

Polymerization

Polymerization starts one or two seconds after the mixture comes into contact with blood, however, depending on the patient, we have one or more minutes before it ends. In case of distal embolization, after flushing the dead space we also abundantly flush the vascular bed to regulate the speed of the polymerization process (Fig.16). In a prostatic artery embolization, for example, we flush the gland and the distal bed with 5 or 10 ml of dextrose solution to leave the glue enough time to go distally. The ratio of our dilution also affects polymerization time. A more diluted mixture will take longer to complete the process (Figs. 17,18).

In most cases we use a 1:3 ratio. Almost any ratio will work with arteries.

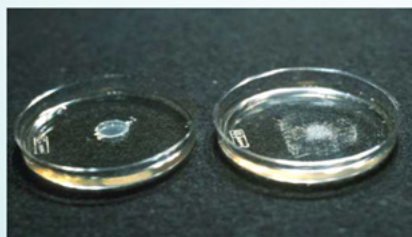
Glue polymerization

- Polymerization period:
 - It starts 1-2 seconds after contact with blood
 - the end depends on the ratio (G2: Ethiodized Oil) i.e: from a minimum of 45 sec (1:1) up to 120 sec (1:6)
- We can regulate the speed of polymerization depending on:
 - Ethiodized Oil/glue ratio
 - Volume and lasting of the previous flushing with a non-ionic fluid the catheter and vascular bed
- We can allow the glue once released into the bloodstream about sailing away into distal beds or stay close for achieve a proximal occlusion

Figure 16

Polymerization time

NBCA-Ethiodized Oil mixture
dropped on plasma



1:1 mixture
(50% NBCA)

1:4 mixture
(20% NBCA)

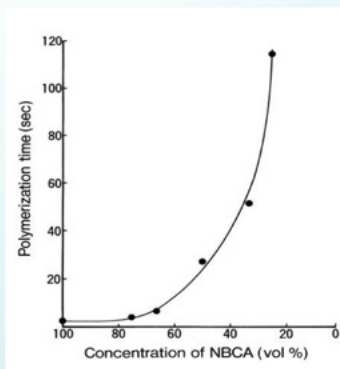


Figure 17

Choosing glue dilution

NBCA-Ethiodized Oil ratio

	Low dilution (1:1 – 1:3)	High dilution (1:4 – 1:9)
Catheter position	Close to lesion	Away from lesion
Catheter tip	Wedged	Free
Injection manner	Continuous column	Drop by drop
Flow speed	Fast	Slow
Occlusion	Segmental	Peripheral
Application	Shunt	Organ, end artery

Figure 18

For veins, a pelvic congestion syndrome (PCS) or a varicocele, use a 1:1 low dilution. In case of reflux, we need to avoid migration at renal vein level. When we use a highly diluted mixture, we cannot intervene on the reflux as we first need to wait for the polymerization to complete. With a 1:1 ratio, polymerization starts immediately and there is no time for the glue to migrate, even in case of reflux. In case of distal embolization, for example with tumors, use a high dilution of 1:5 1:6. Also, when the tip of the microcatheter is far from the bleeding site and you need to reach the distal spot, use a higher dilution.