Classification of indications for caesarean section: Nulliparous women in spontaneous labour with a cephalic foetus at term (Robson Group 1)

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Introduction:

The Robson Ten Group Classification System (TGCS)
Proposed by WHO in 2015 as a global standard for assessing, monitoring and comparing caesarean section (CS) rates both within healthcare facilities and between them[1].

A classification of intrapartum CS delivery has been developed to be used within the Robson TGCS to enable deeper understanding of CS rates. This classification of indications for caesarean section (CICS) has been applied in several centres in Europe[2,3] and gives us a method of comparison between units and over time.

It is likely that there will be differences in distribution of indications for CS in different centres, reflecting differences in management of labour. We use a high dose oxytocin regime for labour augmentation (as defined by Cochrane)[4], which may be expected to show more foetal heart rate (FHR) abnormalities than a low dose regime. Conversely, there may be less CS for poor response to oxytocin.

Objectives:

To apply a developed CICS to women in Group 1 in our unit.
Allow comparing and contrasting between units as a basis for discussion around management of labour. Group 2A is analysed in an E-poster.

Methods:

Robson's CICS was retrospectively applied to women in Robson Group 1
April 2020 to March 2022 for deliveries in Palmerston North Hospital, NZ

Indications for caesarean divided for classification purposes:
Foetal (no oxytocin)
Dystocia <1cm/hr from diagnosis of labour to full dilatation or delivery
≥1cm/hr from diagnosis of labour to full dilatation or delivery
Subgroups shown in figure 1

Results:

As shown in Table 1, 16.1% of women in group 1 were delivered by CS. The majority of caesarean sections were performed for labour dystocia, with most of these labours progressing at <1cm/hr. More than a third of CS were due to foetal intolerance of oxytocin limiting treatment of dystocia. Oxytocin was not prescribed for 20 women (2.1%) despite dystocia.

Total in Group 1	943	100%
Caesarean delivery:	*151*	*16.1%*
Foetal (no oxytocin)	25	2.7%
Dystocia, IUA poor response	34	3.6%
Dystocia, IUA, ITT, overcontracting	0	0%
Dystocia, IUA, ITT, foetal intolerance	59	6.3%
Dystocia, IUA, no oxytocin given	20	2.1%
Dystocia, EUA, malposition or CPD	13	1.4%

IUA: inefficient uterine action (progress <1cm/hr), ITT: inability to treat, EUA: efficient uterine action (progress ≥1cm/hr), CPD: cephalo-pelvic disproportion

Our caesarean rates for most indications are higher than other published rates using this classification system.

Management of labour, maternal and foetal factors all contribute to these rates, and we hope with further research the roles of each will become clearer.

Management of labour is the only modifiable factor at the time of delivery.

References:
1. Robson Classification: Implementation Manual. Geneva: World Health Organization; 2017.
2. Robson M, Murphy M, Byrne F. Quality assurance: The 10-Group Classification System (Robson classification), induction of labor, and caesarean delivery. Int J Gynecol Obstet. 2015; 131: S23-S27
3. Kessler J, Robson M. Verifying a previously described classification system for intrapartum caesarean delivery in a national Norwegian study. Am J Obstet Gynecol. 2020 Jan; Suppl Poster Session IV: S535-536
4. Budden A, Chen, L, Henry A. High-dose versus low-dose oxytocin infusion regimens for induction of labour at term. 2014 Oct 9 [cited 2022 Aug 27]. In: The Cochrane Database of Systematic Reviews [Internet]. Available from: https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD009701.pub2/full

Table 3. The Robson Classification with subdivisions

Group	Obstetric population
1	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour
2	Nulliparous women with a single cephalic pregnancy, ≥37 weeks gestation who had labour induced or were delivered by CS before labour
2a	Labour induced
2b	Pre-labour CS
3	Multiparous women without a previous CS, with a single cephalic pregnancy, ≥37 weeks gestation in spontaneous labour
4	Multiparous women without a previous CS, with a single cephalic pregnancy, ≥37 weeks gestation who had labour induced or were delivered by CS before labour
4a	Labour induced
4b	Pre-labour CS
5	All multiparous women with at least one previous CS, with a single cephalic pregnancy, ≥37 weeks gestation
5.1	With one previous CS
5.2	With two or more previous CSs
6	All nulliparous women with a single breech pregnancy
7	All multiparous women with a single breech pregnancy including women with previous CS(s)
8	All women with multiple pregnancies including women with previous CS(s)
9	All women with a single pregnancy with a transverse or oblique lie, including women with previous CS(s)
10	All women with a single cephalic pregnancy < 37 weeks gestation, including women with previous CS(s)

