INTRODUCTION: We describe an adaptation of the reverse big-bubble technique as a means to circumvent some of the inherent difficulties with DMEK donor tissue preparation. METHODS: 17 donor corneas for research were placed endothelial side up on a donor Barron punch. Air was injected creating a type 1 bubble to detach Dua’s Layer (DL) and Descemet’s membrane (DM). The corneoscleral button was punched from endothelial side and DM was peeled with the tissue submerged in balanced salt solution (BSS). RESULTS Complete detachment of DM was achieved in 14 of 17 cases (82.3%). In 10 (58.8%) cases, this was achieved with a single injection of air; 4 (23.5%) cases required repeat injections. In 1 case DM could not be detached despite repeat air injections; In 2 cases the big bubble burst and the corneas were discarded. The big bubble burst in 3 (17.6%) of 17 cases, being still able to achieve a complete detachment of the DM in 1 of 3 cases. Stretching of DM upon application of the Barron punch suggests overinflation of the big bubble which may subsequently burst if the punch is fully applied. If noted, we recommend slight deflation of the big bubble to prevent bursting. DISCUSSION In this video, we present some variations to the previously described pneumodissection and peeling of DM in preparation for DMEK. The use of a Barron punch facilitates dissection of the correct plane to dissect DM. This technique provides an easier, more reproducible and less traumatic dissection and peeling of DM under BSS.