

lec 5:

Casting Ring and Liner

The casting ring holds the investment in place during setting and restricts the expansion of the mold. Normally a liner is placed inside the ring to allow for more expansion. At one time asbestos was used as the liner, but this has been replaced by other materials to avoid the health risks associated with asbestos fibers. Wetting the liner increases the hygroscopic expansion of the mold, and prevents absorbent dry liner removes water from the investment and makes a thicker mix, the total expansion increases. Care must be taken not to squeeze the liner against the ring to prevent expansion restriction. Increased expansion can be obtained by placing the mold in a water bath. This is because of hygroscopic expansion; the position of the pattern in the casting ring affects expansion, so for consistent results a single crown should be positioned within the ring equidistant from its walls. When fixed prostheses are cast as one piece, greater accuracy is achieved if the pattern is placed near the center of a large or special oval ring, rather than near the edge of a smaller ring (Fig.1)

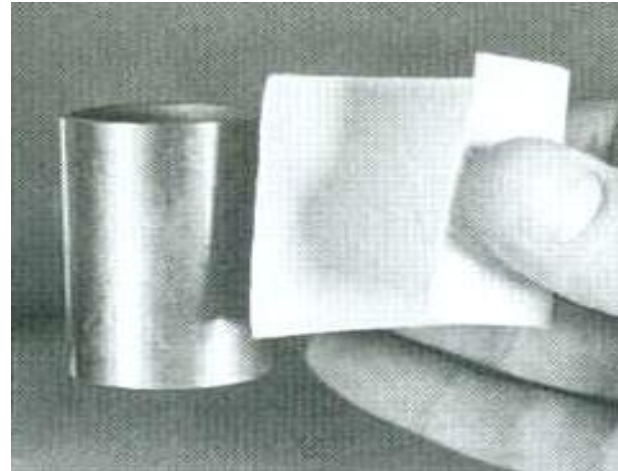
Casting ring liner

Materials used are:

- Asbestos liner
- Cellulose liner
- Ceramic liner
- Combination of ceramic and cellulose liner



Asbestos liner

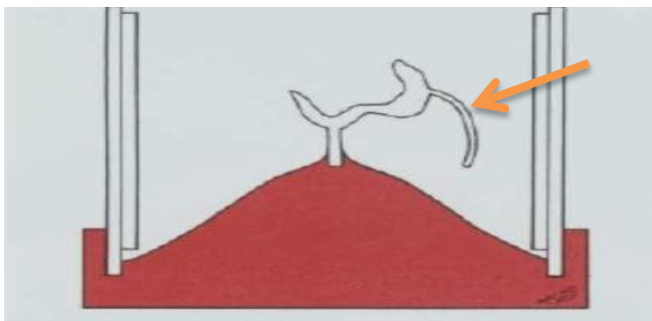


Casting rings with Asbestos liner

Venting:

Every mold contains gases, these gases must be escape as the metal inters, and otherwise they prevent the mold for being completely gas free.

Venting: its process added small auxiliary sprues or vents have been recommended to improve casting of thin patterns. Their action may help gases escape during casting' or ensure that solidification begins in critical areas by acting as a heat.



Venting

Four factors affect the rate of gas escape:

1-Permeability of refractory materials.

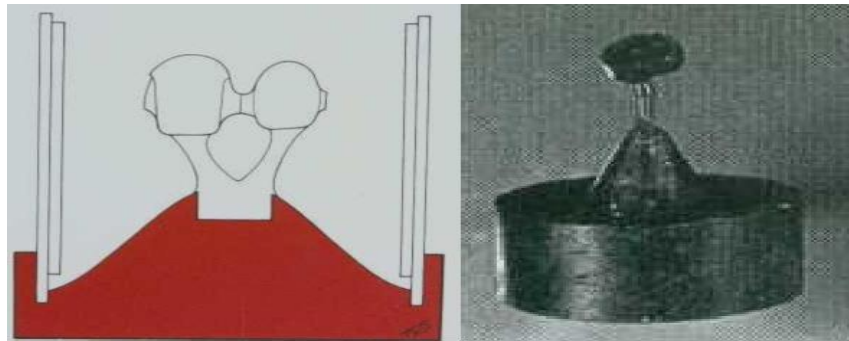
2-The thickness of the material between the top of pattern and the top of casting ring.

3-The height of sprue orifice of hole.

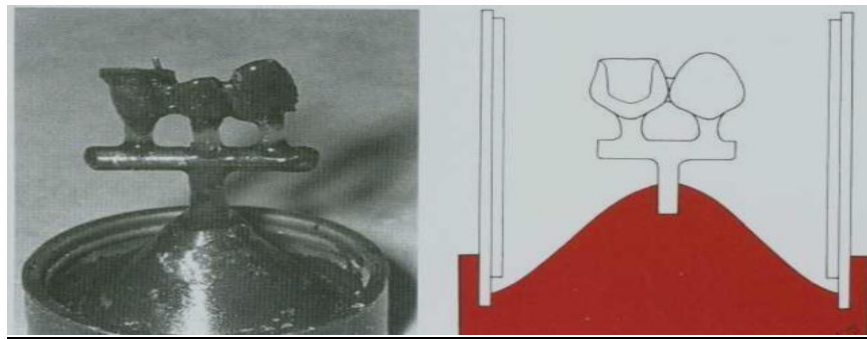
4-The presence of air vent around the mold.

Spruing method:

1-Direct method: usually used with small or moderate size casting it connects wax pattern directly to the crucible former ex. melts or molten metal came directly to the mold cavity.



2-Indirect method: used with multiple casting or unite like bridge, the metal reach the mold cavity by indirect branch channels.



