General anaesthesia for caesarean section in a tertiary hospital population

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Abstract

Introduction: General anaesthesia (GA) is the loss of consciousness and perception of pain by intravenous or inhaled agents and can be used to perform caesarean sections. The rate of general anaesthesia caesarean sections forms a benchmarking point within the Women's Healthcare Australasia.

Methods: The clinical records for all caesarean sections under general anaesthetic at a level 6 tertiary hospital were reviewed over an 18 month period.

Results: Of 5536 births, there were 1602 caesarean sections (28.9%), of which 147 (9.2%) were performed under general anaesthesia. Cases requiring general anaesthesia were more likely to be category A emergency cases (41% vs 10%, p=<0.00001) and the women were more likely to have a BMI >30 (34% vs 20%, p=0.0001). 46% of GA cases were conversions from regional anaesthesia, with 89% due to inadequate analgesia. Reasons for a primary general anaesthesia caesarean sections included a fetal or maternal indication to expedite delivery (58%), regional anaesthesia contraindication (28%), or patient preference (14%). 10% of GA caesareans had a blood loss of >1500mLs, compared to 2% in the overall caesarean group. Nursery admission rate for babies born via GA caesarean was 37% (background overall rate 15%), however this is unclear to be due to either the general anaesthetic or secondary to the underlying reason for caesarean section.

Discussion: General anaesthesia for caesarean section is more likely to be in emergency cases, for women with a higher BMI, resulting in higher blood loss and associated with a higher rate of nursery admission.

Method

All deliveries for an 18 month period were reviewed using the Birth Outcome Summary (BOS) reporting system. A retrospective case note review for caesarean sections performed under general anaesthesia was then performed.

Inclusion criteria:

- Caesarean section under general anaesthesia during the study period

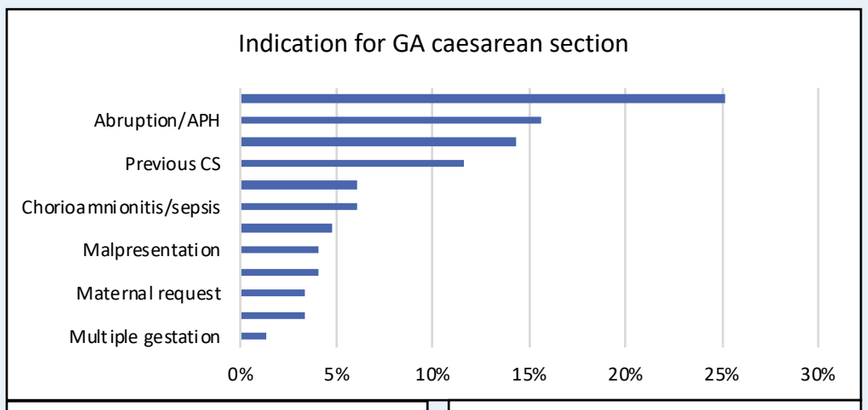
Data included:

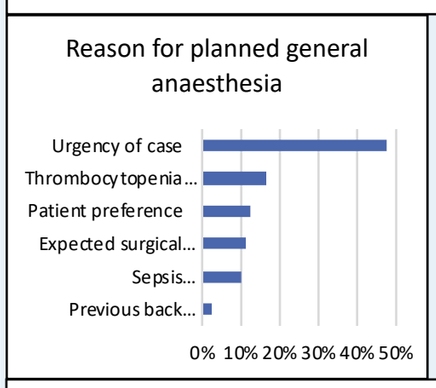
- Demographic data including age, parity, gestational age, booking BMI
- Elective vs emergency caesarean section
- Booking category of caesarean section
- Indication for caesarean section
- Indication for general anaesthesia
- Experience level of anaesthetic and obstetric staff present
- Time of day caesarean section performed
- Blood loss
- Neonatal data: APGAR, umbilical cord arterial pH and NICU admission status

