Objectives:
1. The participant will obtain an overview about the combined spinal epidural technique in relation to obstetric anesthesia.
2. The participant will have a better knowledge of the advantages of combined spinal epidural blocks over epidural blocks and continuous spinal blocks in the obese parturient undergoing cesarean section.

Summary: The prevalence of obesity has been increasing considerably in the population over several decades. In the obstetric population, obesity is associated with a higher risk of elective and emergency lower segment cesarean section (LSCS). These obese parturients are also at high risk of difficult or failed airway intubation, aspiration of gastric contents and oxygen desaturation. These problems require more than ever the need for an efficient, reliable, titratable and safe neuraxial anaesthetic technique.

CSE vs. EPI: Combined spinal-epidural (CSE) anesthesia compares favourably to epidural anesthesia (EPI) in many aspects. The intrathecal (IT) injection of small doses of local anesthetic (LA) with or without narcotics provides rapid onset, dense and reliable surgical anesthesia. The small doses of LA eliminate the risk systemic toxicity. Local anesthetic requirements in the obese patients may be lower than those for non-obese parturients, yet, surgical times may be prolonged owing to increased technical difficulties. The presence of an epidural catheter provides the opportunity to extend the height and length of neuraxial block by means of injection of small doses of LA within the epidural space. With a (spinal) needle-through-needle (epidural) technique, the presence of cerebrospinal fluid (CSF) in the spinal needle increases the chance of correct epidural catheter placement in the epidural space, hence, lower failure rates, lower conversion to alternative anesthesia techniques and better maternal satisfaction when compared to EPI blocks. Post-dural puncture headache (PDPH), regardless of the neuraxial approach, is lower in the obese obstetric population. The incidence of PDPH is comparable between EPI and CSE blocks.

CSE vs. CSA: Continuous spinal anaesthesia (CSA) confers the combined advantages of single-shot spinal anaesthesia and IT titratability. However, there are serious concerns with regards to an association between continuous injection of LA within the IT space and adverse neurological outcomes. Although this has recently been refuted in a recent randomized controlled trial, further studies are still needed before the FDA approves the commercialisation of IT catheters in the United States. No study has compared CSE to CSA in the obstetric population. However, when CSA is compared to EPI, failure rate is considerably higher in the former, potentially leading to supplementation with general anesthesia. Technical issues related to the spinal catheter, catheter dislodgement, paresthesias and difficulties in removing the spinal catheter were the main causes of those failures. Body mass index seems not to be an independent factor of failure. In an obese parturient population where reliability on neuraxial techniques is of critical importance, CSE offers a better profile than CSA. The incidence of PDPH after CSA, whether a catheter-through-needle or catheter-over-needle is employed, is high, reaching 29 % in one recent study.

Key Points:
1. Obese parturients are at high risk of airway complications during general anesthesia, hence the need for an efficient, reliable, titratable and safe neuraxial anaesthetic technique.
2. CSE provides rapid onset, dense and reliable surgical anaesthesia and the flexibility to extend the height and duration of neuraxial block using the epidural catheter.
3. Failure rate is lower for CSE than for CSA and EPI.
4. CSA is complicated by the highest rate of post-dural puncture headache.

Key References: