Anesthetic management of the First Pediatric Hand transplant


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INTRODUCTION

In 1998 the first successful adult hand transplant was performed, heralding the modern era of the clinical vascularized composite allograft (VCA). Unlike solid organs, VCAs are composed of multiple tissues including skin, muscle, tendons, vessels, nerves, lymph nodes, bone, and bone marrow; VCAs are increasingly being performed.

We present the first pediatric bilateral hand transplant with the purpose of outlining the perioperative planning and the anesthetic management of the first pediatric bilateral hand transplant in an 8-year-old child.

Clinical Case

An 8-year-old male (18.1 kg) with PMH of severe staphylococcal sepsis at one year of age, resulting in both ESRD and bilateral upper forearm and lower limb below the knee amputations. PSH: living related Kidney transplant, Port placement.

Pre operative planning involved development of care protocols and reaching a consensus on immunosuppressive, antibiotic and anticoagulation management with input from the anesthesiology, nephrology, renal transplant, pediatric intensive care and therapeutic pharmacy teams.

A preoperative USG evaluation to assess his vascular system and to document patency of bilateral subclavian, internal jugular (IJ) and femoral veins.

Intraoperative management:
• IV induction and intubation.
• 5 Fr. 12 cm Left IJ TLC placed under USG guidance.
• 2.5 Fr. 5 cm Left Femoral arterial line placed under USG guidance.
• Bilateral ultrasound-guided infraclavicular catheters placed.
• 9 ml of 0.2% Ropivacaine bolus through each catheter
• Tourniquet: Left arm for 100 minutes; Right arm for 115 minutes.
• 1204 ml of PRBCs, 750 ml albumin, 300 mL FFP and 2450 ml of LR.

Postoperative management:
• Transported intubated to PICU.
• Reexploration secondary to loss of Doppler signals about 2 hours postoperatively.
• Extubated on POD # 2
• Continued infraclavicular catheter infusions until POD#8.

Case

Postoperative hand

Infraclavicular block

Discussion

The anesthesia team was involved in the planning for this case for about 2 years prior to the actual hand transplantation.

Our goals in this case were to
• Achieve adequate access (venous and arterial) for intraoperative and postoperative management of his hemodynamic parameters;
• Optimize blood flow to the graft using a regional anesthetic technique (infraclavicular catheters),
• Maintain adequate renal function and perfusion throughout the case.

Conclusion

• We report the anesthetic management of the first pediatric bilateral hand transplant operation.
• Extensive preoperative planning and communication between various teams was needed to ensure that the resources needed to deliver the care for this complex and novel transplant surgery were readily available.

REFERENCES