CLASSIFICATION OF INTRAPARTUM CAESAREAN DELIVERY
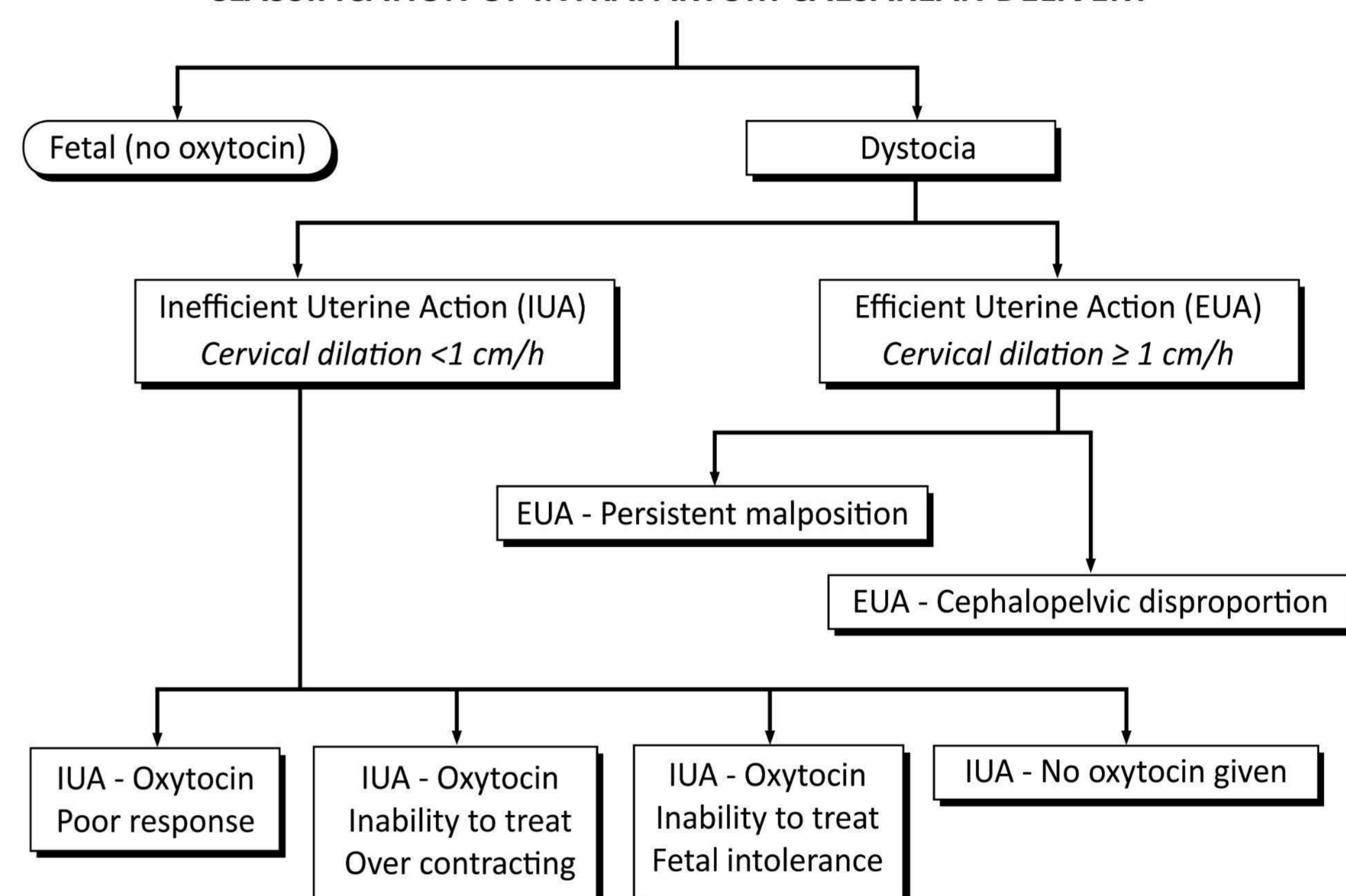
Discussion:

These numbers appear to be different in distribution to other units who have employed the same CICS. The overall CS rate among women in Group 1 is much higher (16.1 vs 7.1%)[2], with most indications accordingly being two to three times higher. The high rate of inability to treat due to foetal intolerance suggests higher doses or more rapid increase in doses of oxytocin. We rarely (never, in this sample) fail to treat due to overcontracting. Our rate of no oxytocin being given is higher than others[2,3]. This may also be multifactorial – either women declining oxytocin, or it not being offered when otherwise indicated due to other subacute concerns around foetal wellbeing. 7/20 where no oxytocin was given had their CS at full dilatation – indicating that they progressed <1cm/hr (but adequately, as per our protocol of 0.5cm/hr) until full dilatation. It is unknown whether initiation of oxytocin earlier would have changed the outcome.

There does not appear to be a single indication for CS which differs from other units in frequency in isolation, to explain total differences in CS rates. The differences in CS rate are likely a reflection of different population factors, in addition to differences in management of labour and CTG interpretation, but it provides grounds for discussion.

Practice implications:

Ongoing reflection on who we perform in labour caesareans for, and why, are an important part of practice improvement as obstetricians. This is particularly important for Robson Group 1, as performing the first CS is the factor most likely to influence subsequent mode of delivery.
We have identified the need to improve our management of Group 1 labours. Developing our policy of labour management to include management of FHR abnormalities while on oxytocin could be of use, along with ongoing education around CTG interpretation to avoid unnecessary CS for foetal indications only, while not compromising on foetal outcomes.