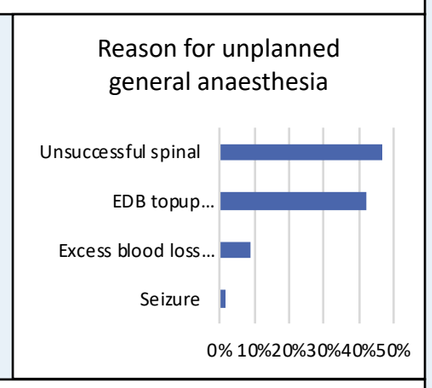
Results

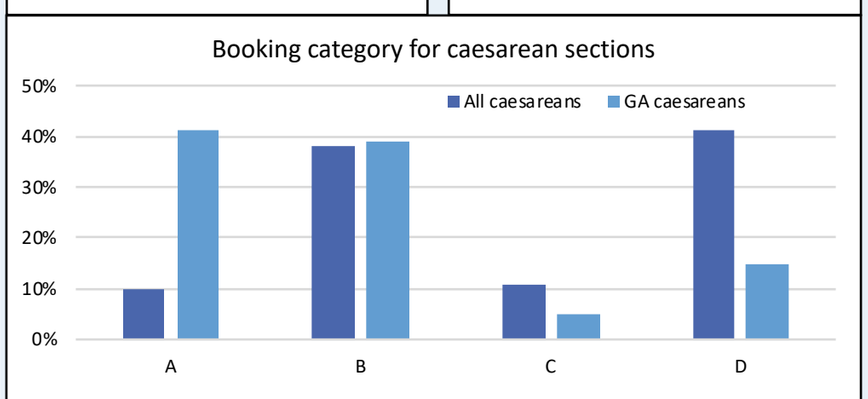
For period 1st Jan 2016 to 30 Jun 2017 (18 months):

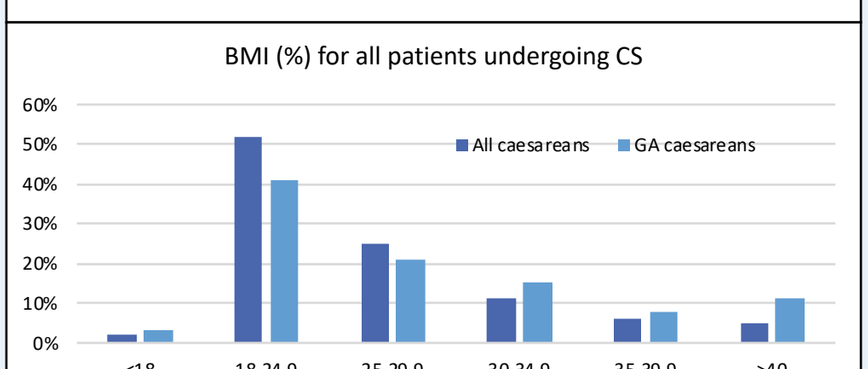
- Total births: 5536
- Caesarean sections: 1602 (28.9% of total births)
- Caesarean sections requiring general anaesthetic: 147 (**9.2% of total caesareans)**

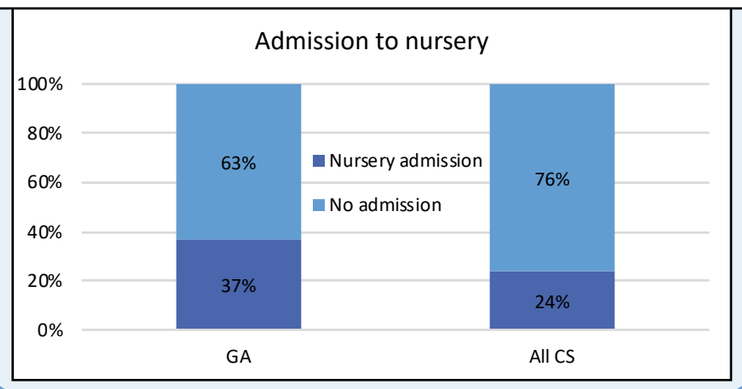












Discussion

The rate of GA for caesarean section forms a benchmarking criteria amongst hospitals. Yet there is no strong evidence to show that regional anaesthesia is superior to general anaesthesia in terms of major maternal and neonatal morbidity[1].

At CHWC, GA caesareans were more likely to be emergency categories A (immediate) and B (within 45 minutes). Caesarean under GA were also more statistically likely to be in women with a BMI >30 (p=0.0012).

This review shows a statistically significant increased blood loss and NICU admission rate for GA caesarean sections, however it is yet to be determined if this is due to the underlying reason for GA caesarean. The average blood loss for all caesareans was 551mL compared to 832mL in the GA population. The histogram shows a higher blood loss (%) for GA caesareans above 500mL. The overall nursery admission rate for all births was 15% at the time of review. The admission rate to SCN/NICU for all caesareans was 24%, however for GA caesareans the rate was 37% (p<0.00005). This review did not evaluate the level of care needed for the babies admitted to SCN. Due to missing date, the significance of arterial pH between the groups was unable to be gleaned.

There was no difference in GA caesarean section depending on time of day. However, there was a trimodal distribution for the time unsuccessful spinal anaesthesia occurred – two times correlating with planned CS lists, and the third peak at midnight - possibly secondary to fatigue. It wasn't able to be delineated from the notes whether obstetric or anaesthetic experience level contributed to this.

There were no recorded cases of maternal adverse outcomes secondary to general anaesthesia such as maternal awareness or aspiration pneumonia.

Conclusion

General anaesthesia for caesarean sections is an important tool to facilitate delivery at caesarean section, however it is associated with high BMI women in emergency cases, resulting in higher blood loss and increased SCN/NICU admission rates.

References

1. *Regional versus general anaesthesia for caesarean section, Cochrane Database Syst Rev 2012*
2. *General anesthesia for cesarean section, Curr Opin Anaesthesiol 2015;28(3):240-246.*
3. *National core maternity indicators– stage 3 and 4, AIHW*