UNDERSTANDING TECHNICAL DIFFICULTIES IN LABOUR EPIDURAL ANALGESIA: RETROSPECTIVE COHORT STUDY OF DOCUMENTED PROCEDURAL DIFFICULTIES AMONG VARIOUS NATIONALITIES AND ETHNICITIES

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Labour analgesia is offered and administered for 80% of the obstetric patients at National University Hospital Singapore. The hospital incidence of complication such as post dural puncture headache range from 0.1 to 4.5%. This retrospective study was conducted to explore the existing problems with labour epidurals at our hospital

It is known that when patients had central spinal obesity with filling up of "valley between the paraspinal muscles", the spinal anatomy was distorted. Not all patients with high BMI tend to have this central filling of space with adiposity. Our shared knowledge was that when residents identified this anatomical variation in patient profile in the higher BMI patients, the procedural attempts to successful epidurals were lesser and hence complications were minimised.

There is no literature documenting if different ethnicities pose technical-related difficulties for epidural anaesthesia. Given that Singapore is a multi-racial country where pregnant women of different ethnicities undergo epidural anaesthesia for their labour, we have decided to do collect pilot retrospective data on epidural analgesia performed over a four month period to evaluate if different ethnicities and nationalities have different epidural-related technical difficulties and thereby different incidences of complications.

Methodology A pilot retrospective cohort study of labour epidural services was conducted. Data was collected from scanned labour epidural forms from in-hospital electronic medical records for the months of December 2017 till March 2018.

Data was deidentified of patient credentials and tabulated. Data analysis was done through SPSS 22 (IBM Inc). Correlations and cross tabulations were made between chief themes such as BMI, nationalities, and observed depth to epidural space and further associations were done with documented complications

Results: A total of **609** patients had received labour epidural analgesia over the 4 month period. The major ethnicities and nationalities included Chinese (45%) Malay (20%) Indian (17.9%) and rest were Caucasians and other nationalities

BMI ranged from 16.4 to 54.7 with 29% normal, 40.9% overweight and 26.3% obese and 2.9% in the super obese category with a mean depth to epidural space from skin was 3.3cm, 4.3cm, 4.8 cm, 5.3cm and 6.5cm in increasing order of BMI.

Caucasians had the lowest skin to depth space irrespective of the BMI with least number of complications such as parasthesias, breakthrough pain with 92% of them having an epidural in the first attempt

Expatriate nationalities had **epidural depth 0.5-0.8 cm lesser** in each category of BMI compared to national population (correlation coefficient 0.05)

Usg was used only in 4.5% of the labour analgesia procedures

Conclusions: Our observation was that expatriate population had lesser central spinal obesity even when they had high BMI; they mostly have lateral adipose deposits. Within our national cohorts, a few ethnicities have higher incidence of complications. In the long term, the supervision of resident-lead labour epidurals could be decided chiefly on presence of central spinal obesity and not just BMI.

While this pilot study collected retrospective data with associations; this study can lead to prospective collection of future data confirming this hypothesis and hence benefit future patients: chiefly through direct supervision and ultrasound guided anatomical localisations.

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