

The Royal Melbourne Hospital

Perfusion Protocol - Homograft Thawing



*Figure 1 - Aortic Valve Homograft with Ascending Aorta + Arch – © DTBV
2021*

Materials

Non sterile instruments	Thermometer	Warm saline (40-42°C) 8x500ml	Cold saline/ringers/Hartman's/dpbs (4°C) 2x500ml
	Insulated Gloves	Lollypop disinfectant stick (SoluPrep stick)	Blue huck towel x 2
Sterile Instruments	2 x Yellow top specimen jars*	2 x 20ml syringes*	2 x sterile scissors
	2 x Sterile forceps	Duval Clamp	4 x 250ml bowls
	Kidney dish	Sterile glove pack	

Method

To thaw correctly the process **will** take longer than 30 minutes.

**Below based On Sydney Heart Valve Bank, Victorian Bank method recommends*:*

- Thaw with warm sterile fluid in the sterile field after air thawing
- Not to agitate valve in warm sterile fluid
- Not to take samples for bioburden testing

Prior to initiating the thawing procedure

1. Ensure that the valve has been stored at -135°C or below
2. Stock of the solutions should be checked in the event more is needed to be warmed/cooled
3. Remaining stock should be checked and be ready, check all required equipment is with the sterile setup in theatre

Once instruction to thaw is given

1. Ensure a trolley is prepared with a sterile field, and contains all the equipment you need as listed below.

2 x Yellow top specimen jars*	2 x 20ml syringes*	2 x sterile scissors
2 x Sterile forceps	Duval Clamp	4 x 250ml bowls filled with cold saline (4 degrees) or Ringers or Hartmans
Kidney dish		

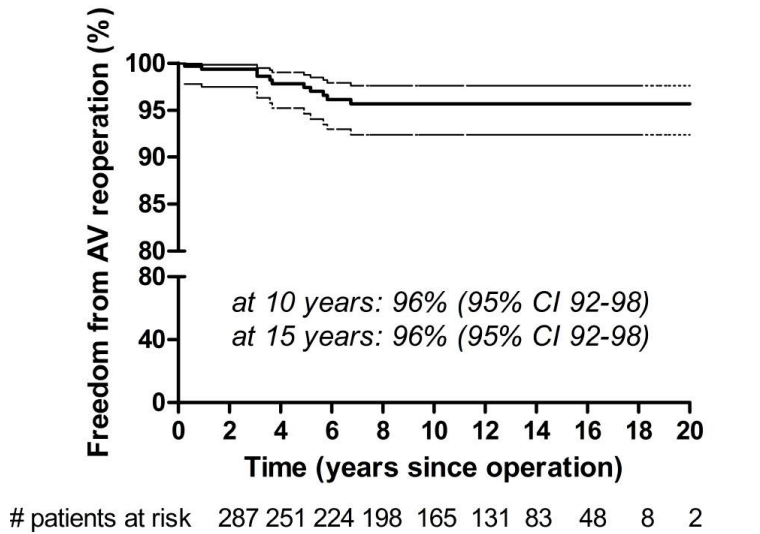
2. Wearing insulated gloves, remove homograft from storage container and remove blue towel wraps and cardboard box to allow air thawing for 3 minutes.
3. After 3 minutes transfer the homograft to the large blue bowl provided by nursing staff for thawing.
4. Add 4 bottles of 500ml **warm (40-42 degrees)** saline to the bowl, do **not** pour the saline directly onto the homograft pack, place blue huck towels over homograft to submerge it in saline. You may use a thermometer to measure the temperature.

5. After 5 minutes add 2 bottles of **warm** saline to the bowl.
6. Repeat step 4 once so total of 8 x 500ml bottles of **warm** saline have been emptied into the bowl.
7. After pouring last of **warm** saline into bowl, perform surgical scrub and don sterile gown and gloves.
8. Have nursing staff assist by removing homograft from bowl, drying the top of the pack with a blue towel.
9. Ask nursing staff to hold the pack tightly and to clean the outside of the top of the outer bag with a solu-prep stick.
10. Ask nursing staff to continue to hold the pack tightly, then carefully cut open the top of the outer layer of the pack without cutting the inner bag open and hand off the scissors.
11. Using sterile forceps remove the inner bag and place the homograft upright into a sterile kidney dish.
12. Make sure **cold (4 degrees)** saline has been added to the 4 bowls to be used for the rinse solution.
13. Cut inner homograft bag and carefully remove from storage solution and place into first rinse bowl.
14. Gently agitate bowl for 3 minutes.
15. Remove and place into next bowl and repeat until homograft has been rinsed 4 times.
Note: To avoid damaging the valve always hold homograft at most distal points to the valve leaflets
16. Take samples from the storage solution and the final wash solution for microbial testing and hand off to the scout nurse.
17. Hand the valve to the surgeon or scrub nurse to be placed on the surgical trolley.
18. Clean up and complete paperwork ready for surgeons to sign off.
 - a. Valve stickers should be given to the scout.
 - b. Patient stickers are required for the valve paperwork.
 - c. Note batch numbers of all defrosting and sterile rinse solutions.
 - d. Sign as the processing person.
19. The relevant tissue bank must be contacted once paperwork is completed for return of storage container.
20. Samples that are collected should be sent to Microbiology for cultures.

** Dimethyl sulfoxide (DMSO) is an organic solvent used as a cryogenic protectant in storage of frozen tissues. It freely penetrates cell membranes and displaces water, reducing ice formation and cell death during cryopreservation. DMSO has increasing toxicity with increasing temperature and concentration¹. DMSO is also damaging to red blood cells and platelets².

Aortic and pulmonary homograft's are heart valves obtained from human donors. Homograft valves are commonly used in Ross procedures during to increased durability over other non mechanical valves, but can also be used for an aortic or pulmonary valve replacement. Homograft valve replacement has the benefit of not requiring anticoagulation, but the supply is limited.

Figure 2 Ross Procedure aortic valve reoperation rates - © Ross Procedure 2021



Contact Details



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