

Ferric Chloride (FeCl₃) Thrombosis Surgical Procedure

General Surgery Labs SOP

September 12, 2014

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Reference: [W. Li et al: Ferric chloride induced murine carotid artery injury model: A model of Redox pathology. Redox Biology 1 \(2013\) 50-55](#)

Ferric Chloride preparation:

- Materials Needed:
 - Anhydrous FeCl₃ (Sigma Cat: 12321)
 - Sterile Water
 - 1.5 ml eppendorf tube
 - Filter Paper (1mmx1mm square)
- Create a 7.5% solution of FeCl₃ in sterile water
- Place approximately 0.1cc of solution into eppendorf tube with filter paper. Allow paper to soak in solution until placed on the carotid artery

Set up and Surgical Prep:

- Set up sterile surgical field
- Turn on microbead sterilizer for instrument sterilization between animals before you start so it will heat up to sterilization temperature <300°C
- Put blue pad down onto heating pad which is on surgical bench
- Using sterile gloves:
 - Place sterile field drape next to blue pad for instruments and gauze
 - Open all needed instruments and place onto sterile pad
 - Place sterile gauze for surgical procedure and for keeping animal warm during experiment onto sterile field (previously autoclaved by the surgeon)
 - Place sterile Q-tips (cotton tip applicators) next to surgical area (previously autoclaved by the surgeon)
 - Place sterile suture next to surgical area (previously autoclaved by the surgeon)
 - Cut coffee stirrer (black thin straw) into 1-2mm sections. Cut these sections in half again to create a U shape (this will be looped under the carotid for imaging)
- Fill stainless steel bowl with 70% alcohol for instrument cleaning between animals
- Anesthetize animal
- Place animal onto metal board and secure in supine position using loose loop tape technique

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- Shave surgical area
- Loop piece of 6-0 suture around upper teeth and tape to board above the nose of the animal to stretch out the neck.
- Use sterile cotton-tip applicators or gauze to sterilize surgical area with betadine and 70% alcohol – repeat three times.

Surgical Procedure

- Perform a midline incision in the animal's neck
- Expose submaxillary glands
- Tease submaxillary glands apart at midline by separating fascia connecting the two halves
- The trachea and surrounding muscle should be exposed at this point.
- Locate the omohyoid muscle (very translucent muscle that lies over the carotid artery (CA) and ties into the muscles surrounding the trachea)
- Cut the omohyoid muscle. This muscle will retract and expose the CA.
- Use your dumonts to blunt dissect the CA away from the vagus nerve and jugular vein and branches.
- Once a clean dissection is made, place dumonts under vessel and leave them in the open position. Insert piece of straw into the opening made by dumonts to slip under the CA. Remove dumonts leaving the piece of straw in place.
- Place the piece of soaked filter paper onto section of straw and leave it for 10 minutes.
- Tie the clot off on distal and proximal ends with 6-0 suture for removal and processing.
- Between animals all instruments must be:
 - Washed in 70% alcohol
 - Put into bead sterilizer for ~ 10-30 seconds
 - Put into 70% alcohol to cool and sterilize
 - Placed onto sterile field drape to dry (be sure not to put instruments into animal with alcohol on them as it may induce tissue injury)
 - Instruments can be used on a maximum of five animals before it is required to be re-steam or gas sterilized – with bead sterilization used between animals.