Reporting Of Serious Maternal Morbidity And Mortality Consequent To Trial Of Labour After Caesarean (TOLAC) Via A Local Incident Reporting System

Pradeep Ruba, Lauren Megaw
King Edward Memorial Hospital, Perth

Abstract

Introduction:
The Royal College of Obstetricians and Gynaecologists (RCOG) lists reporting of serious maternal morbidity and mortality due to TOLAC, including uterine rupture and hysterectomy, as an auditable benchmark of 100%. We audited reporting rates of such events to our local incident reporting system (CIMS) at King Edward Memorial Hospital.
Methods:
All singleton births between 2015-June 2020 where a trial of labour was undertaken in a mother with at least one previous Caesarean section were identified. Cases of reportable uterine rupture and uterine dehiscence during labour, and peripartum hysterectomy were identified from this cohort. All reportable cases were analysed to assess the rate of reporting via CIMS to compare to the benchmark.
Results:
There were 14 cases of uterine rupture, 12 of which were reportable. 9 of these 12 cases were reported via CIMS (75%). There were 11 cases of uterine dehiscence, 5 of which were reportable. 4 cases were reported to CIMS (80%). The one case of uterine rupture requiring emergency hysterectomy was reported via CIMS (100%). Out of the 17 reportable events, 13 cases were in fact reported giving an overall reporting rate of 76%.
Discussion:
Overall, about 57% of women who underwent TOLAC at KEMH delivered vaginally from 2015 to mid-2020. A greater proportion of TOLAC's deliver vaginally at KEMH at the expense of a greater number of uterine ruptures. The overall reporting rate of 76% is lower than the standard of 100%. Thus, the auditable standard was not met. Recommendations include circulated reminders regarding reporting and regular re-audit.

Introduction:

Australia's Caesarean section rate of 34% makes vaginal birth after Caesarean (VBAC) a common discussion topic in the antenatal setting. Success rates of VBAC in the literature vary between 23-85%. 2020 Women's Healthcare Australasia (WHA) data suggests KEMH has one of the higher rates of uterine rupture during trial of labour after Caesarean (TOLAC). Uterine scar dehiscence or rupture leading to emergency delivery of the fetus is a reportable event under the 'Reportable Incident' list for the Obstetric Clinical Outcomes Management Committee (OCOMC).
The Royal College of Obstetricians and Gynaecologists (RCOG) lists reporting of serious maternal morbidity and mortality due to TOLAC, including uterine rupture and hysterectomy, as an auditable benchmark of 100%. Reporting to OCOMC is via the Clinical Incident Management System (CIMS). Given the rate of uterine rupture at KEMH published in the WHA report, we audited reporting rates to our local incident reporting system (CIMS). We also looked at reporting rates for Caesarean hysterectomies for failed TOLAC, with the standard also being 100%.

Methods:

Using the STORK maternity database we identified all singleton births between 2015-June 2020 where a trial of labour was undertaken in a mother with at least one previous Caesarean section. Data were collected including maternal age, gestation, onset of labour, mode of delivery, gravidity, parity, duration of labour, blood loss, and birth outcome.
Cases of uterine rupture and uterine dehiscence during labour, and peripartum hysterectomy were identified from this cohort via STORK. Cases of uterine rupture or dehiscence in labour were reviewed to ascertain if they met the clinical criteria for reporting by STORK and chart assessment. Cases in which a Caesarean section was performed for suspected uterine scar dehiscence or rupture in labour, and a dehiscence or rupture was identified intraoperatively, were considered reportable events. For patients who did not birth vaginally during TOLAC and underwent Caesarean section for failure to progress or obstructed labour – and where a "silent" uterine scar dehiscence or rupture was noted incidentally – such cases were not considered reportable.
In patients undergoing TOLAC, if a Caesarean hysterectomy was performed for any reason, these cases were also considered reportable to CIMS. No patients with known abnormally invasive placenta underwent a trial of labour.
All reportable cases were analysed to assess the rate of reporting via CIMS to compare to the benchmark.

Results:

Between 2015 – mid 2020, 2139 women underwent a trial of labour after Caesarean (table 1) as identified by the STORK database. Of these, there were in total 25 cases of uterine rupture or dehiscence in labour (1.17%). There were 14 cases of uterine rupture and 11 cases of uterine dehiscence. Excluding the 'dehiscence in labour' gives a uterine rupture rate of 0.65%. There was one case of uterine rupture requiring hysterectomy.
As seen in table 2, of the 14 total cases of uterine rupture, 12 were considered reportable events. 9 of these 12 cases were reported via CIMS (75%). Of the 11 total cases of uterine dehiscence, 5 were considered reportable; 4 cases were reported to CIMS (80%). The one case of uterine rupture requiring emergency Caesarean hysterectomy was reported via CIMS (100%).
Overall, there were 17 reportable events which gives a rate of 0.8% for a Caesarean for suspected true rupture or dehiscence. Out of the 17 reportable events, 13 cases were in fact reported giving an overall reporting rate of 76%.

