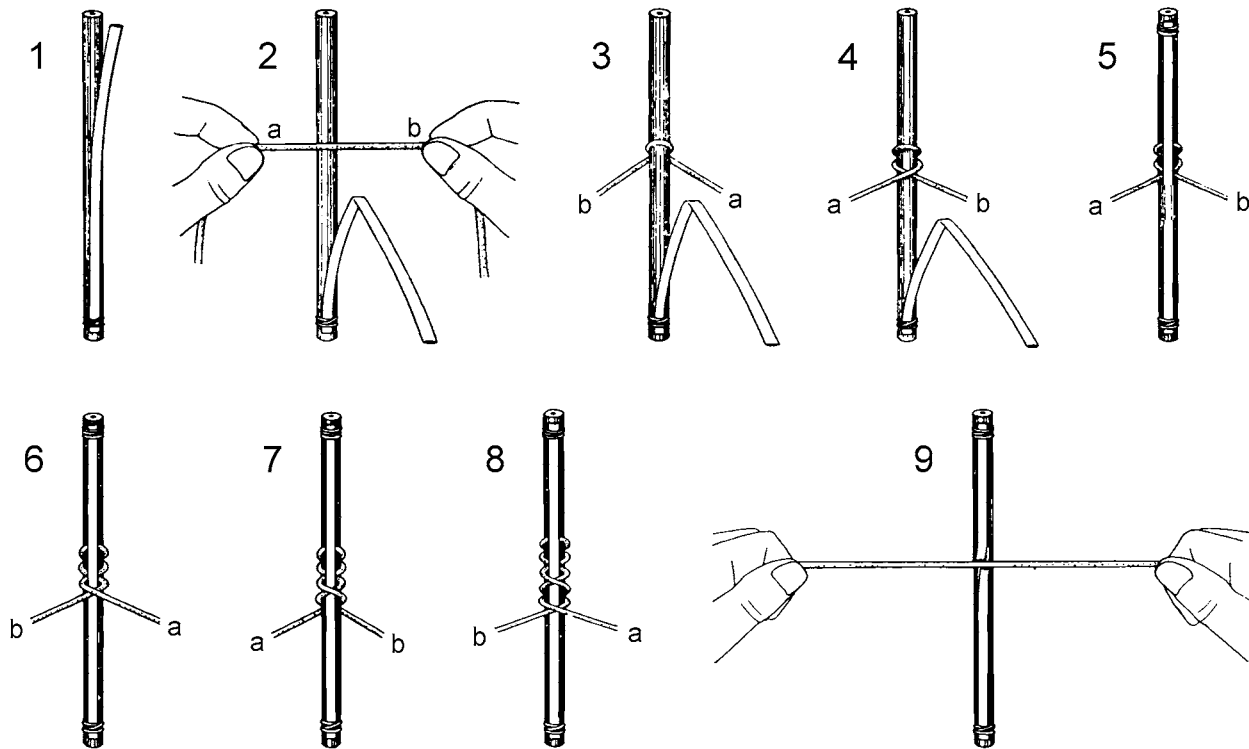


# Judah Penetration Trick

In private, mark one end of a shoelace. Begin by pressing a paper soda straw flat and attaching one end of it, by means of a short rubber band, to the base end of an unsharpened pencil (Figure 1). Bend the straw down and ask a spectator to hold the base of the pencil so that the straw is facing you. Take the marked end of the shoelace in your left hand and the unmarked end in your right hand. Lay the middle of the lace against the pencil (Figure 2), then cross its ends behind the pencil (Figure 3). Throughout the winding, whenever a crossing occurs, the marked end (the end labelled *a* in the diagram) must ALWAYS pass over the unmarked end. Otherwise the trick will not work.

Bring the ends forward, crossing them in front of the pencil (Figure 4), then fasten the free end of the straw to the top end of the pencil with another rubber band (Figure 5). Cross the ends of the lace on top of the straw (Figure 6), wind them behind the pencil for another crossing (Figure 7), then forward for a final crossing (Figure 8). Ask the spectator to firmly grip both ends of the pencil, count three, and give the ends of the lace a quick vigorous tug. Figure 9 shows the surprising result. The shoelace pulls straight, apparently passing right through the pencil and slicing the straw which was "too weak to withstand the penetration".



Careful analysis reveals that the ends of the shoelace spiral around the pencil in a pair of mirror-image helices. The simple closed curve formed by the performer and lace is not linked with the simple closed curve formed by the spectator and pencil. The lace cuts the straw that holds the helices in place.