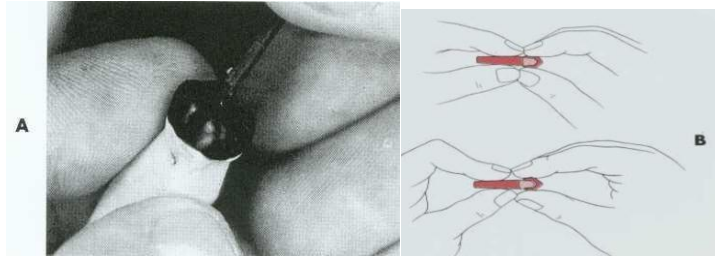
SPRUING TECHNIQUE:

Step-by-step Procedure for a Single Casting. The procedure is as follows:

1. Attach a 12-mm wax sprue to the bulkiest non centric cusp of the wax pattern, and angle it so it is obtuse to the adjacent axial walls and occlusal surface. This angle is usually about 135 degrees to the axial walls, and it facilitates filling of the mold.

2. Add wax to the point of attachment and smooth it to prevent turbulence during casting.

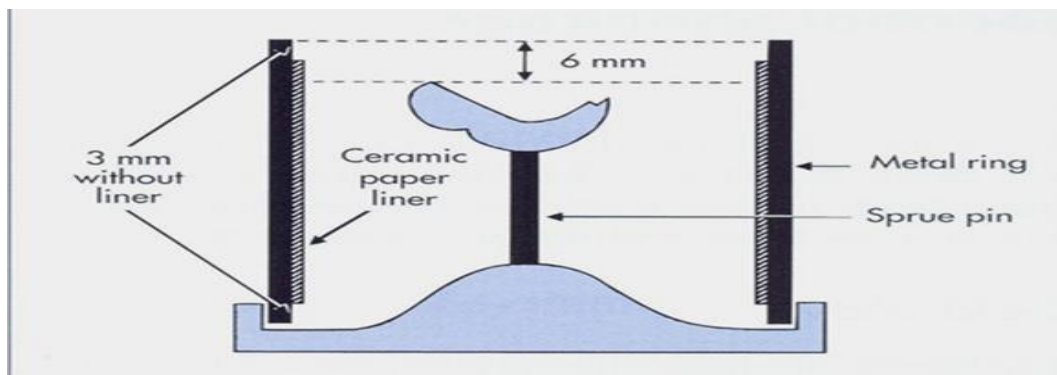
3. Remove the pattern from the die, using extreme caution not to distort it



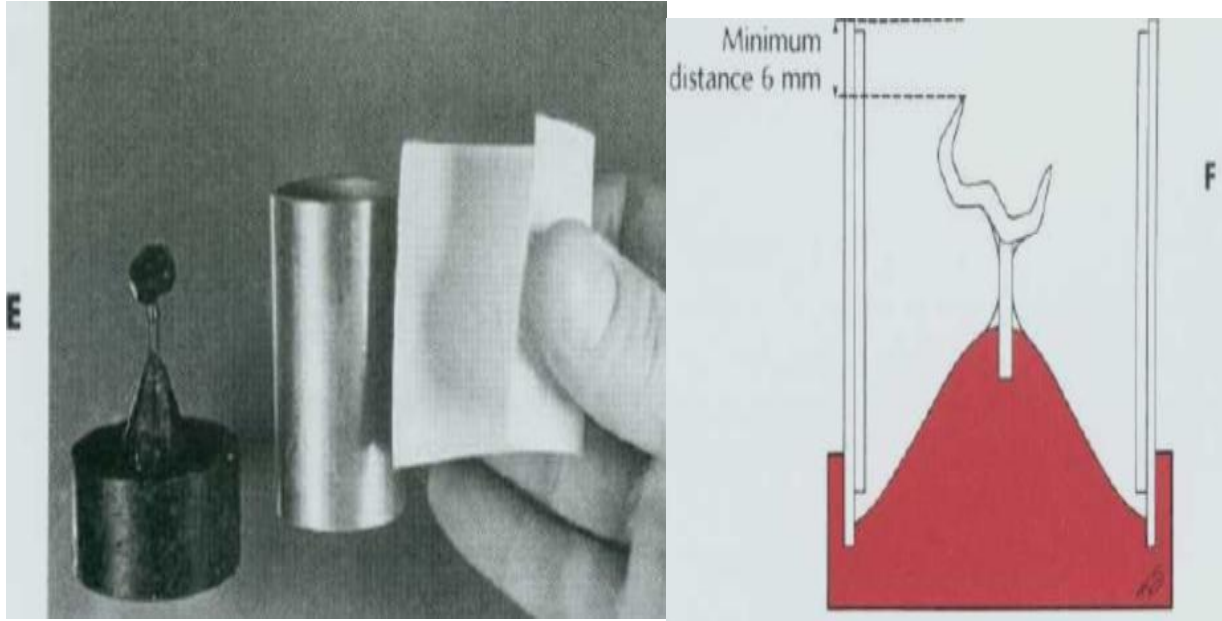
4-Insert the sprue into the hole in the crucible former, holding it with forceps (. It should now be luted into place with wax and the junction between sprue and crucibles should be smoothed. Use of a surfactant greatly enhances wetting of the pattern during investing



5-Line the casting ring, left about **3mm** from the ring between two ends of the liner unlined. The liner should be **3mm** short of both ends of the ring, this allowed supporting contact of the investment with the ring after the liner has burnout, and then moisten the liner



6-Place the ring over the pattern to ensure it is sufficiently long to cover the pattern with about 6 mm of investment. If necessary, the sprue may be shortened, or a longer ring may be chosen as an alternative.



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