Table 1: TOLACs 2015-mid 2020 (n=2139)	Delivered without reportable rupture or dehiscence (vaginal or Caesarean). Dehiscence may be found intraoperatively (non-reportable) n=2122	Caesarean for rupture or dehiscence (reportable) n=17	Hysterectomy (reportable) n=1
Age			
≤ 29 years	679 (32%)	5 (0.2%)	-
30-39 years	1299 (61%)	11 (0.5%)	1
40+ years	144 (7%)	1 (0.05%)	-
Parity			
1	1179 (55%)	14 (0.65%)	-
> 1	943 (45%)	3 (0.14%)	1
Number of previous CS			
1	1776 (83%)	16 (0.75%)	1
> 1	346 (16%)	1 (0.05%)	-
VBAC since previous CS			
Yes	373 (17%)	3 (0.14%)	1
No	1749 (82%)	14 (0.65%)	-
Onset of labour			
Spontaneous (n=1568)	1559 (73%)	9 (0.42%)	-
Induced (n=571)	563 (26%)	8 (0.37%)	1
Mode of delivery			
Vaginal	880 (41%)	0	-
Instrumental	279 (13%)	0	-
Breech	59 (2.7%)	0	-
Caesarean Section	904 (42%)	17 (0.79%)	1

Table 2: TOLACs 2015-mid 2020 (n=2139)	Delivered without reportable rupture or dehiscence (vaginal or Caesarean). Dehiscence may be found intraoperatively (non-reportable) n=2122	Caesarean for rupture or dehiscence (reportable) n=17		Hysterectomy (reportable) n=1
Uterine rupture (n=14)	2	12	9 reported (75%)	1
Uterine dehiscence (n=11)	6	5	4 reported (80%)	-
CIMS submitted				
Yes	-	13 (76%)		1
No	-	4		-

Conclusion:

From 2015 to June 2020, the rate of Caesarean section for suspected true uterine rupture or dehiscence (reportable) was 0.8%.
The uterine rupture rate of 0.65% is still higher than the uterine rupture rate of 1 in 200 or 0.5% we quote to patients when counselling regarding VBAC, however this figure includes women who undertook induction of labour and non-standard approaches to labour management. It must also be kept in mind that the patient population at KEMH is inherently higher risk than the general population in WA.
Of note, the induction of labour rate for patients undergoing TOLAC at KEMH was about 26% from the above data. For comparison, 28% of TOLACs had an induced onset of labour in Queensland from 2016 to 2018.
From table 1, the reportable rupture rate for women undergoing TOLAC in spontaneous labour was 0.57% (9 out of 1568 total), whereas that for women who were induced was 1.4% (8 out of 571 total). This is consistent with the known increased risk of uterine rupture with induction of labour in women undergoing TOLAC.
Overall, about 57% of women who underwent TOLAC at KEMH delivered vaginally (including instrumental and vaginal breech delivery) from 2015 to mid-2020. The WHA data for 2020 showed that 40% of patients who underwent TOLAC at KEMH delivered vaginally, compared to 38.9% on average in 2020. As perhaps may be expected, the uterine rupture rate for KEMH in 2020 was 0.59% compared to 0.35% on average. Essentially, a greater proportion of TOLAC's deliver vaginally at KEMH at the expense of a greater number of uterine ruptures however these differences are small, and our reportable event rate is in keeping with the published and quoted rupture rates.
The overall serious adverse event reporting rate of 76% is lower than the RCOG standard of 100%. Thus, from 2015 to June 2020 the auditable standard was not met. Given the importance of this clinical outcome and our rate of TOLAC and consequent uterine rupture/dehiscence it is imperative that serious morbidity and mortality outcomes are reported via CIMS to ensure continued safe practice and good patient outcomes.
Recommendations include reminders circulated by the Obstetric Head of Department that all cases of TOLAC requiring emergency delivery of the fetus should be reported via CIMS. Reporting may also be delegated to a particular member of the team e.g. Consultant, to further ensure reportable cases are not left unreported. Regular re-audit is also needed to ensure our reporting rate approaches the standard given by RCOG.

References

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