Cesarean Section in a Parturient with an Endocardial Cushion Defect (ECD): Use of a Dural Puncture Epidural (DPE)

Abstract

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Introduction: ECDs are defined by atrioventricular septal defects which create a variety of AV valvular abnormalities, and are often associated with the presence of ASDs/VSDs. The parturient with an ECD poses a challenge to the cardiologist, anesthesiologist, and obstetrician.

Case Report: A 22 year old G2P0 at 33 4/7 wk, with a repaired ECD, was scheduled for a C-section with tubal ligation at our institution due to worsening cardiac status. Past surgical history was significant for an ASD repair, along with placement of prosthetic pulmonic/ mitral valves. Other surgical history included an ablation for arrhythmias, pacemaker insertion, and tricuspid valvuloplasty in 2008. She presented to our hospital at 27 wk in NYHA Class IV CHF with an echocardiogram showing an LVEF of 20%. She was admitted to the CCU for clinical optimization, and was treated with anticoagulants, diuretics, and α/β blockers. After initial improvement, her clinical status began to deteriorate. An echocardiogram at 33 wk again showed an LVEF of 20%, and it was decided that delivery was required.

On the morning of surgery, she was started on dobutamine at 5mcg/kg/min per cardiology recommendation. Access included a 16G peripheral i.v. and a double lumen PICC. Hemodynamic monitoring included an arterial line, along with CVP trending via her PICC. A DPE was chosen to provide anesthesia for her surgery. In short, a 17G Weiss needle was placed in the L3-4 interspace through which a 27G Whitacre spinal needle was passed to create a dural puncture, but no intrathecal injection was performed. After an epidural catheter was threaded, a negative test dose was obtained with 3 ml 0.25% bupivacaine. The epidural was slowly dosed with 50 mcg of fentanyl and 12 ml of 0.5% bupivacaine in 3 ml increments. A bilateral T5 level was obtained. A phenylephrine infusion was started for mild hypotension. A C-section was performed using a midline incision; and uterine repair, along with a tubal ligation, were done in situ. Epidural morphine was given for postoperative analgesia. Oxytocin was given in a titrated fashion to achieve good uterine tone. During surgery she received 250 ml of Lactated Ringers and lost 750 ml of blood. There was successful delivery of a 1685 g female with Apgars of 6 and 8. After an uneventful recovery in the PACU, she was taken to the CCU where she stayed for 2 days.

Discussion: The goal for this patient was to provide surgical anesthesia with minimal impact upon her cardiac status. Administration of i.v. fluid was tightly controlled in anticipation of an increased intravascular volume post-delivery. A DPE was chosen because it ensures placement of the catheter in the epidural space, provides stable hemodynamics, and may facilitate a more intense level of anesthesia.

Our primary concern was avoiding the development of pulmonary edema and worsening CHF following delivery. A multidisciplinary approach allowed for successful maternal/fetal outcome.