 0.95 mm).
- The number of women who had successful VBAC was relatively proportional to increasing lower uterine segment thickness ($p=0.001$).
- With cut-off value of 3.5mm, the sensitivity for successful VBAC was 78.8%, specificity was 55.4%, PPV was 78.1%, NPV was 62.0% and accuracy was 71%.
- The rate of uterine defect increased as the lower uterine segment thickness decreased from 3.5mm ($p=0.001$).

- With cut-off value of 2.5mm to predict the risk of uterine defect, the sensitivity was 55.6%, specificity was 92.1%, PPV was 16.1%, NPV was 92.1% and accuracy was 91.1% while with cut-off value of 3.5mm, the sensitivity was 88.9%, specificity was 69.0%. PPV was 7.3%, NPV was 99.6% and accuracy was 69.5%

Figure 1

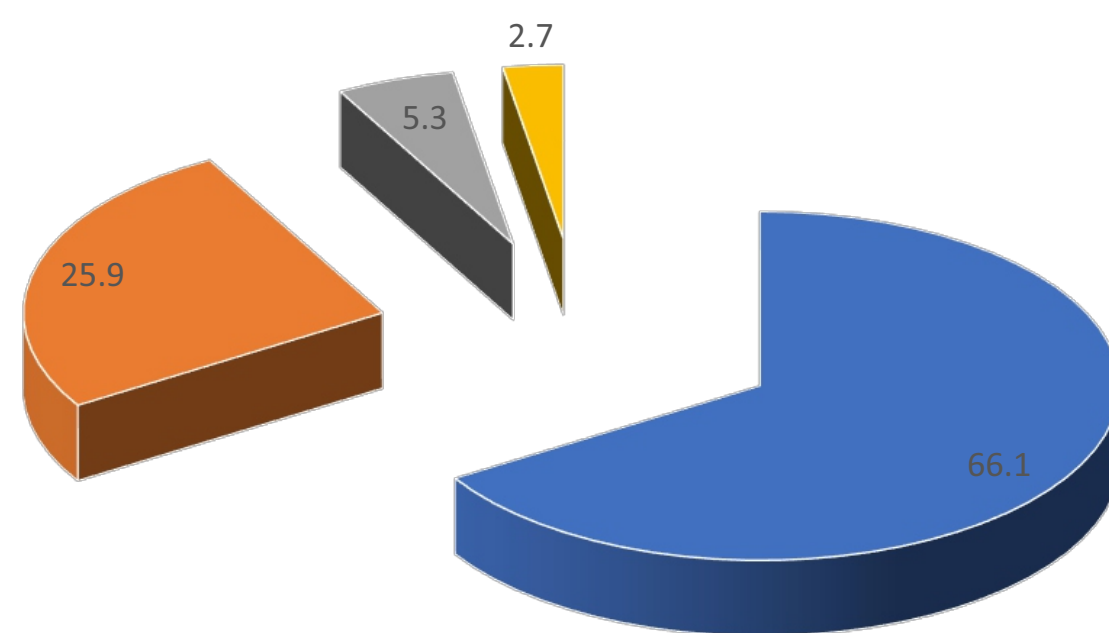
Trial of VBAC outcome



■ Successful VBAC ■ emcs ■

Figure 2

Lower uterine segment grading at caesarean section



■ Grade 1 ■ Grade 2 ■ Grade 3 ■ Grade 4

Table 1: Association between lower uterine segment scar thickness and trial of VBAC outcomes among study participants

Categories	Trial of Labour outcome			χ^2	df	pValue
	Total	Succ. VBAC	EMCS			
	N = 338 (%)	N = 226 (%)	N = 112 (%)			
A (≤ 2.5 mm)	31 (9.2)	9 (29)	22 (71)	43.86	2	0.001
B (2.6–3.5 mm)	79 (23.4)	39 (49.4)	40 (50.6)			
C (≥ 3.6 mm)	228 (67.4)	178 (78.1)	50 (21.9)			

The above table shows the association between the lower uterine segment scar thickness with respect to the three different categories and trial of VBAC outcome. A (≤ 2.5), B(2.6–3.5) and C (≥ 3.6 mm). The frequency of successful VBAC was directly proportional to the increasing lower uterine segment scar thickness. Out of 31 women in A (≤ 2.5 mm) category, 9 (29.0%) had successful VBAC while 22 (71%) had emergency CS. Women with successful VBAC in B (2.6–3.5mm) category were 39 (49.4%) while 40 (50.6%) had emergency CS out of 79 women. In C (≥ 3.6 mm) category, 178 (78.1%) out of 228 women had successful VBAC while a much lesser number 50 (21.9%) had emergency CS ($p=0.001$).

CONCLUSION

- Transvaginal ultrasonographic lower uterine segment scar thickness measurement is an important assessment for predicting possibility of achieving a successful VBAC as a primary outcome or the likelihood of recourse to abdominal delivery with or without unfavourable outcome.
- This research has clearly shown that full LUS thickness of ≥ 3.5 mm at 36 weeks of gestation is associated with an increased chance of successful VBAC while LUS thickness of <3.5 is at increased risk of uterine rupture and uterine dehiscence during a Trial of VBAC.

RECOMMENDATION

- The Lower uterine segment scar thickness assessment at 36 weeks GA should be included among the factors for trial of VBAC while still embarking on more studies (larger, multi-centred and well designed).
- Cut-off point of 3.5mm full LUS thickness should be adopted and should be prospectively validated in future studies.